FIRE PROTECTION EVALUATION REPORT

CLINTON POWER STATION UNIT 1

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CLINTON POWER STATION UNIT 1

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*The listed drawing is included as a "General Reference" only; i.e., refer to the drawing to obtain additional detail or to obtain background information. This drawing is not part of the USAR. It is controlled by the Controlled Documents Program.

DRAWING*	SUBJECT
M05-1039	Fire Protection

1.0 CLINTON POWER STATION FIRE PROTECTION EVALUATION

1.1 INTRODUCTION

The purpose of this report is to summarize the fire hazards analysis which has been performed for the Clinton Power Station (CPS) and to provide the design information which was the basis for the analysis.

Chapter 1 provides a brief history of the fire protection aspects of licensing for Clinton (Section 1.2), a summary of NRC evaluations of CPS fire protection design (Section 1.3), a general fire protection evaluation (Section 1.4), a listing of assumptions used in the analysis (Section 1.5), and a description of the methodology used to perform the evaluation (Section 1.6).

Chapter 2 discusses the procedures which were used to prepare and document the fire hazards analysis and the procedures which will be used to update the Fire Protection Evaluation Report.

Chapter 3, Section 3.1 identifies the CPS construction, equipment, and system characteristics which were used in the fire hazards analysis. Sections 3.2 - 3.9 provide the fire hazards analysis for each fire area and zone. The contents of this chapter include the fire hazard classification and fire rating of building materials, combustible loading for electrical cables, motor control centers and switchgear, description of ventilation systems, and descriptions of fire detection and suppression systems. Each fire area/zone is described, major safety-related equipment located in the area/zone is identified, combustible material and fire loading for the area/zone is stated, fire protection and detection available in the area/zone is described, and a hazards summary is provided.

Chapter 4 provides an evaluation of compliance of the Clinton Power Station Fire Protection Program with the requirements of BTP APCSB 9.5-1 Appendix A.

The Nuclear Regulatory Commission issued a Memorandum and Order (CLI-80-21) on May 23, 1980, that stated that the combination of the guidance contained in Appendix A to BTP APCSB 9.5-1 and the technical requirements set forth in Appendix R to 10 CFR 50 define the essential elements for an acceptable fire protection program at Clinton Power Station. Therefore, the NRC staff has used the technical requirements of Appendix R to 10 CFR 50 and Appendix A to BTP APCSB 9.5-1 as guidelines in its evaluation of Clinton's fire protection program.

1.2 FIRE PROTECTION CHRONOLOGY

In response to R. S. Boyd's (NRC) September 30, 1976 letter to L. J. Koch (IPC), IPC performed a reevaluation of the Clinton Fire Protection Program and submitted the Clinton Fire Protection Evaluation Report (FPER) to the NRC on April 12, 1978. On December 1, 1979, the Clinton FSAR was submitted to the NRC; FSAR Subsection 9.5.1 provided additional detailed information on the design of fire protection and detection systems and administrative fire protection controls.

On November 19, 1980, the NRC issued the fire protection rule, 10 CFR 50.48 and 10 CFR 50 Appendix R. The Clinton Safety Evaluation Report (SER) was issued in February 1982; the SER found the Clinton Fire Protection Program acceptable but required a Safe Shutdown Analysis (SSA) per the requirements of 10 CFR 50 Appendix R. In response, IPC performed an SSA for Clinton and submitted it to the NRC on December 16, 1982. Subsequent to IPC's submittals of the FPER and SSA, many guidance documents were issued by the NRC to clarify various aspects of their fire protection requirements. In order to update the two reports to reflect current design and to incorporate recent NRC guidance, IPC decided that a complete review of the Clinton fire hazards analysis and safe shutdown analysis would be performed. This revised report reflects the review of the fire hazards analysis.

1.3 RESULTS OF NRC REVIEW

The NRC has documented the results of their review of the Clinton Fire Protection Program in the Clinton Safety Evaluation Report (SER) issued in February 1982, SER Supplement 1 issued in July 1982, and SER Supplement 3 issued in May 1984. The SER and its supplements reported that the Fire Protection Program was acceptable based on the information provided and commitments which were made. Additionally, several deviations to the fire protection regulations were granted in these documents for design features which provided an equivalent level of protection.

Additional staff positions and clarification developed by NRC regarding 10 CFR 50 Appendix R have been addressed in this reevaluation. This reevaluation has, therefore, assessed previous commitments to assure that an adequate level of fire protection has been provided.

1.4 EVALUATION

1.4.1 Introduction

This review was made to compare the original 1978 submittal to the NRC with respect to current plant design considering current requirements of 10 CFR 50 Appendix R as updated by NRC staff positions and clarifications, i.e., Generic Letter 85-01.

1.4.2 Reevaluation task force

To accomplish the task, IPC's Clinton Architect-Engineer, Sargent & Lundy, assigned Mr. Richard Pollock as project leader for the reevaluation. The project team consisted of individuals from Architectural, Mechanical, Project Management, Mechanical Design and Drafting, HVAC, Nuclear Safeguards & Licensing, and Electrical Project Engineering Divisions. A third party independent review by a qualified fire protection consultant was provided by Mr. Kenneth W. Dungan, P.E., President, Professional Loss Control (PLC). Heading up Illinois Power's review of the project were Mr. Robert T. Kerestes, P.E., Project Manager - Fire Protection and Mr. Ram P. Bhat, P.E., supervisor of IPC's HVAC and Fire Protection Engineering and a qualified fire protection engineer.

1.5 ASSUMPTIONS/DEFINITIONS

1.5.1 Assumptions

This fire hazards analysis was based on the following assumptions:

a. Fire areas are bounded by fire barriers rated at least 3 hours except for specifically identified fire barriers which have been evaluated and justified as adequate in the Safe Shutdown Analysis. Exterior walls to fire areas are not fire rated unless there is an exterior exposure hazard.

b. Fire zones are subdivisions of fire areas defining natural divisions in fire areas for the purpose of discussion.

1.5.2 Definitions

Fire loadings are categorized in the Clinton Power Station as follows:

Classification	Fireload (BTU/ft^2)	Fire Severity (min)
negligible	less than or equal to 1,000	less than or equal to 0.75
low	below 40,000	below 30
moderate	40,000 to 152,000	30 to 114
high	above 152,000	above 114

* The classification of “negligible” quantities of combustibles is limited to use in Transient Combustible Free Zones (TCFZs) as follows:

a. the amount of identified transient combustible materials does NOT impact the fire zone classification (i.e., changing the fire zone from “Low” to “Moderate” or “Moderate” to “High”); and
b. the amount of identified transient combustible materials does NOT impact any "adequate for the hazard" fire barrier justifications; and
c. limits the intervening combustibles to “negligible quantity of combustibles” of no more than 1,000 Btu/ft^2 calculated to the square footage of the TCFZs, thereby ensuring there is insufficient heat potential to propagate a fire to the cold side. (Note: there are two exceptions: 737’ Control and 751’ Control TCFZs are limited to 700 BTU/ft^2 due to impacts on the fire zone classification); and
d. either of the following:
    i. limits the intervening combustibles to incidental as-found transient combustibles (i.e., inadvertently or accidentally left in a TCFZ); or,
    ii. requires transient combustible material to be maintained in an arrangement/configuration that does not support a propagation path across the zone.

1.6 FIRE HAZARDS ANALYSIS METHODOLOGY

A systematic approach was taken for evaluating and protecting plant fire hazards. Fire areas were defined to establish separation criteria for safe shutdown division and safety related equipment. Fire areas are further divided into zones using natural divisions for the purposes of describing plant construction features, equipment, fire hazards, and protection. The hazards contained in plant fire zones were identified by quantifying the amount, type, and nature of the combustibles in the zone. Conservative methodology was used to quantify the contributions of cable insulation and lubricants to the combustible loading. The likelihood and type of potential transient combustibles were considered in the selection and level of fire protection provided. Fire protection provided for each fire zone was evaluated and described in this report, including Figures FP-1 through FP-36a/b which show zone boundaries, fire barriers, fire suppression, and areas established as Transient Combustible Free Zones (placement of transient combustible material in these areas without prior approval and additional compensatory measures is PROHIBITED in modes, 1, 2, and 3). See additional information regarding "Negligible" quantities of combustibles in TCFZs in Section 1.5.

The information accumulated in this analysis was used as input for the SSA to verify that a fire anywhere in the plant will not prevent safe shutdown. This information was also used to evaluate compliance with NRC fire protection guidelines, as documented in Chapter 4.0.

2.0 FIRE PROTECTION EVALUATION REPORT (FPER) PROCEDURES

2.1 PROCEDURES FOR CONTINUING UPDATE OF FPER

The impact of plant design modifications on the FPER and the SSA will be assessed as part of plant design review and safety evaluation procedures. The FPER will be updated as required to reflect changes resulting from design modifications, backfits, or completion of work in progress. Procedures in use provide instructions and responsibilities for processing the proposed changes and amendments to the FPER and SSA. Revisions will be issued to the FPER and SSA to incorporate changes as necessary as part of the USAR update.

3.0 FIRE HAZARDS ANALYSIS

3.1 GENERAL

3.1.1 Introduction

This section of the report contains the results of the fire hazards analysis as required by Sections A.2 and D.1(b) of Appendix A to Branch Technical Position APCSB 9.5-1. These results have been utilized in reevaluating the existing fire protection program and in providing a basis for the comparison of this program with the guidelines of Appendix A, as given in Section 4.0 of this report.

The applicable NFPA Codes were used as guidelines in the design and construction of Clinton's fire protection features.

3.1.2 General Plant Description

3.1.2.1 Introduction

The information developed in this report is for the Clinton Power Station, a GE BWR/6 boiling water reactor.

The containment design employs the drywell/pressure suppression features of the GE BWR-Mark III containment concept. The containment is a right cylindrical, reinforced concrete, steellined pressure vessel with a hemispherical dome.

3.1.2.2 Building Design

Information on the composition of materials making up the structural elements in the plant and fire resistance ratings obtained from results of tests on rated materials are presented in this section. In addition, data for untested materials which are given as equivalent ratings were obtained by extrapolating results of related fire tests. The fire rating is established according to the elements of walls, floor and roof slabs, or ceiling slabs comprising each fire area or zone. The fire barrier rating is established based upon an analysis of structural materials and penetration seals. Penetrations include: access openings and clearance for deflection as well as HVAC, electrical, mechanical, and plumbing. The fire ratings given in this section take into consideration structural members and protective coverings. Where noted in Subsection 3.1.2.2, the term "fire classification" refers to the surface burning characteristics of the material as determined by the standard test method outlined in ASTM E84.

3.1.2.2.1 Concrete

The concrete used in the construction of walls, floor slabs, and ceiling or roof slabs was a mix of cement, sand, water, and carbonate-type aggregate. Test results of Portland Cement Association Development Laboratories indicate that a 5-3/4-inch-thick concrete slab used as either a floor, wall, or roof will provide a 3-hour fire rated barrier.

According to "Reports of Fire Tests of Reinforced Concrete Slabs and Beam Floors," by Underwriters' Laboratories, Inc., tests R3390-5 and R3390-17, a 6-inch-thick concrete slab with a 1-inch protection to steel reinforcement has a 3-hour rating. Removable concrete floor and roof slabs assemblies have not been tested but based on related data are equivalent to a 3-hour

rated barrier when they have a 3-inch minimum bearing in the direction of the span, with a maximum 6-inch by 1/4-inch thick exposed steel plate frame. Watertight removable slabs are sealed with silicone caulk.

3.1.2.2.2 Concrete Block

Hollow concrete block used in construction of fire barrier masonry walls and as a fire resistive covering on steel beams and columns conforms to the requirements of ASTM C-90, Grade N, Type 1, Moisture Controlled Units. These blocks are 2-cell units manufactured of normal weight limestone aggregate. Walls are constructed using 3/8 inch-thick horizontal and vertical mortar joints with steel truss-type continuous reinforcing placed in every second course.

Test results based on equivalent thicknesses in accordance with Underwriters Laboratories UL618 "Standard for Concrete Masonry Units" indicate that the nominal 8- x 8- x 16- inch concrete block units will provide a 1.9-hour fire rated barrier and the nominal 6- x 8- x 16-inch blocks will provide a 1-hour fire rated wall. Similarly, by extrapolation, the nominal 12- x 8- x 16-inch concrete block will provide a 3-hour fire-rated barrier.

Solid concrete blocks (75% net cross-sectional area) used in the construction of walls conform to the requirements of ASTM C-145, Grade N, Type 1, Moisture Controlled Units. These blocks are manufactured of normal weight limestone aggregate and test results from the National Concrete Masonry Association indicate that both a nominal 8- x 8- x 16-inch and 12- x 8- x 16-inch block will provide a 3-hour fire rated barrier.

3.1.2.2.3 Precast Concrete Channel Roof Slabs

Precast concrete channel roof slabs are composed of Portland Cement and lightweight aggregate, and conform to the requirements of the American Concrete Institute Document 525-63. Slabs are "channel" design, 24 inches wide, having 3-1/2-inch thick reinforced concrete legs, and a 1-1/4-inch thick concrete web reinforced with steel welded wire fabric, and are anchored to supporting steel members with metal clips. Since the precast channel slabs are used only in conjunction with a complete roof assembly, the fire protection considerations are more directly related to the data presented in Subsection 3.1.2.2.5.

3.1.2.2.4 Siding

The exterior insulated siding wall system is constructed of a fluted metal exterior sheet, flat liner panels, insulation, and subgirts. The following systems are based on information from H. H. Robertson, the manufacturer.

Fluted metal exterior sheet is constructed of steel with a minimum 22 gauge, 28- to 40 inch width and 1-1/2-inch depth of fluting. Protection of siding is Galbestos, with asphalt-impregnated felt applied with metallic adhesive and resin base coating. The exterior siding fire classification is: flame spread 45, fuel contribution 10, and smoke developed 35-180. The corrugated closures are premolded neoprene.

Flat liner panels are constructed with a minimum 20 gauge galvanized steel, 24-inch width, and 1-3/8-inch depth, ASTM 525, rating G60 JLA 60. Joints are concealed with interlocking male and female side joints with factory applied sponge neoprene vapor seal or continuous caulking. Sealing tape is PT1 Part T-301, 606 architectural tape, 1/8-inch thick by 1/2-inch depth consisting of two or three strips. The liner panel fire classification is: flame spread 5, fuel

contribution 0, smoke developed 0. The neoprene, caulking, and PT1 tape is not present in significant amounts.

Insulation is fibrous glass minimum weight 1.5 pcf and minimum thickness 1-1/2 inches. The insulation classification is: flame spread 20, fuel contribution 5, smoke developed 5. The classification for the seal caulking is unavailable.

The exterior uninsulated siding wall in the building is typically constructed with fluted metal exterior sheets and subgirts. Construction is identical to the insulated siding with the exception that there is no insulation or liner panels and all joints are continuously caulked. The gas control boundary of the containment building is identical to exterior insulated siding, with liner panels being a part of the construction except that there is no insulation.

The interior uninsulated siding wall is constructed of flat liner panels. Construction of the liner panel is identical to the construction of liner panels in the exterior insulated siding, as discussed above.

3.1.2.2.5 Roofing

Roofing systems on precast concrete slabs, poured concrete, and/or metal decking are in accordance with the requirements of Underwriters' Laboratories for "Class A" roof coverings. The roofing assembly over metal decking meets the requirements of the Factory Mutual System for Class 1 construction. Roofing systems consist of a vapor barrier, insulation and other materials (chipped rock, pavers, asphalt, etc.) which are installed over non combustible roof decking of the permanent structures.

3.1.2.2.6 Structural Steel Fireproofing

Where designated on the drawings, exposed structural steel beams and columns within fire areas or zones have been provided with a fire-resistive coating. This coating is "Cafcote H" cementitious material produced by U.S. Mineral Products Company, or its approved equal, and provides the exposed steel with a 3-hour rated fire protection. In addition to this steel, some exposed steel columns also located within fire areas or zones have been encased in "Firecode" gypsum wallboard rather than coated with the "Cafcote H" product. This wallboard assembly provides a 3-hour fire protection rating to the steel columns.

3.1.2.2.7 Suspended Ceilings

The suspended ceilings are constructed primarily of noncombustible materials with the suspension systems fabricated of galvanized metal main runners and interlocking cross tees and minimum 12-gauge annealed wire hangers. Ceiling tiles are 3/4-inch-thick, 12- x 12-inch square noncombustible mineral fiber with a fire classification of: flame spread 15 and smoke developed 0. Suspended plaster ceilings consist of expanded metal lath attached to galvanized steel channel runners suspended by No. 8 wire hangers. Plaster material is Portland Cement Plaster applied in three coats (brown, scratch, and finish coats) to a thickness (including the metal lath dimension) of 7/8 inch. All suspension and plaster materials are considered to be noncombustible and the finish plaster coat fire classification is: flame spread 10, fuel contribution 0, smoke developed 0.

3.1.2.2.8 Floor Covering

The vinyl floor tile and wall base have a fire classification of: flame spread 30, fuel contribution 0, and smoke developed 415. Since the structural support for the vinyl flooring is a noncombustible concrete slab and the material thickness is only 1/8 inch, the fire classification results are not considered to be significant to this report. The vinyl floor tile and wall base materials have not been tested for potential heat values.

Polyurethane seamless flooring is used for ease of maintenance in areas where radioactive contamination is a possibility. The flooring is manufactured by General Polymers Corp. and has a fire classification of: flame spread 10, fuel contribution 5, smoke developed 0.

Inorganic coating is applied to Class 1 locations inside Containment. A self-leveling epoxy is appied to non-Class 1 locations outside Containment.

Carpeting consisting of low nap carpet tiles is utilized in areas where improved aesthetics, acoustics and general working environment are desired. Carpet tiles will have a nylon face and polyester-vinyl-calcium carbonate based back and a Critical Radiant Flux and Specific Optical Density within the ANI Property Loss Control Guidelines for Electronic Equipment "greater than or equal to 0.45 watts/sq. cm" and "as low as possible, approaching zero" for the respective criteria.

3.1.2.2.9 Fire Doors

Access openings in fire barrier walls are closed with fire rated doors or equivalent. These doors carry a 3-hour fire rating or a 1-1/2 hour fire rating. The 1-1/2 hour fire doors when used for stairway access in stairwell enclosure walls have a 450° temperature rise restriction. Other 1-1/2 hour fire doors and 3-hour fire doors do not have any such temperature rise restriction. Where vision lights were required, they are of a maximum size of 100 in^2 in area and are located in 1-1/2 hour fire doors only. Elevator hoistway doors are 1-1/2 hour fire rated doors.

In areas where the danger of flooding exists, watertight bulkhead doors are used. (USAR 3.4.1, Food Protection) Watertight doors installed in some 3-hour walls have not been tested for a fire rating, but are considered at least equivalent to a 3-hour fire door. (SER 9.5.2.2)

3.1.2.2.9 Fire Seals

3.1.2.2.10

Penetrations through fire barriers such as mechanical piping, external conduit and cable trays, will be sealed with fire rated seals. Internal electrical conduit fire rated seals are not required for electrical conduits which satisfy any of the below criteria:

Conduits that terminate in junction boxes or other noncombustible closure need no additional sealing. Conduits that run through an area but do not terminate in that area need not be sealed in that area.

Conduits smaller than 2" diameter that terminate 1 foot or greater from the barrier need not be sealed.

Open conduits of 2" diameter that terminate 3 feet or greater from the barrier need not be sealed.

Open conduit of greater than 2" in diameter that terminate 3 feet or greater from the barrier and have a cable fill of 40% or greater need not be sealed.

In the case of ventilation ductwork, fire dampers are used within the duct to prevent compromise of the fire barrier integrity of the wall.

Non-load-bearing concrete and concrete block walls are constructed with a gap between the top of the wall and the underside of the ceiling slabs or structural members above the wall. Depending upon the type of wall construction, this gap varies from 1 to 2 inches. To prevent horizontal transfer of certain loads such as seismic loading from one area or building to another, vertical gaps have also been provided at the ends or intersection of walls in these areas. All such structural gap seal configurations in walls designated as fire barriers are tested in accordance with ASTM-E119 to achieve a fire rating equivalent to the fire barrier.

3.1.2.2.11 Plumbing

A floor drain system is installed throughout the plant to drain and convey fire protection water, tank leakage and ruptures, oil leaks, and washdown water to proper points of discharge. The system is designed to have the finish floor slope to the floor drain and the piping sloped at 1/8 inch per foot permitting a 4-inch diameter pipe to have a flow rate of 100 gpm at 2.4 fps and a 6-inch diameter pipe to have a flow rate of 300 gpm at 3.0 fps. Curbs have been provided around pieces of equipment which have oil reservoirs or where oil is stored to minimize the effect of an oil leak or spill.

Effluents from the floor drain system are discharged through oil separators, and the separated oil flows to fixed or portable oil storage tanks. Tanks are sized to hold the largest probable quantity of oil anticipated for storage.

The drainage system from the turbine oil reservoir room, the dirty and clean oil room (radwaste building), and the seal oil unit (turbine building) are discharged to exterior oil separators. Drainage, which is potentially radioactive, discharges to the liquid radwaste system where it is analyzed and processed.

3.1.2.2.12 Ventilation Fire Dampers

Where ducts penetrate fire barriers, fire damper sleeve assemblies are provided to maintain the fire barrier's integrity. A sleeve assembly is composed of a sheet metal sleeve with perimeter angles enclosing a fire damper. The perimeter angles are placed flush with the fire barrier and protect the opening provided for expansion between the fire damper sleeve assembly and the wall opening. The enclosed fire damper has a rating of 3 hours which is greater than or equal to the fire barrier for both vertical and horizontal installations. The fire dampers are automatic; once closed they can only be opened manually. Deviations from the installation of fire dampers in fire barriers are identified and justified in the Safe Shutdown Analysis.

3.1.2.3 Electrical Cable Trays, Conduits, Panels, and Fire Stops

Steel cable trays are provided throughout the station. Generally the cable trays have solid bottoms and are uncovered except for instrumentation cable trays, which have solid covers. Sometimes open-bottom, ladder-type cable trays are used to facilitate cable entry to equipment such as switchgear and motor control centers. Cable trays are used only for cables.

Conservative energy contribution values (BTU/lb) were selected for the several types of cable insulation. Heat content values (BTU/ft) were then calculated for various cable types based on each cable's non-conductor weight.

The length of each tray-routed cable within each firezone was determined by either 1) the cable tabulation computer program based on distances between cable route points, or 2) tray length within that firezone as shown on cable tray route drawings.

Each tray-routed cable's heat load (BTU) contribution in the event of a fire in a given firezone was then determined by multiplying its length (ft) within that firezone by its heat content (BTU/ft). Heat loads from all cables within a given firezone were summed to determine the total heat load (BTU) from tray-routed cable, which is an input to the fireload analysis.

Steel conduits are used throughout the station. Generally, the conduits are rigid steel except for lighting, communication, and fire detection cabling, which is in EMT conduit. Flexible metal conduits are used throughout the station, but only in short lengths to connect nonflexible conduit to equipment. Conduits are used only for cables.

The energy contributed during a fire by cables routed in conduits was considered negligible and was not included in determining the fire loading in each fire zone.

3.1.2.4 Ventilation Systems

Once-through ventilation systems are provided for the turbine building, containment building, fuel building, radwaste building, machine shop, and general areas of the auxiliary, control, and diesel-generator buildings. These systems are non-safety-related except for isolation functions on the containment building and fuel building systems. These systems provide conditioned air to their respective buildings to obtain a minimum air change requirement, maintain the air flow from radioactively clean areas to areas of progressively greater radioactive contamination, and assist in heat removal. Air from potentially radioactive areas is exhausted through the common station HVAC vent where it is monitored for radiation.

The safety-related diesel-generator ventilation system, which operates when the diesel generator operates, is a once-through system which provides air for the diesel-generator, day tank, and oil tank rooms. The supply air is kept within design temperatures by mixing outdoor and return air, and is ducted to the diesel-generator room, then recirculated or exhausted to the outside.

The diesel-generator makeup system, which operates during normal plant conditions, is also a once-through system providing air to the diesel-generator, day tank, and oil tank rooms. The supply air is conditioned by heating and cooling coils, and is ducted to the diesel-generator room and then staged to the day tank and oil tank rooms and then exhausted.

The diesel-generator ventilation system also contains exhaust fans, which exhaust air from the day tank and oil tank rooms. These fans run continuously.

The diesel-generator ventilation system (including the exhaust fans) is safety-related, and a separate system is provided for each divisional diesel. The diesel-generator makeup system is non-safety-related, and one system is provided for three diesel generator rooms.

Room ventilation fans are stopped, and appropriate isolation dampers are closed whenever a CO_2 fire protection system is actuated in the diesel-generator rooms. The room ventilation system can be manually restarted only after the CO_2 system is reset.

Recirculation type systems are provided for the ECCS pump rooms, shutdown service water pump rooms and switchgear rooms. These systems are safety-related. A separate HVAC system is provided for each divisional equipment room associated with the areas. The recirculation systems provide heat removal while a small quantity of fresh air is purged through each equipment room for ventilation.

The control room HVAC system provides redundant safety-related cooling and ventilation to the control room and associated support facilities. The system normally operates in a recirculation mode with outdoor air introduced. The purge mode of the system can be manually activated by handswitch on the main control board to provide 100% outdoor air and exhaust 100% room air for control of smoke and combustible products. Additionally, ionization detectors in the return air and minimum outside air intake ducts automatically align the control room HVAC system to preclude significant entry of smoke from inside or outside the plant, by putting into service the control room HVAC recirculation air filter packages (See USAR Section 9.4.1.4 for smoke mode testing description).

The laboratory area of the control building is ventilated by a conventional HVAC system using a mixture of outdoor and return air. Isolation dampers are provided for each exhaust hood to permit laboratory personnel to stop air flow through the hood if a fire develops in the hood working area.

Fire dampers are discussed in Subsection 3.1.2.2.12.

Heat and smoke vents are provided in the turbine building roof. These vents will automatically open in case of a fire by melting of a fusible link. Also, these vents, except Vent #23, can be opened locally by manual releases or by remote manual hand switch operation from the main control room. In addition, large overhead rolling doors may be activated to open from the main control room to provide air inlet area.

3.1.2.5 Fire Detection System

The fire detection system for the station consists of a low-voltage, microprocessor-based Pyrotronics XL-3 panels (1H13-P841 in the Main Control Room and 1FP43J in the Auxiliary Electrical Equipment Room) and terminal located in the main control room, which is connected to automatic fire detectors, local panels, and service water fire protection system flow switches throughout the station. Additional details on the Fire Detection System are provided in USAR Section 9.5.1.2.2.

3.1.2.6 Fire Protection Water Supply System

The fire protection water supply system consists of pumps, underground yard water mains, inside building water mains, and isolation valves. Additional details of the Fire Protection Water Supply System are provided in USAR Section 9.5.1.2.2.3.

3.1.2.7 Water Sprinkler and Hose Standpipe Systems

The fire protection water sprinkler systems and hose standpipes have branch connections to the main loop. Additional details on the Water Sprinkler and Hose Standpipe Systems are provided in USAR Section 9.5.1.2.2.4.

3.1.2.8 Halon Suppression Systems

Halon suppression systems are total flooding and local application type systems. A sufficient quantity of Halon will be automatically discharged into the enclosure to provide a uniform fire-extinguishing concentration of agent. The Halon agent is stored outside of the protected ”zone”, but may be stored inside the fire area. Additional details on the Halon Suppression Systems are provided in USAR Section 9.5.1.2.2.5.

3.1.2.9 Carbon Dioxide Suppression System

Carbon dioxide suppression systems are provided for the diesel-generator set rooms, and the main turbine-generator exciter bearing housings. These systems are automatic initiation, low-pressure type systems. Additional details on the Carbon Dioxide Suppression System are provided in USAR Section 9.5.1.2.2.6.

3.1.2.10 Portable Extinguishers

UL listed/FM approved portable extinguishers of appropriate classification are utilized in the Clinton Power Station. General placement of the extinguishers is indicated on the fire hazards analysis drawings included with this report. The extinguishers are located based on the fire hazards in the area. Extinguisher location provides easy accessibility near paths of travel, entrances, and exits, as well as high visibility. Additional details onPortable Extinguishers are provided in USAR Section 9.5.1.2.2.9.

3.1.2.11 Turbine Building Class 1E Cables

The turbine building is classified as a non-safety-related, non-seismic building, although it does house some Class 1E electrical cables (in conduits) as well as instrumentation devices. These cables and devices provide inputs to the solid-state protection system for reactor trip or perform functions initiated by the protection system. The principal function of these devices is to provide anticipatory trip for the reactor based upon secondary system parameters. If these cables and/or devices failed, other parameters not measured in the turbine building would provide the necessary signal to shut down the reactor. Thus, no credit has been taken in the Safe Shutdown Analysis for the parameter measurements taken in the turbine building since the loss of these cables and/or devices will not inhibit safe shutdown of the plant.

On this basis, the turbine building and all equipment and systems in the building are considered nonessential for the safe shutdown of the plant.

AUXILIARY BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
A-1	A-1a	General Access Area (North) - elevation 707'-6"	E3.2-1	FP-2a	FP-2b	2
	A-1b	General Access Area (North) - elevation 737'-0"	E3.2-2	FP-3a	FP-3b	3
	A-1c	RP Issue Room - elevation 737'-0"	E3.2-3	FP-3a	FP-3b	-
	A-1d	RP Storage Room - elevation 737'-0"	E3.2-3	FP-3a	FP-3b	-
	A-1e	General Access Area (West) - elevation 737'-0"	E3.2-4	FP-3a	FP-3b	-
A-2	A-2a	RCIC Pump Room - elevation 707'-6"	E3.2-5	FP-2a	FP-2b	-
	A-2b	RHR A Equipment Room - elevations 707'-6", 712'-0", 737'-0", 762'-0", 786'-6"	E3.2-6	FP-2a FP-3a FP-4a FP-5a	FP-2b FP-3b FP-4b FP-5b	- - - -
	A-2c	LPCS Pump Room - elevations 707'-6", 712'-0"	E3.2-7	FP-2a	FP-2b	-
	A-2d	Personnel Hatch Area - elevation 737'-0"	E3.2-8	FP-3a	FP-3b	3
	A-2e	MSIV Leakage Control Room - elevation 737'-0"	E3.2-9	FP-3a	FP-3b	-
	A-2f	Main Steam and Pipe Tunnel - elevations 727'-0", 755'-0"	E3.2-10	FP-3a FP-4a	FP-3b FP-4b	- -
	A-2g	Reactor Water Cleanup Pump A Room - elevation 737'-0"	E3.2-11	FP-3a	FP-3b	-
	A-2h	Reactor Water Cleanup Pump B Room - elevation 737'-0"	E3.2-12	FP-3a	FP-3b	
	A-2i	Reactor Water Cleanup Pump C Room - elevation 737'-0"	E3.2-13	FP-3a	FP-3b	-
	A-2j	Radwaste Pipe Tunnel - elevation 750'-6"	E3.2-13	FP-3a	FP-3b	-

AUXILIARY BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
	A-2k	Nonsafety Switchgear Room (East) - elevation 762'-0"	E3.2-14	FP-4a	FP-4b	4
	A-2m	Containment Electrical Penetration (East) area - elevation 762'-0"	E3.2-15	FP-4a	FP-4b	4
	A-2n	Division 1 Switchgear Room - elevation 781'-0"	E3.2-16	FP-5a	FP-5b	5
	A-2o	Containment Electrical Penetration (East) area - elevation 781'-0"	E3.2-17	FP-5a	FP-5b	5
A-3	A-3a	RHR B Equipment Room - elevations 707'-6", 737'-0", 762'-0", 788'-6"	E3.2-18	FP-2a FP-3a FP-4a FP-5a	FP-2b FP-3b FP-4b FP-5b	- - - -
	A-3b	RHR C Pump Room - elevations 707'-6"	E3.2-19	FP-2a	FP-2b	-
	A-3c	Floor Drains and Hallway - elevations 712'-0"	E3.2-20	FP-2a	FP-2b	-
	A-3d	Nonsafety Switchgear Room (West) - elevation 762'-0"	E3.2-21	FP-4a	FP-4b	4
	A-3e	Containment Electrical penetration (West) area - elevation 762'-0"	E3.2-22	FP-4a	FP-4b	4
	A-3f	Division 2 Switchgear Room - elevation 781'-0"	E3.2-23	FP-5a	FP-5b	5
	A-3g	Containment Electrical penetration area (West) - elevation 781'-0"	E3.2-24	FP-5a	FP-5b	5
A-4	-	Division 1 Battery Room - elevation 781'-0"	E3.2-25	FP-5a	FP-5b	-
A-5	-	Division 2 Battery Room - elevation 781'-0"	E3.2-26	FP-5a	FP-5b	-
A-6	-	General Access Area (North) - elevation 707’-6”	E3.2-26	FP2a	FP2b	2

3.2 AUXILIARY BUILDING

3.2.1 Fire Area A-1

3.2.1.1 Fire Zone A-1a; Elevation 707'- 6" General Access Area (North)

Description

The zone consists of a general access area in the basement of the auxiliary building with a floor area of 2112 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. Safety-related cable trays are shown on cable tray Figure 2.

The floor is 9-foot 8-inch concrete on grade with five 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated. The walls are 18-inch minimum concrete or 19-5/8-inch minimum solid concrete block. The walls are 3-hour fire rated. The ceiling is 16-inch minimum concrete with areas of removable concrete slabs and an open stairwell. The ceiling is not fire rated. There are three stair systems in this zone: one 1.9-hour rated enclosed stair up to elevation 737 feet 0 inch, one open stair up to elevation 737 feet 0 inch, and one open ladder up to elevation 715 feet 0 inch to the turbine building.

Conditioned ventilation air is supplied to this zone through the auxiliary building HVAC supply system ductwork. The supplied air is exhausted directly to the auxiliary building HVAC exhaust ductwork. Area coolers in this zone recirculate air within this zone.

Safety-Related Equipment

Residual heat removal (RHR) pumps 1B & 1C vent panels, backup air supply bottles for ADS, reactor core injection cooling (RCIC) room vent panel, and Division 2 cable trays.

Combustible Materials

The fire zone contains the following types of combustible materials:

Lubricants
Cable Insulation
HVAC Material
Plastic and Cloth

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system and an automatic wet pipe sprinkler system in this zone. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.1 of the Safe Shutdown Analysis.

3.2.1.2 Fire Zone A-1b; Elevation 737'- 0" General Access Area (North)

Description

The zone consists of a general access area in the auxiliary building at elevation 737 feet 0 inch. The floor area is 5650 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. Safety-related cable trays are shown on cable tray Figure 3.

The floor is 14-inch minimum concrete with fifteen 4-inch floor drains, piped to a tank in Zone A-3c, removable concrete and slabs, and an open stairwell. The floor above Zones A-2b, A-2c, A-3a, and A-3b at elevation 707 feet 6 inches, is 3-hour fire rated, the remainder of the floor is not fire rated. The walls are 36-inch minimum reinforced concrete, 11-5/8-inch hollow concrete block, or uninsulated metal siding. The zone boundary walls are all 3-hour rated, except the walls adjacent to Zones A-1c, A-1d, A-1e, and A-2d. The ceiling is 17-inch minimum concrete. The ceiling is 3-hour rated. There are four stair systems in this zone: one 1.9-hour rated enclosed stair down to elevation 707 feet 6 inches, two 3-hour rated enclosed stairs up to elevation 762 feet 0 inch, and one open stair down to elevation 707 feet 0 inch.

Conditioned ventilation air is supplied to this zone through the auxiliary building HVAC supply system ductwork. The supplied air is exhausted directly to the auxiliary building HVAC exhaust ductwork. Area coolers in this zone recirculate air within the zone.

Safety-Related Equipment

Division 1 and 2 panels and instruments and Division 1 and 2 cable trays are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Plastic, Rubber, Cloth, Wood and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. An automatic wet pipe sprinkler system is provided to protect a portion of the corridor. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.1 of the Safe Shutdown Analysis.

3.2.1.3 Fire Zone A-1c; Elevation 737'- 0" RP Issue Room

Description

The zone consists of a health physics instrument storage room. The floor area is 130 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete. The zone contains no floor drains. The floor is not fire rated. The walls are 36-inch minimum concrete or 11-5/8-inch hollow concrete block. The north and west walls are 3-hour fire rated. The south wall is 1.9-hour fire rated. The remaining walls are not rated. The ceiling is 6-inch minimum concrete and is not fire rated.

Conditioned ventilation air is supplied to the general area on this elevation via the auxiliary building HVAC system supply ductwork. Air is then staged ductless through a backdraft damper to this fire zone and exhausted through the auxiliary building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

Cloth, Paper, Plastic, Wood and Rubber

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.1 of the Safe Shutdown Analysis.

3.2.1.4 Fire Zone A-1d; Elevation 737'- 0" RP Storage Room

Description

The zone consists of a protective clothing storage room. The floor area is 142 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete and not fire rated. The zone contains no floor drains. The walls are 36-inch minimum concrete or 11-5/8-inch hollow concrete block. The north wall is 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 6-inch minimum concrete and is not fire rated.

Conditioned ventilation air is supplied to the general area on this elevation via the auxiliary building HVAC system supply ductwork. Air is then staged ductless through a backdraft damper to this fire zone and exhausted through the auxiliary building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

Cloth, Rubber, Wood, Paper and Plastic

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.1 of the Safe Shutdown Analysis.

3.2.1.5 Fire Zone A-1e; Elevation 737'- 0" General Access Area (West)

Description

The zone consists of a general access area. The floor area is 1768 ft^2. A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. Safety-related cable trays are located in this fire zone as sshown on cable tray Figure 3.

The floor is 14-inch minimum concrete with two 4-inch floor drains. The floor is 3-hour fire rated except for the 2-inch gap between the Containment and Auxiliary Buildings. The walls are 36-inch minimum concrete, 11-5/8-inch hollow concrete block, or uninsulated metal siding. The walls are 3-hour fire rated except the wall adjacent to Zone A-1b which is not fire rated. The ceiling is 14-inch minimum concrete and is 3-hour fire rated, except for the 2-inch gap between the containment and auxiliary buildings.

This zone has a small quantity of air movement due to air induced from the fuel building through the standby gas treatment system and being exhausted from the ECCS pump rooms on elevation 707 feet 6 inches.

Safety-Related Equipment

Division 1 and 2 valves are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Rubber, Cloth, Paper and Wood

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.1 of the Safe Shutdown Analysis.

3.2.2 Fire Area A-2

3.2.2.1 Fire Zone A-2a; Elevation 707' - 6" RCIC Pump Room

Description

The zone consists of the reactor core injection cooling (RCIC) pump room. The floor area is 1116 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch concrete with four 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated. The walls are 12-inch minimum concrete or 11-5/8-inch minimum solid concrete block. The north, west, and containment walls are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 36-inch minimum concrete. The ceiling is not fire rated.

This zone has a safety-related fan-coil cooler, supplied from the Division 1 power source, that recirculates air for room cooling. A small quantity of air from the fuel building is inducted into this room by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

The RCIC water leg pump, RCIC pump, motor, and turbine, fan-coil cooler, Division 1 and 2 instruments, Division 1 and 2 valves, turbine stop valve gland seal compressor motor, and RCIC suction strainer are located in this zone.

Combustible Materials

Lubricants
HVAC Material
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers (in an adjacent fire zone) and hose stations (in the zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.2 Fire Zone A-2b; Elevation 707’ - 6”, 712’ - 0”, 737’ - 0”, 762’ - 0”, and 786’ - 6” RHR A Equipment Room

Description

The zone consists of the Residual Heat Removal (RHR) Pump A and Heat Exchanger A rooms. The Fire Zone covers multiple elevations. However, since the zone is open above 707' - 6", only this floor area, 1484 ft^2 is used for evaluation.

A plan view of this fire zone is shown in Figures FP-2a through FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-2b through FP-5b. No safety-related cable trays are located in this fire zone.

At elevation 707' - 6", the floor is 9-foot 8-inch minimum concrete on grade with four 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated.

Description

At elevation 786' - 6", the floor is 1-1/2-inch steel grating supported by steel beams and is open to elevations 737' - 0". The elevation floor contains no floor drains and is not fire rated. The ceiling at elevation 801 feet 9 inches is 36-inch minimum concrete and is not rated.

At elevation 737' - 0" the floor and ceiling are 1-1/2-inch steel grating supported by steel beams. The elevation contains no floor drains. The floor is not fire rated.

The walls are 32-inch minimum concrete or 39-5/8-inch solid concrete block. The containment wall and the walls adjacent to Zone A-1a are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 32-inch minimum concrete with areas of removable concrete slabs and steel grating. The ceiling east of Column Row 117 is 3-hour fire rated. The remainder of the ceiling is not fire rated.

The zone has two safety-related fan-coil coolers, supplied from the Division 1 power source, that recirculate air for room cooling. A small quantity of air from the fuel building is induced into this room by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

The RHR pump A, RHR heat exchanger 1A, fan-coil coolers, Division 1 and 2 instruments, and Division 1 and 2 valves are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone at 707' - 6" elevation. Portable fire extinguishers (in an adjacent fire zone) and hose stations (in the zone at elevation 707 feet 6 inches and in an adjacent zone at elevation 737 feet 0 inch) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.3 Fire Zone A-2c; Elevation 707’ - 6” and 712’ - 0” LPCS Pump Room

Description

The zone consists of a low-pressure core spray (LPCS) pump room. The floor area is 2072 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete with five 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated. The walls are 18-inch minimum concrete or

19-5/8-inch minimum solid concrete block. The south, east, north, and containment walls are 3-hour fire rated. The remaining walls are not fire rated. The north wall is penetrated by a 1 1/2" unsealed drain line which does not affect the barrier's 3-hour fire rating. The ceiling is 14-inch minimum concrete with areas of removable concrete slabs. The portion of the ceiling which separates this fire zone from Fire Zone A-1b is 3-hour fire rated.

The zone has a safety-related fan-coil cooler, supplied from the Division 1 power source, that recirculates air for room cooling. A small quantity of air from the fuel building is induced into this room by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

The LPCS pump, LPCS water leg pump, fan-oil cooler, Division 1 and 2 valves, and Division 1 instruments are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Cloth, Paper, Plastic and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.4 Fire Zone A-2d; Elevation 737’ - 0” Personnel Hatch Area

Description

The zone consists of a general hallway and containment building personnel hatch area. The floor area is 700 ft^2. A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b.

The floor is 14-inch minimum concrete with two 4-inch floor drains. The floor is not fire rated. The walls are 36-inch minimum concrete, 48-inch removable solid concrete block, or uninsulated metal siding. The east, south, and containment walls are 3-hour fire rated. The north wall is not fire rated. The ceiling is 36-inch minimum concrete and is not fire rated.

This zone contains no HVAC system.

Safety-Related Equipment

Division 1 cable tray and Division 1 instruments are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (in an adjacent fire zone) and hose stations (in the zone) are provided for manual firefighting as shown on the referenced drawings.

Design Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.5 Fire Zone A-2e; Elevation 737' - 0" MSIV Leakage Control Room

Description

The zone consists of the main steam isolation valve-LCS rooms. The floor area is 767 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 36-inch minimum concrete with three 4-inch floor drains. The floor is not fire rated. The walls are 18-inch minimum concrete. The west wall and the containment building wall are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 60-inch minimum concrete and is not fire rated.

This zone contains safety related fan coil coolers that recirculate air for room cooling.

Safety-Related Equipment

Division 1 and 2 valves, exhaust blowers B and F, heaters A, E, J, and N, and Division 1 and 2 MSIV inboard and outboard room supply fans are located in this zone.

Combustible Materials

Lubricants
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.6 Fire Zone A-2f; Elevations 727’ - 0” and 755’ - 0” Main Steam and Pipe Tunnel

Description

The zone consists of the main steam tunnel and pipe tunnel. The zone crosses elevations 727' - 0" through 786' - 6"; the 727' - 0" and 755' - 0" elevations are combined to obtain the floor area of 1918 ft^2 used in analysis.

A plan view of this fire zone is shown on Figures FP-3a and FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-3b and FP-4b. No safety-related cable trays are located in this fire zone.

At elevation 727' - 0", the floor is 36-inch minimum concrete with no floor drains. The walls are 48-inch minimum concrete. The north and west walls are 3-hour fire rated; the remaining walls and floor are not fire rated.

At elevation 755' - 0", the floor is 60-inch minimum concrete and is 3-hour fire rated only over Zone A-1b. The remaining floor is not fire rated. There are four 4-inch floor drains and there is an opening to Zone A-2f at elevation 727 feet 0 inch. The walls are 36-inch minimum concrete or uninsulated metal siding. The containment building wall and west wall are 3-hour fire rated. The remaining walls, including the uninsulated metal siding wall adjacent to the turbine building, are not fire rated. The ceiling is 56-inch minimum concrete and is not fire rated. The ceiling is 3-hour fire rated at elevation 790 feet 0 inch. The rest of the ceiling is open to the auxiliary building roof.

No ventilation air is supplied to this zone. The zone is maintained under negative pressure via the SGTS system, exhausting from RCIC room and 2-inch gaps at the containment wall between the RHR rooms and steam tunnel. Makeup air is provided via the containment gas control boundary system from the fuel building.

Safety-Related Equipment

The main steam isolation valves, Division 1 and 2 instruments, Division 1 and 2 valves, feedwater check valve accumulator tanks A and B, and the 39-gallon accumulator tank are in this zone.

Combustible Materials

Lubricants
Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Hose stations are provided in a nearby fire zone of the Turbine Building for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.7 Fire Zone A-2g; Elevation 737' - 0" Reactor Water Cleanup Pump A Room

Description

The zone consists of the reactor water cleanup pump A room. The floor area is 156 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete with one 4-inch floor drain. The floor is not fire rated. The walls are 18-inch minimum concrete. The containment building wall and the walls adjacent to Zone A-1b are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 42-inch minimum concrete and is not fire rated.

These rooms have non-safety-related fan-coil coolers which recirculate air for room cooling. A small quantity of air from the fuel building HVAC system is supplied to the room. Air is exhausted from the room through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

Division 1 and 2 instruments are located in the zone.

Combustible Materials

Lubricants
Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.8 Fire Zone A-2h; Elevation 737' - 0" Reactor Water Cleanup Pump B Room

Description

The zone consists of reactor water cleanup pump B room. The floor area is 140 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete with one 4-inch drain. The walls are 18-inch minimum concrete. The walls adjacent to Zone A-1b are 3-hour fire rated. The ceiling is 42-inch minimum concrete. The remaining walls, floor, and ceiling are not fire rated.

A small quantity of air from the fuel building HVAC system is supplied to the room. Air is exhausted from the room through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

Division 1 and 2 instruments are located in the zone.

Combustible Materials

Lubricants
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.9 Fire Zone A-2i; Elevation 737' - 0" Reactor Water Cleanup Pump C Room

Description

The zone consists of the reactor water cleanup pump C room. The floor area is 132 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete with one 4-inch floor drain. The floor is not rated. The walls adjacent to the containment and Fire Zone A-1b are 3-hour fire rated. The remaining walls are 18-inch minimum concrete and are not fire rated. The ceiling is 42-inch minimum concrete and is not rated.

The zone has a non-safety-related fan-coil cooler which recirculates air for room cooling. A small quantity of air from the fuel building HVAC system is supplied to the room. Air is exhausted from the room through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

Division 1 and 2 instruments are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.10 Fire Zone A-2j; Elevation 750' - 6" Radwaste Pipe Tunnel

Description

This zone is part of radwaste pipe tunnel and is at an intermediate level of 750 feet 6 inches. The floor area is 1617 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 36-inch minimum reinforced concrete and is 3-hour fire rated above zone A-1b. The walls are 36-inch minimum reinforced concrete. All walls are 3-hour fire rated, except the tunnel to Zone A-2f. The ceiling is 36-inch minimum concrete and is not fire rated.

Safety-Related Equipment

Safety-related cables, instruments, and valves are located in this zone.

Combustible Materials

HVAC Material
Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

A hose station is provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 oof the Safe Shutdown Analysis.

3.2.2.11 Fire Zone A-2k; Elevation 762' - 0" Nonsafety Switchgear Room (East)

Description

The zone consists of a non-safety-related switchgear area. The floor area is 4306 ft^2.

A plan view of this fire zone is shown on Figure FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-4b. Safety-related cable trays are shown on cable tray Figure 4.

The floor is 17-inch minimum concrete with eight 4-inch floor drains, and an open stairwell. The floor is 3-hour fire rated over Fire Zone A-1b. The walls are 24-inch minimum concrete or uninsulated metal siding. The walls are 3-hour fire rated except the walls adjacent to Zones A-b and A-f and the uninsulated metal siding walls adjacent to Zone A-2m which are not fire rated. The ceiling is 14-inch minimum concrete and is 3-hour fire rated adjacent to Fire Zones A-3f and A-4. The remaining ceiling is not rated. One stair system passes through this zone: an open stair up to elevation 781 feet 0 inch and enclosed down to elevation 737 feet 0 inch. The stair enclosure down to elevation 737 feet 0 inch is 3-hour fire rated.

This zone is served by two interconnected HVAC systems: one is non-safety related on elevation 762 feet 0 inch and the second is located on elevation 781 feet 0 inch. Either system can serve both areas simultaneously. During normal operation, the auxiliary building HVAC

supply system furnishes conditioned air to this zone and it is exhausted by the auxiliary building HVAC exhaust system, as well as the Division 1 battery room exhaust fan.

Safety-Related Equipment

Source range monitor, intermediate range monitor drive control relay panel, electrical penetrations, and Division 1 cable trays are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.12 Fire Zone A-2m; Elevation 762' - 0" Electrical Penetrations (East)

Description

This zone is a containment electrical penetration area. The floor area is 452 ft^2.

A plan view of this fire zone is shown on Figure FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-4b. Safety-related cable trays are located in this fire zone as shown on cable tray Figure 4.

The floor is 36-inch minimum concrete with two 4-inch floor drains. The floor is not fire rated. The walls are 24-inch minimum concrete or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-2k which are not fire rated. The ceiling is 14-inch minimum concrete and is not fire rated.

Air infiltrates this zone from the containment gas control boundary extension and the 2-inch gap between the auxiliary building and the containment building at the floor level. Air exfiltrates this zone through the 2-inch gap between the auxiliary building and the containment building at the floor level.

Safety-Related Equipment

Containment electrical penetrations, Division 1 instruments, and Division 1 valves are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.13 Fire Zone A-2n; Elevation 781' - 0" Division 1 Switchgear Room

Description

The zone consists of the auxiliary building Division 1 switchgear area. The floor area is 3369 ft^2.

A plan view of this fire zone is shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. Safety-related cable trays are shown on cable tray Figure 5.

The floor is 14-inch minimum concrete with eight 4-inch floor drains and an open stairwell. The floor is not fire rated. The walls are 24-inch minimum concrete, 11-5/8-inch hollow concrete block, or uninsulated metal siding. The north and east walls are 3 hour fire rated. The remaining walls are not fire rated. The ceiling is 18-inch minimum concrete and is not fire rated. There is one open stair system in this zone down to elevation 762 feet 0 inch.

This zone is served by two interconnected HVAC systems: one is non-safety-related (elevation 762 feet 0 inch) and the second is a safety-related system (elevation 781 feet 0 inch). Either system can serve both areas simultaneously. During normal operation, the auxiliary building HVAC supply system furnishes conditioned air to this zone and it is exhausted by the auxiliary building HVAC exhaust system, as well as the Division 1 battery room exhaust fan.

Safety-Related Equipment

Division 1, 4.1-kV switchgear, 480-volt unit substation, battery charger, hydrogen igniter cabinet, motor control centers, remote shutdown panel, Division 1 and 3 cable trays, electrical penetrations, switchgear heat removal system, fan, and damper are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.2.14 Fire Zone A-2o; Elevation 781' - 0" Electrical Penetrations (East)

Description

This zone is a containment electrical penetration area. The floor area is 460 ft^2.

A plan view of this fire zone is shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. Safety-related cable trays are shown on cable tray Figure 5.

The floor is 14-inch minimum concrete with two 4-inch floor drains. The floor is not fire rated. The walls are 24-inch minimum concrete, or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-2n which are not fire rated. The ceiling is 18-inch minimum concrete and is not fire rated.

Air infiltrates this zone from the containment gas control boundary and the containment gas control boundary extension, and exfiltrates through the 2-inch gap between the auxiliary building and the containment building at the floor level.

Safety-Related Equipment

Containment electrical penetrations and Division 1 instruments and drywell instrument panel are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawing.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.2 of the Safe Shutdown Analysis.

3.2.3 Fire Area A-3

3.2.3.1 Fire Zone A-3a; Elevation 707’ - 6”, 737’ - 0”, 762’ - 0”, and 788’ - 6” RHR B Equipment Room

Description

The zone consists of the Residual Heat Removal (RHR) Pump B and Heat Exchanger B rooms. The fire zone covers multiple elevations. However, since the zone is open above 707' - 6", only this floor area, 1564 ft^2, is used for evaluation.

A plan view of this fire zone is shown on Figures FP-2a through FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-2b through FP-5b. No safety-related cable trays are located in this fire zone.

At elevation 707' - 6" the floor is 9-foot 8-inch concrete with four 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated.

At elevation 737' - 0" the floor and ceiling are 1-1/2-inch steel grating supported by steel beams. The elevation contains no floor drains. The floor is not fire rated.

At elevation 788' - 6" the floor is 1-1/2-inch steel grating supported by steel beams and is open to elevations 707 feet 0 inch, 737 feet 0 inch, and 781 feet 0 inch. The zone contains no floor drains. The floor is not fire rated. The ceiling at elevation 801 feet 9 inches is 36-inch minimum concrete and is not fire rated.

The walls are 32-inch minimum concrete or 39-5/8-inch minimum solid concrete block. The north, east, and containment building walls and the portion of the west wall adjacent to Zone A-1a are 3-hour rated. The remaining walls are not fire rated. The ceiling is 32-inch minimum concrete with areas of removable concrete slabs and steel grating. The ceiling west of Column Row 107 is 3 hour fire rated, the remainder of the ceiling is not fire rated.

This zone has two safety-related fan-coil coolers, supplied from the Division 2 power source, that recirculate air for room cooling. A small quantity of air from the fuel building is induced into this room by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system. Ducts penetrating fire walls are provided with 3-hour fire rated dampers.

Safety-Related Equipment

The RHR pump 1B, RHR heat exchanger B, RHR heat exchanger B room fan-coil unit, Division 1 and Division 2 instrument panel and valves are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone at elevation 707'-6". Portable fire extinguishers (in an adjacent fire zone) and hose stations (in the zone at elevation 707'-6") are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.2 Fire Zone A-3b; Elevation 707' - 6" RHR C Pump Room

Description

The zone consists of the Residual Heat Removal Pump C room with floor area of 1221 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch concrete with two 4-inch floor drains routed to a sump located within the zone. The floor is not fire rated. The walls are 18-inch minimum concrete or 19-5/8-inch solid concrete block. The north wall and containment building wall are 3 hour fire rated. The west wall above elevation 722 feet 0 inch is 3-hour rated. The remaining walls are not fire rated. The ceiling is 16-inch minimum concrete with areas of removable concrete slabs. The ceiling is 3-hour fire rated, except for the 2-inch gap between the Containment and Auxiliary buildings.

This zone has a safety-related fan-coil cooler supplied from the Division 3 power source, that recirculates air for room cooling. A small quantity of air from the fuel building is induced into this room by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

The residual heat removal (RHR) pump 1C, RHR water leg pump, RHR pump C room supply fan, Division 2 valves, and Division 2 instruments are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Plastic and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers (in adjacent fire zones) and hose stations (in the zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.3 Fire Zone A-3c; Elevation 712' - 0" Floor Drains and Hallway

Description

The zone consists of a general hallway and floor drain pump rooms. The floor area is 644 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete with four 4-inch floor drains routed to the sump located within the zone. The floor is not fire rated. The walls are 30-inch minimum reinforced concrete. The south and containment walls are 3-hour fire rated. The west wall above elevation 722 feet 0 inch is 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is 3-hour fire rated, except for the 2-inch gap between the Containment and Auxiliary Buildings.

This zone has a small quantity of air induced from the fuel building by way of the containment gas control boundary. Air is exhausted from the zone through the standby gas treatment system piping which has a normal exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

Division 2 valves are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (in the zone) and hose stations (outside the zone door) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.4 Fire Zone A-3d; Elevation 762' - 0" Nonsafety Switchgear (West)

Description

This zone consists of a non-safety-related switchgear area. The floor area is 4296 ft^2.

A plan view of this fire zone is shown on Figure FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-4b. Safety-related cable trays are shown on cable tray Figure 4.

The floor is 14-inch minimum concrete with seven 4-inch floor drains and an open stairwell. The floor is 3-hour fire rated. The walls are 24-inch minimum concrete or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-3e and the walls adjacent to Zone A-3a which are not fire rated. The ceiling is 14-inch minimum concrete and is 3-hour fire rated below zone A-5. One stair system passes through this zone: an open stair up to elevation 781 feet 0 inch and enclosed down to elevation 737 feet 0 inch. The stair enclosure down to elevation 737 feet 0 inch is 3-hour fire rated.

This zone is served by two interconnected HVAC systems: one is non-safety-related on elevation 762 feet 0 inch and the second is a Division 2 system located on elevation 781 feet 0 inch. Either system can serve both areas simultaneously. During normal operation, the auxiliary building HVAC supply system furnishes conditioned air to this zone and it is exhausted by the auxiliary building HVAC exhaust system as well as the Division 2 battery room exhaust fan.

Safety-Related Equipment

Electrical penetrations and Division 2 cable trays are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in this zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.5 Fire Zone A-3e; Elevation 762' - 0" Electrical Penetrations (West)

Description

This zone is a containment electrical penetration area. The floor area is 382 ft^2.

A plan view of this fire zone is shown on Figure FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-4b. Safety-related cable trays are located in this fire zone as shown on cable tray Figure 4.

The floor is 14-inch minimum concrete with two 4-inch floor drains. The floor is 3-hour fire rated except for the air gap adjacent to the containment. The walls are 24-inch minimum concrete or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-3d which are not fire rated. The ceiling is 14-inch minimum concrete and is not fire rated.

Air infiltrates this zone from the containment gas control boundary extension and the 2-inch gap between the auxiliary building and the containment building at the floor level.

Air exfiltrates this zone through the 2-inch gap between the auxiliary building and the containment building at the floor level.

Safety-Related Equipment

Containment electrical penetrations and Division 1 and 2 valves are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.6 Fire Zone A-3f; Elevation 781' - 0" Division 2 Switchgear Room

Description

The zone consists of the auxiliary building Division 2 switchgear area and general access areaand extends above the Division 1 and 2 battery rooms (Areas A-4 and A-5) and above the steam tunnel (Zone A-2f). The floor area is 6170 ft^2.

A plan view of this fire zone is shown on Figure FP-5a. Rated barriers, area detection,suppression systems, and major plant equipment are shown on Figure FP-5b. Safety-related cable trays are shown on cable tray Figure 5.

The floor is 12-inch minimum concrete with fourteen 4-inch floor drains and an open stairwell. The intermediate floor (Elevation 790 feet 0 inch) has two 6-inch floor drains and is 3-hour fire rated above the battery rooms, above the steam tunnel, and above Fire Zone A-2k. The switchgear floor area is not fire rated. The walls are 24-inch minimum concrete, 11-5/8-inch hollow concrete block, or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-3g and the east wall adjacent to Zone A-3a which are not fire rated. The ceiling is 18-inch minimum concrete and is 3-hour fire rated. There is one open stair system in this zone down to elevation 762 feet 0 inch.

This zone is served by two interconnected HVAC systems: one is non-safety-related (elevation 762 feet 0 inch) and the second is safety-related (elevation 781 feet 0 inch). Either system can serve both areas simultaneously. During normal operation, the auxiliary building HVAC supply system furnishes conditioned air to this zone and it is exhausted by the auxiliary building HVAC system, as well as the Division 2 battery room exhaust fan.

Safety-Related Equipment

Division 2 4.1-kV switchgear, 480-volt unit substation, hydrogen igniter cabinet, battery charger, instrument panel, motor control centers, switchgear heat removal system, fan, damper, battery room exhaust fans, Division 2 and 4 cable trays, and electrical penetrations are located in the zone.

Combustible Materials

Lubricants
HVAC Material
Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. An automatic wet pipe water spray system is installed in accordance with NFPA 15 to provide area protection over the Division 1 and 2 battery rooms and the pipe tunnel (see Section E-E, Figure FP-5a). This system is installed to comply with the requirements of BTP 9.5-1, Appendix A. The system is designed with a density of 0.15 gpm/ft² for 25.5 ft² of tray. The 0.15 gpm/ft² density is based on NFPA requirements for an "Ordinary" occupancy classification and engineering judgement. The 25.5 ft² area of tray is based on the spray nozzle throw of 8.5 ft. times the 3 ft. wide tray. Portable fire extinguishers (in the zone) and hose stations (outside the zone access doors) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.3.7 Fire Zone A-3g; Elevation 781' - 0" Electrical Penetrations (West)

Description

This zone is a containment electrical penetration area. The floor area is 393 ft^2.

A plan view of this fire zone is shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. Safety related cable trays are shown on cable tray Figure 5.

The floor is 14-inch minimum concrete with two 4-inch floor drains. The floor is not fire rated. The walls are 24-inch minimum concrete or uninsulated metal siding. The walls are 3-hour fire rated except the uninsulated metal siding walls adjacent to Zone A-3f which are not fire rated. The ceiling is 18-inch minimum concrete and is not fire rated.

Air infiltrates this zone from the containment gas control boundary and the containment gas control boundary extension, and exfiltrates through the 2-inch gap between the auxiliary building and the containment building at the floor level.

Safety-Related Equipment

Containment electrical penetrations, Division 2 valves, and drywell sample panel are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.1.3 of the Safe Shutdown Analysis.

3.2.4 Fire Area A-4; Elevation 781' - 0" Division 1 Battery Room

Description

The area consists of an auxiliary building Division 1 battery room. The floor area is 340 ft^2.

A plan view of this fire area is shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. Safety-related cable trays are located in this fire area as shown on cable tray Figure 5.

The floor is 17-inch minimum concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 36-inch minimum concrete or 11-5/8-inch hollow concrete block. All walls are 3-hour fire rated. The ceiling is 18-inch minimum concrete and is 3-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. The air enters from the surrounding areas through a backdraft damper and exhausts through the Division 1 battery room exhaust fans.

The design and construction of the structural boundaries of the area and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

Division 1 125-Vdc batteries are located in the area.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the area. Portable fire extinguishers are provided outside the zone access door for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.1.4 of the Safe Shutdown Analysis.

3.2.5 Fire Area A-5; Elevation 781' - 0" Division 2 Battery Room

Description

The area consists of an auxiliary building Division 2 battery room. The floor area is 255 ft^2.

A plan view of this fire area if shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. No safety-related cable trays are located in this fire area as shown on cable tray Figure 5.

The floor is 17-inch minimum concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 36-inch minimum concrete or 11-5/8 inch hollow concrete block. All walls are 3-hour fire rated. The ceiling is 18-inch minimum concrete and is 3-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. The air enters from the surrounding area through a backdraft damper and exhausts through the Division 2 battery room exhaust fans.

The design and construction of the structural boundaries of the area and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

Division 2 125-Vdc batteries are located in the area.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the area. Portable fire extinguishers are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.1.5 of the Safe Shutdown Analysis.

3.2.6 Fire Area A-6; Elevation 707' - 6" General Access Area (North)

Description

The area consists of a general access area in the basement of the Aixiliary Building with a floor area of 852 ft^2.

A plan view of this fire area is shown in Figure FP-2a. Rated barriers, fire detectors (ionization smoke detectors), suppression system, and major plant equipment are shown on Figure FP2b. Safety-related cable trays are shown on cable tray Figure 2.

The floor is 9 foot 8 inch of concrete on grade with one 4-inch floor drain routed to a sump located in fire zone A-1a. The wall common to zone A-2c is penetrated by a 1 1/2" unsealed drain line which does not affect the barrier's 3-hour fire rating. The floor is not fire rated. The walls are 18-inch minimum concrete or 19-5/8 inch minimum solid concrete block except the wall common to fire zone A-1a which is an 8" solid concrete block wall. All walls are 3-hour fire rated including the 8" solid concrete block which is built up to the concrete slab located in this area at elevation 726' 0". Although the wall which is common to fire zone A-1a has a significant number of penetrations, the penetrations are sealed with approved 3-hour fire seals and the 3-hour rating should not be affected. The ceiling is 16-inch minimum concrete which is not fire rated. In addition, there is a 12" concrete slab at elevation 726' 0" which is used as part of the 3-hour fire barrier system between fire zone A-1a and A-6. There are three fire doors in this fire area in the wall common to fire zone A-1a.

Conditioned ventilation air is supplied to this area through the auxiliary building HVAC supply system ductwork. The supplied air is exhausted directly to the auxiliary building HVAC exhaust ductwork. Area coolers in the area recirculate air within this area.

Safety-related Equipment

Residual heat removal (RHR) pump 1A vent panel, control panels, Division 1 cable trays, and Division 1 instrumentation are located in this area.

Combustible Materials

Cable Insulation
HVAC Material
Plastic and Cloth

Fire Load

The fire load for this fire area is **moderate.**

Fire Detection and Protection

There is an ipnization smoke detection system and an automatic wet pipe sprinkler system in this area. However, it should be noted that due to the installation of the 3-hour rated fire wall between fire areas A-6 and A-1a, the sprinkler system is not required as per 10 CFR 50, Appendix R, Section III.G.2.a, and credit for the sprinkler system is not taken. Portable fire extinguishers and hose stations are provided for manual fire fighting as shown on the reference drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.1.6 of the Safe Shutdown Analysis.

CONTAINMENT BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
C-1	-	Containment Drywell - elevation 723'-1-3/4" 737'0", 755'-0", 778'-0"	E3.3-1	FP-2a	FP-2b	-
C-2	-	Containment - elevations 712'-0", 737'-0", 755'-0", 778'-0", 789'-1", 803'-3", 816'-7", 828'-3"	E3.3-2	FP-2a	FP-2b	-
			E3.3-2	FP-3a	FP-3b	-
			E3.3-3	FP-4a	FP-4b	4
			E3.3-4	FP-5a	FP-5b	5
			E3.3-6	FP-6a	FP-6b	5
			E3.3-7	FP-6a	FP-6b	6
			E3.3-8	FP-6a	FP-6b	-
			E3.3-8	FP-7a	FP-7b	-

3.3 CONTAINMENT BUILDING

3.3.1 Fire Area C-1; Elevation 723' - 1 3/4" through 778'-0" Containment Drywell

Description

The area consists of the drywell volume of the containment building starting at elevation 723 feet 1-3/4 inches. The floor area at this elevation is 2947 ft^2.

A plan view of this fire area is shown on Figures FP-2a and FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-2b and FP-3b.

The floor is 12-foot 8-1/4-inch minimum concrete with five 6-inch and two 4-inch floor drains to a sump located within the area. The floor is not fire rated. The walls are 22-inch minimum concrete and 1-inch steel liner plates. The drywell wall is 3-hour fire rated, the remaining walls are not fire rated. The ceiling is 36-inch minimum concrete and is 3-hour fire rated.

The reactor vessel is located within the area and enclosed by a wall of 68-inch concrete.

The drywell cooling system is non-safety-related and is powered by two independent essential switchgear and standby diesel generators to preclude possible ECCS operation due to cooler shutdown in the event of loss of offsite power. The supplemental drywell cooling system is not powered from divisional sources. The system functions to recirculate and distribute cooling air throughout the drywell. There is an open stairwell, up to elevation 737'-0".

Safety-Related Equipment

The reactor vessel, reactor assembly, vessel and components, control rod drive, nuclear instrumentation, and Division 1, 2, 3, and 4 valves are located in the area.

Combustible Materials

Lubricants

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an infrared fire detection system in this area adjacent to the reactor recirculation motors at elevation 723. A hose station is provided at elevation 737 for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.2.1 of the Safe Shutdown Analysis.

3.3.2 Fire Area C-2

This fire area consists of one fire zone with fire load evaluations performed at eight elevations.

3.3.2.1 Fire Area C-2; Elevation 712' - 0" Containment

Description

The area consists of the suppression pool area on elevation 712 feet 0 inch and above. The floor area is 7174 ft^2.

A plan view of this fire area is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire area.

The floor is 9-foot 8-inch minimum concrete with no floor drains. It is covered by 19 feet of water. The floor is not fire rated. The walls are 36-inch minimum concrete with 1-inch steel liner plate. The walls are 3-hour fire rated. The ceilings are 1-1/2-inch steel grating supported by steel beams. The ceiling is not fire rated.

Safety-Related Equipment

The RHR suction strainers A, B, and C, LPCS suction strainer, HPCS suction strainer, SRV discharge devices, containment hatch removal monorail beam, and containment area 1 and 3 personnel hatch shield door are located in this area.

Combustible Materials

Lubricants
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

None required.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.2 Fire Area C-2; Elevation 737' - 0" Containment

Description

This fire area continues from below and is a circular area consisting of 6969 ft^2, bounded by the containment wall and drywell wall.

A plan view of this fire area is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire area.

The floor is 1-1/2-inch steel grating with open areas to elevation 712 feet 0 inch. The floor is not fire rated. The walls are 36-inch minimum concrete with a steel liner plate. The walls are 3-hour fire rated. The ceiling is 12-inch minimum concrete with open areas and areas covered by steel grating. The ceiling is not fire rated. There are two open stairwells in this area, both up to elevation 762 feet 0 inch. The personnel and equipment hatches are also located in this area.

Safety-Related Equipment

Division 1 and 2 valves and Division 1 and 2 hydrogen ignitors are located in this area.

Combustible Materials

Lubricants
Cable Insulation
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (in an adjacent area) and hose stations (in the area) are provided for manual fire fighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.3 Fire Area C-2, Elevation 755' - 0" Containment

Description

The fire area continues from lower elevations and consists of the steam and feedwater tunnel between the drywell and containment walls and the circular area between the drywell and containment walls excluding the tunnel. The floor area is 6855 ft^2.

A plan view of this fire area is shown on Figure FP-4a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-4b. Safety-related cable trays are shown on cable tray Figure 4.

The floor is 12-inch minimum concrete and 1-1/2-inch steel grating with sixteen 4 inch floor drains. The floor drains are routed to a sump at elevation 737 feet 0 inch. The floor is not fire rated. The walls are 36-inch minimum concrete with steel liner plate. The containment and drywell walls are 3-hour fire rated. The ceiling is 12-inch minimum concrete and is not fire rated

.

This area is served by either the containment HVAC system or the continuous containment purge system and the air recirculating type cubicle coolers served by the containment chilled water system.

The hydraulic control unit (HCU) modules are designed to be fail-safe. Any postulated credible fire in the area will not prevent any unit from performing its design function. Damage as the result of a fire to the electrical or pneumatic portion of any module will result in a control rod insertion.

Safety-Related Equipment

Division 1, 2, 3, and 4 cable trays, instrument panels and electrical penetrations, the HCU modules, reactor vessel level and pressure instrument panels A, B, and C, main steam flow instrument panels A and B, recirculating pump A instrument Panel, jet pump instrument panels, SRM/IRM preamplifier panel C, the recirculating system flow control system instrument panel, and Division 2 valves are in the area.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Paper, Rubber, Cloth and Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Linear thermal detectors are provided in the safety-related cable trays from elevations 755 feet to 803 feet. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.4 Fire Area C-2; Elevation 778' - 0" Containment

Description

The fire area continues from elevations below, and, at this elevation, consists of the general access and equipment area, the main steam pipe tunnel, and refueling pool. The floor area is 6131 ft^2.

A plan view of this fire area is shown on Figure FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-5b. Safety-related cable trays are shown on cable tray Figure 5.

The floor is 12-inch minimum concrete with areas of 1-1/2-inch steel grating supported by steel beams. There are two 3-inch floor drains routed to the equipment drain system, two 4-inch floor drains, and one 8- x 8-inch box drain routed to the floor drain sump at elevation 737 feet 0 inch of the auxiliary building. The floor is not fire rated. The walls are a combination 30-inch minimum reinforced concrete and 40-inch removable solid concrete blocks. The drywell and containment walls are 3-hour fire rated. The ceiling is 30-inch minimum concrete with areas of 1-1/2-inch steel grating supported by steel beams. The ceiling is not fire rated. There are four open stairways in this area: one up to elevation 784 feet 1 inch, one down to elevation 737 feet 0 inch, one up to elevation 828 feet 3 inches, and one up to 828 feet 3 inches and down to elevation 762 feet 0 inch.

This area is served by either the containment HVAC system or the continuous containment purge system and the recirculating type air handling units served by the containment chilled water system.

Air enters the main steam pipe tunnel through backdraft dampers and exits through exhaust ductwork. The cooling capacity can be augmented by recirculating type cubicle coolers or air handling units which are connected to the chilled water system.

Safety-Related Equipment

The standby liquid and control storage tank and pumps, Division 1, 2, 3, and 4 electrical penetrations, Division 1, 2, 3, and 4 cable trays, Division 1 and 2 control and instrument panels, and Division 1, 2, and 3 valves are located within this area.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

An infrared detection system is provided for the standby liquid control system pumps. Linear thermal detectors are provided in the safety-related cable trays from elevations 755 feet to 803 feet. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.5 Fire Area C-2, Elevation 789' - 1" Containment

Description

This elevation includes the RWCU filter demineralizer vessel rooms, the regenerative and nonregenerative heat exchanger rooms, and area coolers. The floor area at elevation 789 feet 1 inch is 814 ft^2.

A plan view of this fire zone is shown on Figure FP-6a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-6b. Safety-related cable trays at this elevation of the fire area are shown on Cable Tray Figure 5.

The floor is 18-inch minimum concrete with 1-1/2-inch steel grating supported by steel beams. There is one 4-inch floor drain in each RWCU filter demineralizer vessel room and heat exchanger room. The floor is not fire rated. The walls are 12-inch minimum concrete. The containment and drywell walls are 3-hour fire rated and the remaining walls are not fire rated. The ceiling is 24-inch minimum concrete with areas of 1-1/2 inch steel grating and 1/2-inch checkered plate and is not fire rated.

The entire area also contains one open stairway down to elevation 778 feet 0 inch.

This area is served either by the containment HVAC system or by the continuous containment purge system and the recirculating type air-handling units served by containment chilled water system.

Air is not normally exhausted from the dome area. However, a manual damper connecting to the dome area ductwork can be opened when required to exhaust air from this area.

Safety-Related Equipment

The safety-related equipment located within the fire area are Division 1 and 2 control panels, Division 1 and 2 valves, Division 1 and 2 instruments, Division 1 and 2 cable trays, fuel storage rack, inclined fuel transfer tube, and shroud head and separator.

Combustible Materials

Lubricants
Cloth, Plastic and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided at elevations 778 and 803 for manual firefighting as shown on the referenced drawings. Linear thermal detectors are provided in the safety-related cable trays from elevations 755 feet to 803 feet.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.6 Fire Area C-2, Elevation 803' - 3" Containment

Description

This elevation consists of a general access area and the RWCU filter demineralizer pumps and tanks. The floor area is 8862 ft^2.

A plan view of this fire zone is shown on figure FP-6a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-6b. Safety-related cable trays are shown on Cable Tray Figure 6.

The floor contains three 4-inch floor drains which are routed down to a sump at elevation 737 feet 0 inch and is not fire rated.

The entire area also contains two open stairways: one up to elevation 828 feet 3 inch and down to elevation 778 feet 0 inch and one up to elevation 828 feet 3 inch and down to elevation 754 feet 2 inch.

This area is served either by the containment HVAC system or by the continuous containment purge system and the recirculating type air-handling units served by containment chilled water system.

Air is not normally exhausted from the dome area. however, a manual damper connecting to the dome area ductwork can be opened when required to exhaust air from this area.

Safety-Related Equipment

The safety-related equipment located within the fire area are Division 1 and 2 control panels, Division 1 and 2 valves, Division 1 and 2 instruments, Division 1 and 2 cable trays, fuel storage rack, inclined fuel transfer tube, and shroud head and separator.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings. Linear thermal detectors are provided in the safety-related cable trays from elevations 755 feet to 803 feet.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.7 Fire Area C-2; Elevation 816' - 7" Containment

Description

This zone consists of filter/demineralizer vessels, containment building transfer fan, and area coolers. The floor area is 483 ft^2.

A plan view of this fire zone elevation is shown on Figure FP-6a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-6b.

The floor is 40-inch minimum concrete and is not fire rated. There are no floor drains. The walls are 36-inch minimum concrete and are not fire rated. The ceiling is 30-inch minimum concrete and is not fire rated.

This area is served either by the containment HVAC system or by the continuous containment purge system and the recirculating type air-handling units served by containment chilled water system.

Air is not normally exhausted from the dome area. However, a manual damper connecting to the dome area ductwork can be opened when required to exhaust air from this area.

Safety-Related Equipment

The safety-related equipment located within the fire area are Division 1 and 2 control panels, Division 1 and 2 valves, Division 1 and 2 instruments, Division 1 and 2 cable trays, fuel storage rack, inclined fuel transfer tube, and shroud head and separator.

Combustible Materials

Cloth, Rubber and Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided at elevation 803 for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

3.3.2.8 Fire Area C-2; Elevation 828' - 3" Containment

Description

This elevation consists of the refueling floor. The floor area is 12,076 ft^2.

A plan view of this fire zone elevation is shown on Figure FP-7a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-7b.

The floor is 24-inch minimum concrete with 1-1/2-inch steel grating and 1/2-inch checkered plate. The floors are not fire rated. The walls are 36-inch minimum reinforced concrete and are 3-hour fire rated at the drywell. The ceiling (containment dome) is 30-inch minimum concrete and is 3-hour fire rated. There are two 4-inch floor drains and four 8- x 8- x 4-inch box drains routed to a sump at elevation 737 feet 0 inch.

The entire area also contains two open stairways: one down to elevation 778 feet 0 inch and one down to elevation 754 feet 2 inch.

This area is served either by the containment HVAC system or by the continuous containment purge system and the recirculating type air-handling units served by containment chilled water system.

Air is not normally exhausted from the dome area. However, a manual damper connecting to the dome area ductwork can be opened when required to exhaust air from this area.

Safety-Related Equipment

The safety-related equipment located within the fire area are Division 1 and 2 control panels, Division 1 and 2 valves, Division 1 and 2 instruments, Division 1 and 2 cable trays, head holding pedestal dryer and separator strong back, head strong back carousel, refuel platform equipment assembly, refueling platform, fuel storage rack, inclined fuel transfer tube, shroud head and separator, and steam dryer.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Rubber, Plastic and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.2.2 of the Safe Shutdown Analysis.

CONTROL BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
CB-1	CB-1a	Unit 2 Diesel Generator Bays - elevations 712'-0", 719'-0", 737'-0"	E3.4-1	FP-8a FP-9a FP-10a	FP-8b FP-9b FP-10b	-
	CB-1b	General Access Area and Common Station HVAC Vent- elevation 702'-0", 699'0" through 935'6"	E3.4-2	FP-8a	FP-8b	7
	CB-1c	General Access and HVAC Area - elevation 719'-0"	E3.4-3	FP-9a	FP-9b	8
	CB-1d	Rad-Chem Laboratory Area - elevation 737'-0"	E3.4-4	FP-10a	FP-10b	-
	CB-1e	General Access Area - elevations 737'-0", 751'-0"	E3.4-5	FP-10a FP-11a	FP-10b FP-11b	9
	CB-1f	General Access Area - elevation 762'-0"	E3.4-6	FP-12a	FP-12b	10
	CB-1g	Unit 2 Cable Spreading Rooms - elevation 781'-0"	E3.4-7	FP-13a	FP-13b	11
	CB-1h	East Stairwell - elevations 702'-0" to 847'-0"	E3.4-8	FP-8a FP-9a FP-10a FP-11a FP-12a FP-13a FP-14a FP-15a	FP-8b FP-9b FP-10b FP-11b FP-12b FP-13b FP-14b FP-15b	- - - - - - - -
	CB-1i	Air Handling Equipment Area - elevation 825'-0"	E3.4-9	FP-15a	FP-15b	13
CB-2	-	Division 2 Cable Spreading room - elevation 781'-0"	E3.4-10	FP-13a	FP-13b	11
CB-3	CB-3a	Auxiliary Electric Equipment Room - elevation 781'-0"	E3.4-11	FP-13a	FP-13b	11

CONTROL BUILDING (Cont'd)
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
	CB-3b	Division 4 NSPS Inverter Room - elevation 781'-0"	E3.4-12	FP-13a	FP-13b	-
	CB-3c	Nonsafety Battery Room (West) - elevation 781'-0"	E3.4-13	FP-13a	FP-13b	-
	CB-3d	Division 4 Battery Room - elevation 781'-0"	E3.4-14	FP-13a	FP-13b	-
	CB-3e	Division 2 NSPS Inverter Room - elevation 781'-0"	E3.4-15	FP-13a	FP-13b	-
	CB-3f	Division 1 NSPS Inverter Room - elevation 781'-0"	E3.4-16	FP-13a	FP-13b	-
	CB-3g	Nonsafety Battery Room (East) - elevation	E3.4-17	FP-13a	FP-13b	-
CB-4	-	Division 1 Cable Spreading Room - elevation 781'-0"	E3.4-18	FP-13a	FP-13b	11
CB-5	CB-5a	Division 3 Switchgear Room - elevation 781'-0"	E3.4-19	FP-13a	FP-13b	11
	CB-5b	Division 3 Battery Room - elevation 781'-0"	E3.4-20	FP-13a	FP-13b	-
	CB-5c	Division 1 and 2 Cable Risers - elevation 781'-0"	E3.4-21	FP-13a	FP-13b	11
CB-6	CB-6a	Main Control Room Complex - elevation 800'-0"	E3.4-21	FP-14a	FP-14b	12
	CB-6b	Operations Admin Area - elevation 800'-0"	E3.4-23	FP-14a	FP-14b	12
	CB-6c	Old Technical Support Center - elevation 800'-0"	E3.4-23	FP-14a	FP-14b	-
	CB-6d	Corridor and Miscellaneous Rooms - elevation 800'-0"	E3.4-24	FP-14a	FP-14b	12

CONTROL BUILDING (Cont'd)
FIRE AREA/ZONE INDEX

CB-7	-	West Stairwell and Personnel Access Walkway - elevations 702'-0" to 847'-0"	E3.4-25	FP-8a	FP-8b	-
				FP-9a	FP-9b	-
				FP-10a	FP-10b	-
				FP-11a	FP-11b	-
				FP-12a	FP-12b	-
				FP-13a	FP-13B	-
				FP-14a	FP-14b	12
				FP-15a	FP-15b	-

3.4 CONTROL BUILDING

3.4.1 Fire Area CB-1

3.4.1.1 Fire Zone CB-1a; Elevations 712’ - 0” & 719’ - 0” and 737’ - 0” Unit 2 Diesel Generator Bays

Description

This zone crosses multiple elevations. The 712' - 0" and 719' - 0" elevations were treated together; The combined floor area is 4431 ft^2. The 737' - 0" elevation was analyzed separately; it has a floor area of 6892 ft^2.

A plan view of this fire zone is shown on Figures FP-8a through FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b through FP-10b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot reinforced concrete with thirteen 4-inch floor drains leading to a sump within the zone. The floor is not fire rated. Walls are 12-inch minimum reinforced concrete, or 11-5/8 or 7-5/8-inch hollow concrete block and are not fire rated, except the west wall and the south corridor wall common to D-1, D-2, and D-3, which are 3-hour fire rated; and the wall common to CB-1h, which is 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete, is 3-hour fire rated, and is the floor of elevation 762 feet 0 inch.

Safety-Related Equipment

None.

Combustible Materials

Paper, Plastic, Cloth, and Rubber

Fire Load

Elevations 712'-0" and 719'-0", Unit 2 Diesel Generator Bays: The fire load for the fire zone is **low.**

Elevation 737'-0", Unit 2 Diesel Generator Bay: The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (at elevation 719 feet 0 inch) and hose stations (at elevations 712 feet 0 inch and 719 feet 0 inch) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.2 Fire Zone CB-1b; Elevation 702' - 0" and Elevations 699' - 0" through 935' - 6" General Access Area and Common Station HVAC Vent

Description

This zone is the general access area at elevation 702 feet 0 inch of the control building, and it includes the hydrogen recombiner rooms, the drywell purge filter units room, and the common station HVAC vent. The floor area is 25,669 ft^2.

A plan view of this fire zone is shown on Figure FP-8a. The common station HVAC vent is shown on Figures FP-8a, FP-9a, FP-10a, FP-12a, FP-13a, FP-14a, and FP-33a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-8b, and Figures FP-10b, FP-12b, and FP-33b for the common station HVAC vent. No safety-related cable trays are located in this fire zone.

The floor is 9-foot reinforced concrete. The floor is not fire rated. There are sixty-five 4-inch floor drains in the zone. The walls are 12-inch minimum reinforced concrete, 11-5/8-inch minimum solid concrete block or 7-5/8-inch hollow concrete block. The north and west walls are 3-hour fire rated. The two enclosed stairways and the two enclosed elevators are 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is not fire rated.

The common station HVAC vent bottoms at 699 feet and rises from Fire Zone CB-1b through Fire Zones CB-1c and D-4a and Fire Area D-10, and up through the Diesel Generator Building roof and terminating at elevation 935'-6", as shown on Figure FP-33a. The west wall of the common station HVAC vent is the Diesel Generator Building/Fuel Building common wall, is 24" reinforced concrete, and is 3-hour fire rated from the Upper Basement at elevation 712'-0" to the Diesel Generator Building ceiling at elevation 800'-0", as shown on Figure FP-33b. The other three walls of the vent are 16" reinforced concrete for radiation shielding, and are 3-hour fire rated at elevations 737'-0" and 762'-0" through Fire Zone D-4a and Fire Area D-10, respectively. These walls at other elevations are not fire rated.

Conditioned ventilation air is supplied to this zone through the auxiliary building HVAC system supply ductwork. A portion of the air is exhausted through the auxiliary building HVAC system exhaust ductwork. The balance is staged ductless via a backdraft damper to the drywell purge unit cubicle and directly to the hydrogen recombiner rooms. Air at this elevation is then exhausted via the auxiliary building HVAC system exhaust ductwork.

Area coolers (supplied by the plant chilled water system) in this zone will recirculate air within these zones.

A portion of the supplied air to the general area on this elevation will be exhausted from the hydrogen recombiner room though the auxiliary building HVAC system exhaust ductwork.

A portion of the supplied air to the general area on this elevation is staged to the drywell purge filter room via a backdraft damper where it is exhausted through the auxiliary building HVAC system exhaust ductwork.

Safety-Related Equipment

Safety-related equipment located in this zone includes Division 1 and 2 hydrogen recombiners and room fans.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Paper, Plastic, Rubber, Cloth and Wood
Hydrogen in Recombiners
Charcoal

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings. Each of the three drywell purge filter units is protected by a manual deluge system.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.3 Fire Zone CB-1c; Elevation 719' - 0" General Access and HVAC Area

Description

This zone is a general access area and the general heating, ventilation, and air conditioning equipment area. Also the standby gas treatment systems A and B are located in the zone. The floor area is 24,348 ft^2.

A plan view of this fire zone is shown on Figure FP-9a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-9b. Safety-related cable trays are shown on cable tray Figure 8.

The floor is 12-inch reinforced concrete and has thirty-seven 4-inch floor drains. The floor of the west and east radwaste pipe tunnels are 3-hour fire rated, and the remaining floor is not fire rated. The walls are 36-inch reinforced concrete, 15-5/8-inch solid concrete block, or 11-5/8-inch hollow concrete block. The north and west walls, including walls and ceiling of the west radwaste pipe tunnel and interior walls and ceiling of the east radwaste pipe tunnel, are 3 hour rated and the remaining walls are not fire rated. The ceiling is 20-inch reinforced concrete and is 3-hour fire rated from Column/Rows AC-AE and 124-130, and the under the cable riser area of Zone CB-1d. There are four stair systems in this zone: two are open and two are enclosed (CB-1h and CB-7) in 1.9-hour fire rated walls. There are two elevators (CB-1h and CB -7) enclosed in 1.9-hour fire rated walls.

Conditioned ventilation air is supplied to this zone through the auxiliary building HVAC system supply ductwork. A portion of the air is exhausted through the auxiliary building HVAC system exhaust ductwork. The balance is staged ductless via a backdraft damper to the standby gas treatment cubicle. Air is then exhausted via the auxiliary building HVAC system exhaust

ductwork. Area coolers (supplied by the plant chilled water system) in the zone recirculate air within this zone.

A portion of the supplied air to the general area on this elevation is staged to the standby gas treatment cubicles via backdraft dampers where it is exhausted through the auxiliary building HVAC system ductwork. Safety-related recirculation cooling units are provided in these rooms.

Safety-Related Equipment

Division 1 and 2 cable trays, control building motor control centers, the standby gas treatment systems, and control and instrument panels are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
Plastic, Rubber, Cloth and Wood

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

An ionization detection system is installed in this zone. The three standby gas treatment filter packages are protected by manual deluge systems. An automatic wet-pipe sprinkler system protects the small open pipe hatch at the ceiling of Fire Zone CB-1c. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.4 Fire Zone CB-1d; Elevation 737' - 0" Rad-Chem Laboratory Area

Description

This zone consists of the rad-chem laboratory area and has a floor area of 12,483 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. Safety-related cable trays are located in this fire zone as shown on cable tray Figure 9.

The floor is 20-inch reinforced concrete and is not fire rated, except for the floor of the cable riser area which is 3-hour fire rated. There are thirty-six 4-inch floor drains and two 20-inch drains in this zone. The walls are 7-5/8-inch minimum solid or hollow concrete block or 18-inch minimum reinforced concrete. The north and west exterior walls are 3-hour fire rated. The two Radwaste pipe tunnels are 3-hour fire rated. The south, east and west walls of the cable riser and stairwell room are 1.9-hour fire rated. The interior walls adjacent to the laundry surrounding the cable chase are 1.9 hour fire rated barriers. The interior walls enclosing the two stairways

are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch reinforced concrete at elevation 751 feet 0 inch and is not fire rated.

Safety-Related Equipment

Division 2 safety-related cables are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Materials
Flammable Liquids, PVC, Acetone and Wood
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

An ionization detection system is provided for the radiation-chemistry lab and office, and cold lab. Portable fire extinguishers and hose stations are provided for manual fire fighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.5 Fire Zone CB-1e; Elevations 737' - 0" & 751' - 0" General Access Area

Description

The zone consists of a general access area at elevation 737 feet 0 inch and a secondary floor at 751' - 0". Both sections are treated together for analysis; with a combined floor area of 18,072 ft^2.

A plan view of this fire zone is shown on Figures FP-10a and FP-11a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-10b and FP-11b. Safety-related cable trays are shown on cable tray Figure 9.

The floor of the general access area is 20-inch minimum reinforced concrete with eleven 4-inch floor drains and one 2-inch drain to a sump in Zone CB-1b.

The floor of the secondary level is 8-inch reinforced concrete and has thirteen 4-inch floor drains to a sump in Zone CB-1b.

The floors are not fire rated. The walls are 18-inch minimum reinforced concrete, 15-5/8-inch solid concrete block, or 7-5/8-inch minimum hollow concrete block. The portion of the south wall adjacent to the diesel-generator rooms (Fire Areas D-4a, D-5a, and D-6a) and the north wall adjacent to the radwaste building above elevation 751 feet 0 inch and the west wall adjacent to the auxiliary building are 3-hour fire rated. The two enclosed stairways and two enclosed

elevators are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum reinforced concrete with open areas for equipment removal. The ceiling is not fire rated. There are two open stair systems to the secondary floor.

Conditioned ventilation air is supplied to this zone through the auxiliary building HVAC supply system ductwork. A portion of the supplied air is exhausted directly and the balance is staged ductless to the two storage rooms located within this zone. Air from corridor and storage rooms is then exhausted through the auxiliary building HVAC ductwork. Area coolers (supplied by the plant chilled water system) in this zone will recirculate air within this zone.

Safety-Related Equipment

Division 1 and 2 electrical cables, diesel generator motor control centers, Division 1 and 2 cable trays, and the Division 1 hydrogen recombiner control panel are located in this zone.

Combustible Materials

Cable Insulation
HVAC Materials
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system provided in this zone at elevation 751. An automatic wet pipe sprinkler system is provided in the zone at elevations 737 and elevation 751 over Zone CB-1d between Column Rows 124-128 and Column Lines S-Y, Column Rows 128-130 and Column Lines Y-AC and Column Rows 130-132 and Columns Lines Y-10'-0" south of AA. This system will also protect the west pipe hatch at column row 125/AC and the equipment hatch at column row 132/AA leading to elevation 762 feet 0 inch. Portable fire extinguishers and hose stations are provided at elevations 737 and 751 for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.6 Fire Zone CB-1f, Elevation 762' - 0" General Access Area

Description

The zone is a general access and equipment area of the control building. The floor area is 18,462 ft^2.

A plan view of this fire zone is shown on Figure FP-12a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-12b. Safety-related cable trays are shown on cable tray Figure 10.

The floor is 12-inch reinforced concrete with twenty-three 4-inch floor drains and open areas for piping and equipment removal. The floor is not fire rated except for the floor over the two radwaste pipe tunnels which are 3-hour fire rated. The zone walls are 24-inch minimum concrete and are 3-hour fire rated except for the east wall which is not fire rated. The two enclosed stairways and two enclosed elevators (CB-1h and CB-7) are 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated between Column Rows 124-130 and Column Lines S-AC.

Air is supplied and exhausted ducted from this zone by the auxiliary building ventilation system. Area coolers (supplied by the plant chilled water system) in the area recirculate air within this zone.

Safety-Related Equipment

Division 1 and 2 cable trays and a Division 2 cable are routed through the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system provided in this zone. An automatic wet pipe sprinkler system protects the area between column lines S-AC and column rows 124-130 as shown in Figure FP-12b. This system protects both Division 1 and 2 cables that serve safe shutdown equipment. An automatic wet pipe system is also protecting the west pipe hatch located at the intersection of column line AC and column row 125. Portable fire extinguishers and hose stations are provided for manual firefighting.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.7 Fire Zone CB-1g; Elevation 781' - 0" Unit 2 Cable Spreading Rooms

Description

This zone is a general access for the cable spreading rooms and has a floor area of 8790 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 12-inch minimum reinforced concrete with twenty-four 4-inch floor drains and is not fire rated. The walls are 24-inch minimum reinforced concrete or 7-5/8-inch reinforced hollow concrete block. The north and south walls are 3-hour fire rated, and the west wall and stair/elevator enclosure are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 23-inch minimum reinforced concrete and is 3-hour fire rated.

Safety-Related Equipment

Division 1 and 2 cable trays are in this zone.

Combustible Materials

Cable Insulation
HVAC Material
Plastic, Rubber, Cloth, Wood and Paper

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings. An ionization detection system is located in this zone.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.8 Fire Zone CB-1h; Elevations 702’ - 0” through 847’ - 0” East Stairwell

Description

This zone is a stairwell tower and adjacent elevator shaft (including a janitor's closet at elevation 800 feet 0 inch) which is enclosed by 1.9-hour fire rated walls except at elevation 800 feet 0 inch where the walls are 3-hour fire rated (except the east exterior wall which is 1.9-hour fire rated).

The floor areas at each elevation are:

702' - 0"	150 ft^2
719' - 0"	101 ft^2
737' - 0"	69 ft^2
762' - 0"	54 ft^2
781' - 0"	300 ft^2
800' - 0"	324 ft^2
828' - 3"	335 ft^2
847' - 0"	307 ft^2

A plan view of this fire zone is shown on Figures FP-8a through FP-15a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b through FP-15b. No safety-related cable trays are located in this fire zone.

The walls are 12-inch minimum reinforced concrete or 7-5/8-inch hollow concrete block. On elevation 702 feet 0 inch and above, the stairwell tower enclosure includes the adjacent elevator enclosure, which is partitioned by a 1.9-hour fire wall.

The enclosure walls at elevation 800 feet 0 inch are 3-hour fire rated with the security air lock door with 1.9-hour fire rating. The floor on elevation 702 feet 0 inch is 9-foot reinforced concrete. The ceiling at elevation 847 feet 0 inch is 24-inch concrete on steel decking. Neither the floor nor ceiling is fire rated, except for the stairwell ceiling under the Control Building Elevator Machine Room which is 1.9-hour fire rated. The east wall of the Control Building Elevator Machine Room is 1.9-hour fire rated. The exterior walls and ceiling at elevation 847 feet 0 inch are not fire rated.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Plastic, Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone at elevation 800 feet 0 inch. Portable fire extinguishers and hose stations are provided for manual firefighting starting at elevation 781 feet 0 inch as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.1.9 Fire Area CB-1: Zone CB-1i, Elevations 781'-0", 800'-0", 825'-0" Air Handling Equipment Area

Description

This zone contains the air handling equipment for the control room and auxiliary buildings and has a floor area of 18,230 ft^2.

A plan view of this fire zone is shown on Figures FP-13a through FP-15a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-13b through FP-15b. Safety- related cable trays are shown on cable tray Figure 13.

There are two 2-inch shower drains and sixteen 4-inch floor drains in this zone. The floors are 12-inch minimum concrete steel decking and are 3-hour fire rated. The walls are 24-inch reinforced concrete, 11-5/8-inch hollow concrete block, or 7-5/8-inch hollow concrete block. The walls at the stair/elevator enclosures (CB-1h and CB-7) are 1.9-hour fire rated. The walls of the

hatch at elevation 800'0" are 3-hour fire rated. The missile wall and remaining exterior walls are not fire rated. The ceiling is 24-inch concrete on steel decking and is 3-hour fire rated. The dividing wall at Column 130 between missile wall and Row AC has a 3-hour fire rating.

Safety-Related Equipment

This zone contains the Division 1 and 2 control room air handling units, control room chillers, control room air filter packages and fans, Division 1 and 2 electrical cables and trays, unit substations, and motor control centers and panels.

Combustible Materials

Lubricants
Cable insulation
HVAC materials
Rubber, Plastic, Cloth, Paper and Wood
Charcoal

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

The control room air filter packages and portions of the control room air handling units are protected by manual deluge sprinkler systems. An ionization detection system is located in this zone west of Column 133. (Two smoke detectors were deleted from the VC air intake area, Column/Row 129-132/S.) Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.1 of the Safe Shutdown Analysis.

3.4.2 Fire Area CB-2; Elevation 781' - 0" Division 2 Cable Spreading Room

Description

The area is the Division 2 cable spreading room at elevation 781 feet 0 inch of the control building. The floor area is 2092 ft^2.

A plan view of this fire area is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 18-inch minimum concrete with five 4-inch floor drains and is 3-hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow concrete block. The walls are 1.9-hour fire rated except the north and west walls which are 3-hour fire rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated.

Conditioned air is supplied to this area from a switchgear heat removal system non safety-related coil cabinet via its respective fan at normal operating conditions, and from a safety-related coil cabinet via its respective fan at abnormal operating conditions. Air is also staged ductless from Division 2 inverter room to Division 1 cable spread area. Air is then returned through the ductwork via a switchgear heat removal return air fan to the switchgear room where it is returned ductless to the operating switchgear heat removal fan via its respective coil cabinet.

Safety-Related Equipment

Division 2 cable trays are located in the area.

Combustible Materials

Cable Insulation
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

There is an ionization fire detection system and automatic wet pipe sprinkler system in the area. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.3.2 of the Safe Shutdown Analysis.

3.4.3 Fire Area CB-3

3.4.3.1 Fire Zone CB-3a; Elevations 781' - 0" & 790' - 0" Auxiliary Electric Equipment Room

Description

The area includes the auxiliary electric equipment room at elevation 781 feet 0 inch and the space over zones CB-3c, CB-3d, CB-3e, CB-3f, and CB-3g at elevation 790 feet 0 inch. The total floor area is 3001 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 18-inch reinforced concrete with seven 4-inch floor drains. The floor is 3 hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow concrete block. The walls are 1.9-hour fire rated, except the portion of the west wall adjacent to the auxiliary building, which is 3-hour fire rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated.

Conditioned air is supplied to this zone from the switchgear heat removal system non safety-related coil cabinet via its respective fan at normal operating conditions, and from the safety-

related coil cabinet via its respective fan at abnormal operating conditions. Air is also staged ductless from the Division 1 inverter room to the Division 1 cable spreading area. Air is then returned through ductwork via the switchgear heat removal return air fan to the switchgear room where it is returned ductless to the operating switchgear heat removal fan via its respective coil cabinet.

Safety-Related Equipment

Division 1 and 2 cable trays, Division 1 and 2 inverter room cubicle HVAC panel, Division 1 and 2 switchgear heat removal return fans, and Division 1 and 2 optical isolator cabinets are located in this area.

Combustible Materials

Cable Insulation
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. This zone is protected by an automatic preaction sprinkler system activated by ionization detectors. There is an Insurer-required Halon fire suppression system installed to protect non-safety BOP equipment in the underfloor space below the electrical panels. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.2 Fire Zone CB-3b; Elevation 781' - 0" Division 4 NSPS Inverter Room

Description

The zone is the Division 4 nuclear systems protection system inverter room. The floor area is 202 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 18-inch minimum concrete with no floor drains. The floor is 3-hour fire rated. The walls are 24-inch concrete or 7-5/8-inch hollow concrete block. The west wall is 3-hour fire rated; the remaining walls are 1.9-hour fire rated. The ceiling is 23-inch minimum concrete and is 3-hour fire rated.

Conditioned air is supplied to the inverter from the switchgear heat removal system non safety-related switchgear heat removal coil cabinet at normal operating conditions and from the safety-related switchgear heat removal coil cabinet during abnormal conditions. Air is returned by ducted means of the switchgear heat removal return air fan to the switchgear room; then to the switchgear heat removal non-safety-related fan at normal operating conditions (safety-related fan at abnormal conditions) via the coil cabinet; and then supplied to the inverter and other areas to provide cooling. Area coolers recirculate air within this zone.

Safety-Related Equipment

The Division 4 NSPS inverter, Division 4 cable and bypass transformer, distribution panel and battery charger, and MCC are located in the zone.

Combustible Materials

Cable Insulation

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.3 Fire Zone CB-3c; Elevation 781' - 0" Nonsafety Battery Room (West)

Description

The zone is a non-safety-related battery room at elevation 781 feet 0 inch of the control building. The floor area is 174 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 18-inch reinforced concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 6-inch reinforced concrete and is 1.9-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. Air enters from the surrounding areas through a backdraft damper and exhausts through the battery room exhaust fans.

The design and construction of the structural boundaries of the zone and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

None.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system located in this zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.4 Fire Zone CB-3d; Elevation 781' - 0" Division 4 Battery Room

Description

The zone is the Division 4 battery room at elevation 781 feet 0 inch of the control building. The floor area is 134 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 18-inch reinforced concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 6-inch reinforced concrete and is 1.9-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. Air enters from the surrounding areas through a backdraft damper and exhausts through the battery room exhaust fans.

The design and construction of the structural boundaries of the zone and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

Division 4 batteries are located in the zone.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.5 Fire Zone CB-3e; Elevation 781' - 0" Division 2 NSPS Inverter Room

Description

The zone is the Division 2 nuclear systems protection system (NSPS) inverter room. The floor area is 117 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No Safety-related cable trays are located in this fire zone.

The floor is 18-inch minimum concrete with no floor drains. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 6-inch minimum concrete and is 1.9-hour fire rated.

Conditioned air is supplied to the inverter from the switchgear heat removal system non safety-related switchgear heat removal coil cabinet at normal operating conditions and from the safety-related switchgear heat removal coil cabinet during abnormal conditions. Air is induced to the cable spread area and then returned by means of the switchgear heat removal return air fan to the switchgear room; then to the switchgear heat removal non-safety-related fan at normal operating conditions (safety-related fan at abnormal conditions) via coil cabinet; and then supplied to the inverter and other areas to provide cooling. An area cooler recirculates air within this zone.

Safety-Related Equipment

The Division 2 NSPS inverter, Division 2 electrical cable and bypass transformer, and distribution panel are located in the zone.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.6 Fire Zone CB-3f; Elevation 781' - 0" Division 1 NSPS Inverter Room

Description

The zone is the Division 1 nuclear system protection system (NSPS) inverter room. The floor area is 117 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 18-inch reinforced concrete with no floor drains. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 6-inch reinforced concrete and is 1.9-hour fire rated. Conditioned air is supplied to Division 1 inverter from the switchgear heat removal system non-safety-related switchgear heat removal coil cabinet at normal operating conditions and from the safety-related switchgear heat removal coil cabinet during abnormal conditions. Air is induced to Division 1 cable spread area and then returned by means of the switchgear heat removal return air fan to the switchgear room; then to the switchgear heat removal non-safety-related fan at normal operating conditions (safety related fan at abnormal conditions) via coil cabinet; and then supplied to the Division 1 inverter and other areas to provide cooling. An area cooler recirculates air within this zone.

Safety-Related Equipment

The Division 1 NSPS inverter, bypass transformer, and distribution panel are located in the zone.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.3.7 Fire Zone CB-3g; Elevation 781' - 0" Nonsafety Battery Room (East)

Description

The zone contains a non-safety-related battery room at elevation 781 feet 0 inch. The floor area is 174 ft^2.

A plan view of this zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, fire and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 18-inch reinforced concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-our fire rated. The ceiling is 6-inch reinforced concrete and is 1.9-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. Air enters from the surrounding areas through a backdraft damper and exhausts through the battery room exhaust fans.

The design and construction of the structural boundaries of the zone and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

None.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.3 of the Safe Shutdown Analysis.

3.4.4 Fire Area CB-4; Elevation 781' - 0" Division 1 Cable Spreading Room

Description

The area is the Division 1 cable spreading room at elevation 781 feet 0 inch of the control building. The floor area is 2042 ft^2.

A plan view of this fire area is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure 13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 18-inch reinforced concrete with five 4-inch floor drains. The floor is 3-hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow concrete block. All walls are 1.9-hour fire rated except the west wall, which is 3-hour fire rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated.

Conditioned air is supplied to this area from the switchgear heat removal system non safety-related coil cabinet via its respective fan at normal operating conditions, and from the safety-related coil cabinet via its respective fan at abnormal operating conditions. Air is also staged ductless from the Division 1 inverter room to the Division 1 cable spread area. Air is then returned through ductwork via the switchgear heat removal return air fan to the switchgear room where it is returned ductless to the operating switchgear heat removal fan via its respective coil cabinet.

Safety-Related Equipment

Division 1 cable trays and Division 2 cables are located in the area. (Note: These Division 2 cables are not required for safe shutdown.)

Combustible Materials

Cable Insulation
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in this area. This area is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.3.4 of the Safe Shutdown Analysis.

3.4.5 Fire Area CB-5

3.4.5.1 Fire Zone CB-5a; Elevation 781' - 0" Division 3 Switchgear Room

Description

The zone is the Division 3 switchgear room and general access area. The floor area is 1448 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 12-inch reinforced concrete with three 4-inch floor drains. The floor is 3 hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow or solid concrete block. The walls are 1.9-hour fire rated except the south exterior wall and the equipment hatch enclosure wall which are 3-hour rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated.

A safety-related switchgear heat removal coil cabinet and associated fan at abnormal operation and non-safety-related coil cabinet via its respective fan at normal operation conditions are located in this zone. The coil cabinets and fan recirculate air within this zone. During normal operation, the auxiliary building HVAC supply system furnishes conditioned air to this zone and it is exhausted by the auxiliary building HVAC exhaust system.

Safety-Related Equipment

The Division 3 4.16-kV switchgear unit, 480-volt transformer, battery charger, motor control centers, switchgear heat removal and condensing units, Division 3 cable trays, NSPS inverter, bypass transformer, and distribution panel are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Rubber, Cloth and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.5 of the Safe Shutdown Analysis.

3.4.5.2 Fire Zone CB-5b; Elevation 781' - 0" Division 3 Battery Room

Description

The Zone is the Division 3 battery room at elevation 781 feet 0 inch. The floor area is 114 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 12-inch reinforced concrete with one 4-inch floor drain. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated.

The battery room ventilation system is designed to keep the generated hydrogen concentration to below 2% by volume. Air enters from the surrounding areas through a backdraft damper and exhausts through the battery room exhaust fans.

The design and construction of the structural boundaries of the zone and the battery room ventilation system preclude the possibility of hydrogen buildup.

Safety-Related Equipment

Division 3 batteries and battery room exhaust fan are located in the zone.

Combustible Materials

Cable Insulation
Plastic

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual fire fighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.5 of the Safe Shutdown Analysis.

3.4.5.3 Fire Zone CB-5c; Elevation 781' - 0" Divisions 1 and 2 Cable Risers

Description

The zone is a room enclosing Division 1 and 2 vertical cable risers. The floor area is 173 ft^2.

A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. Safety-related cable trays are shown on cable tray Figure 11.

The floor is 12-inch reinforced concrete with or floor drains. The floor is 3-hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow or solid concrete block. The walls are 1.9-hour fire rated except the south wall, which is 3-hour fire rated. The ceiling is 24-inch reinforced concrete and is 3-hour fire rated.

Safety-Related Equipment

Division 1 and 2 cable trays are routed vertically through the zone.

Combustible Materials

Cable Insulation

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings. An ionization detection system and an automatic wet pipe sprinkler system is installed in this zone.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.5 of the Safe Shutdown Analysis.

3.4.6 Fire Area CB-6

3.4.6.1 Fire Zone CB-6a; Elevation 800' - 0" Main Control Room Complex

Description

This zone is the main control room complex and includes the computer room, Shift Manager's office and various offices. The floor area is 8360 ft^2.

A plan view of this fire zone is shown on Figure FP-14a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-14b. Safety-related cable trays are shown on cable tray Figure 12.

The floor is 23-inch reinforced concrete. The floor is 3-hour fire rated. The walls are 24-inch minimum reinforced concrete or 7-5/8 inch hollow concrete block. The control room complex in this zone is separated from adjacent fire areas on the west by 3-hour fire rated walls. The north exterior wall is 3-hour fire rated. The interior fire zone boundary walls are 1.9-hour fire rated. The ceiling is 24-inch reinforced concrete on metal decking with fireproofed structural steel. The ceiling is 3-hour fire rated.

The Clinton Power Station computer room is part of the Power Generation Control Complex (PGCC) designed by the General Electric Company. The design of the PGCC, including a fire hazards analysis of the PGCC, is addressed in GE's Topical Licensing Report NEDO-10466-A.

Conditioned air is supplied to this zone through either one of the safety related control room HVAC systems A or B (a mixture of hot and cold air depending on the load requirements) via common supply air ductwork. Air is then returned through the return air ductwork along with the return air from other areas supplied by this system by means of either one of this system's return air fans A or B. This zone is maintained at a slightly positive pressure relative to the adjacent areas resulting in the exfiltration of air.

Safety-Related Equipment

The safety-related equipment located within the fire zone are the control cabinets and cables of all divisions.

Combustible Materials

Cable Insulation
HVAC Materials
Plastic, Rubber, Cloth, Paper, Wood and PVC
Carpet

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers (in the zone) and hose stations (outside the zone offices) are provided for manual firefighting as shown on the referenced drawings.

A Halon fire suppression system, upgraded to provide automatic initiation by the thermal detectors, is also provided as part of the Power Generation Control Complex (PGCC) designed by General Electric Company.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.6 of the Safe Shutdown Analysis.

3.4.6.2 Fire Zone CB-6b; Elevation 800' - 0" Operations Admin Area

Description

This zone is what was to be the Unit 2 terminal cabinet and back-panel area of the control room and includes the TMI panel room. The floor area is 5631 ft^2.

A plan view of this fire zone is shown on Figure FP-14a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-14b. Safety-related cable trays are shown on cable tray Figure 12.

The floor is 23-inch reinforced concrete and has two 4-inch floor drains. The floor is 3-hour fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch minimum hollow concrete block. The control room complex in this zone is separated from adjacent fire zone CB-1h by 3-hour fire rated barriers. The north exterior wall is 3-hour fire rated. The interior fire zone boundary walls are 1.9-hour fire rated. The east exterior wall is not fire rated. The ceiling is 24-inch concrete on steel decking over fire protected structural steel and is 3-hour fire rated.

Safety-Related Equipment

The safety-related equipment located within this zone includes Division 1, 2, and 3 instrument and control cables, terminal cabinets and panels, Division 1 and 2 cable trays, and control room breathing air bottles.

Combustible Materials

Cable Insulation
HVAC Materials
Wood, Paper, Plastic, Rubber and Cloth
Carpet

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings. An ionization detection system, as well as a partial automatic wet pipe sprinkler system, is located in this zone.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.6 of the Safe Shutdown Analysis.

3.4.6.3 Fire Zone CB-6c; Elevation 800' - 0" Old Technical Support Center

Description

The zone is the control room old technical support center. The floor area is 1005 ft^2.

A plan view of this fire zone is shown on Figure FP-14a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-14b. No safety-related cable trays are located in this fire zone.

The floor is 23-inch reinforced concrete with no floor drains. The floor is 3-hour fire rated. The walls are 7-5/8-inch hollow concrete block and are 1.9-hour fire rated. The ceiling is 24-inch concrete on steel decking over fire protected structural steel. The ceiling is 3-hour fire rated.

Conditioned air is supplied to this zone through either one of the control room HVAC systems A or B (a mixture of hot and cold air depending on the load requirements) via common supply air ductwork. Air is then returned through the return air ductwork along with return air from other areas supplied by this system by means of either one of this system's return air fans A or B. This zone is maintained at a slightly positive pressure relative to the adjacent areas resulting in the exfiltration of air.

Safety-Related Equipment

None.

Combustible Materials

HVAC Materials
Plastic and Paper
Carpet

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system in the zone. Portable fire extinguishers (in the zone) and hose stations (outside the zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.6 of the Safe Shutdown Analysis.

3.4.6.4 Fire Zone CB-6d; Elevation 800’ - 0” Corridor and Miscellaneous Rooms

Description

This zone includes the locker room, various offices, storage rooms, kitchen, and corridor outside the control room complex. The floor area is 2538 ft^2. A plan view of this fire zone is shown on Figure FP-14a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-14b. Safety-related cable trays are shown on cable tray Figure 12.

The floor is 24-inch reinforced concrete, has eleven 4-inch floor drains and is 3-hour fire rated. The walls are 12-inch reinforced concrete or 7-5/8-inch hollow concrete block. The south, east,

and west walls are 3-hour fire rated. The north wall is 1.9-hour fire rated. Interior walls that separate the air locks, kitchen, and corridor between the kitchen and the womens toilet are 1.9-hour fire rated. The eight (8) doors of the four (4) air locks are 1.9-hour fire rated. The ceiling is 24-inch concrete on steel decking with fireproofed structural steel and is 3-hour fire rated.

Safety-Related Equipment

Division 1 and 2 vertical electrical cable risers are located in this zone.

Combustible Materials

Cable Insulation
HVAC Materials
Plastic, Rubber, Cloth, Paper and Wood
Carpet

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

An ionization detection system is provided for this zone. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.3.6 of the Safe Shutdown Analysis.

3.4.7 Fire Area CB-7; Elevations 702’ - 0” through 847’ - 0” West Stairwell and Personnel Access Walkway

Description

This area includes a stairwell tower and elevator shaft which is enclosed and partitioned by 1.9-hour fire rated walls, except at elevation 800 feet 0 inch and a corridor at elevation 801 feet 9 inches where the walls are 3-hour fire rated. In addition, this area includes a 400 ft^2 Personnel Access Walkway at elevation 828’-3” between the Control and Containment buildings where the walls, floor and ceiling are not fire rated. The floor areas are:

702' - 0"	150 ft^2
719' - 0"	101 ft^2
737' - 0"	69 ft^2
762' - 0"	54 ft^2
781' - 0"	300 ft^2
800' - 0"/801' - 9"	1090 ft^2
828' - 3"	735 ft^2
847' - 0"	307 ft^2

A plan view of this fire area is shown on Figures FP-8a through FP-15a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b through FP-15b. Safety-related cable trays are shown on cable tray Figures 11 and 12.

The walls are 12-inch minimum reinforced concrete or 7-5/8-inch hollow concrete blocks. On elevations 702 feet 0 inch and above, the stairwell tower enclosure includes the adjacent elevator enclosure, which is partitioned by a 1.9-hour fire wall. On elevation 800 feet 0 inch, the enclosure includes the corridor at elevation 801 feet 9 inch west of the main control room. The enclosure and corridor walls are 3-hour fire rated with air lock doors with 1.9-hour fire rating. The floor on elevation 702 feet 0 inch is 9-foot reinforced concrete. The walls, floor and ceiling for the Personnel Access Walkway at elevation 828'-3" between the Control and Containment buildings consists of insulated sheet metal, with a minimum 16 inches of concrete inside the uninsulated sheet metal for the last 14'-0" enclosing the personnel lock on Containment. The walls, floor and ceiling for this personnel lock are not fire rated. The ceiling at elevation 847 feet 0 inch is 24-inch concrete on steel decking. Neither the floor nor ceiling is fire rated except for the stairwell ceiling under the Control Building Elevator Machine Room which is 1.9-hour fire rated. The west wall in the Control Building Elevator Machine Room is 1.9-hour fire rated. The exterior walls and ceiling at elevation 847 feet 0 inch are not fire rated. The floor of the corridor west of the main control room is 18-inch minimum concrete and the ceiling is reinforced concrete. The corridor floor is 3-hour fire rated and the ceiling is not fire rated.

Safety-Related Equipment

This area at elevation 781'-0" and the corridor at elevation 801'-9" contains the NSPS solenoid power inverter/bypass switches A and B, Division 3 and 4 cable trays, and control room breathing air bottles.

Combustible Materials

Cable Insulation
Clothing, Rubber, Plastic and Paper
HVAC Material
Lubricants

Fire Load

The fire load for the fire zone is moderate.

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided at elevations 781, 800, and 801 for manual firefighting as shown on the referenced drawings. There is an ionization detection system located in the stairwell at elevations 781 and 800, and in the corridor at elevation 801 feet.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.3.7 of the Safe Shutdown Analysis.

DIESEL-GENERATOR BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
D-1	-	Division 3 Diesel-Generator Fuel Tank Room – elevations 712'-0", 719'-0"	E3.5-1	FP-8a FP-9a	FP-8b FP-9b	- -
D-2	-	Division 1 Diesel-Generator Fuel Tank Room – elevations 712'-0", 719'-0"	E3.5-2	FP-8a FP-9a	FP-8b FP-9b	- -
D-3	-	Division 2 Diesel-Generator Fuel Tank Room – elevations 712'-0", 719'-0"	E3.5-3	FP-8a FP-9a	FP-8b FP-9a	- -
D-4	D-4a	Division 3 Diesel-Generator Room - elevation 737'-0"	E3.5-4	FP-10a	FP-10b	9
	D-4b	Division 3 Diesel-Generator Day Tank Room – elevation 737'-0"	E3.5-5	FP-10a	FP-10b	-
D-5	D-5a	Division 1 Diesel-Generator Room - elevation 737'-0"	E3.5-6	FP-10a	FP-10b	9
	D-5b	Division 1 Diesel-Generator Day Tank Room – elevation 737'-0"	E3.5-7	FP-10a	FP-10b	-
D-6	D-6a	Division 2 Diesel-Generator Room - elevation 737'-0"	E3.5-8	FP-10a	FP-10b	9
	D-6b	Division 2 Diesel-Generator Day Tank Room – elevation 737'-0"	E3.5-9	FP-10a	FP-10b	-
D-7	-	Division 3 Diesel-Generator HVAC Room - elevation 762'-0"	E3.5-10	FP-12a	FP-12b	-
D-8	-	Division 1 Diesel-Generator HVAC Room - elevation 762'-0"	E3.5-11	FP-12a	FP-12b	-
D-9	-	Division 2 Diesel-Generator HVAC Room - elevation 762'-0"	E3.5-12	FP-12a	FP-12b	
D-10	-	General Access and HVAC Area - elevation 762'-0"	E3.5-12	FP-12a	FP-12b	10

3.5 DIESEL-GENERATOR BUILDING

3.5.1 Fire Area D-1 ; Elevations 712' - 0" & 719' - 0" Division 3 Diesel Generator Fuel Tank Room

Description

The area is the Division 3 diesel-generator oil storage tank room. The floor area is 1571 ft^2.

A plan view of this fire area is shown on Figures FP-8a and FP-9a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b and FP-9b. No safety-related cable trays are located in this fire area.

The floor is 36-inch minimum reinforced concrete with five 4-inch floor drains to a sump located in the area. The floor is not fire rated. The walls are 12-inch minimum reinforced concrete or 11-5/8-inch hollow concrete block. All walls except a portion of the south wall (which is not fire rated) are 3-hour fire rated. The ceiling is 20-inch minimum concrete. The ceiling is 3-hour fire rated. There is an open stair system up to elevation 719 foot 0 inch.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan that operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 3 diesel-generator oil storage tank, valve, and oil transfer pump are located in the area.

Combustible Materials

Fuel Oil
HVAC Materials

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection system is installed in this area. This area is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers (at elevation 719) and hose stations (at elevation 712) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.1 of the Safe Shutdown Analysis.

3.5.2 Fire Area D-2; Elevations 712' -0" & 719' - 0" Division 1 Diesel Generator Fuel Tank Room

Description

The area is the Division 1 diesel-generator oil storage tank room. The floor area is 1985 ft^2.

A plan view of this fire area is shown on Figures FP-8a and FP-9a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b and FP-9b. No safety-related cable trays are located in this fire area.

The floor is 9-foot minimum concrete with three 4-inch floor drains to a sump located within the area. The floor is not fire rated. The walls are 12-inch minimum reinforced concrete or 11-5/8-inch hollow concrete block. All walls except the south wall are 3-hour fire rated. The ceiling is 20-inch minimum reinforced concrete. The ceiling is 3-hour fire rated. There is an open stair system up to elevation 719 foot 0 inch.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan that operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 1 diesel-generator oil storage tank, oil transfer pump, fuel oil valve, and Division 1 instrumentation are located in the area.

Combustible Materials

Fuel Oil
HVAC Materials

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection system is installed in this area. This area is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers (at elevation 719) and hose stations (at elevation 712) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.2 of the Safe Shutdown Analysis.

3.5.3 Fire Area D-3; Elevations 712' - 0" & 719' ' - 0" Division 2 Diesel Generator Fuel Tank Room

Description

The area is the Division 2 diesel-generator oil storage tank room. The floor area is 1340 ft^2.

A plan view of this fire area is shown on Figures FP-8a and FP-9a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-8b and FP-9b. No safety-related cable trays are located in this fire area.

The floor is 9-foot minimum concrete with five 4-inch floor drains to a sump located within the zone. The floor is not fire rated. The walls are 12-inch minimum reinforced concrete or 11-5/8-inch hollow concrete block. All walls except the south wall are 3-hour fire rated. The ceiling is 20-inch minimum reinforced concrete. The ceiling is 3-hour fire rated. There is an open stair system up to elevation 719 foot 0 inch.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan that operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 2 diesel-generator oil storage tank, oil transfer and pump, fuel oil valve, and Division 2 instrumentation are located in the area.

Combustible Materials

Fuel Oil
HVAC Materials

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection is provided for this area. This area is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers (at elevation 719) and hose stations (at elevation 712) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.3 of the Safe Shutdown Analysis.

3.5.4 Fire Area D-4

3.5.4.1 Fire Zone D-4a; Elevation 737' - 0" Division 3 Diesel Generator Room

Description

The zone is the Division 3 diesel-generator room. The floor area is 2751 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. Safety-related cable trays are shown on cable tray Figure 9.

The floor is 20-inch minimum reinforced concrete with seven 4-inch drains and one 3-inch trench drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch minimum hollow concrete block. The walls are 3-hour fire rated except the interior walls around D-4b, which are 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated.

During normal station operating conditions, the non-safety-related diesel-generator ventilation makeup supply unit furnishes outside air, conditioned by cooling coils or tempered by heating coils, to this room. The air is then staged to the day tank and oil tank rooms.

When the diesel-generator operates, the safety-related diesel-generator Division 3 ventilation system operates. This system supplies air to this room at a minimum of 65 F by mixing outside air with return air. The air is not only staged to the day tank and oil tank rooms but also directly exhausted from this room.

When the carbon dioxide fire protection system in this room activates, all ventilation fans stop.

Safety-Related Equipment

Located within the zone are the following safety-related equipment: the Division 3 diesel-generator associated instrument and control panels and air start skid, Division 1 and 3 control panels, Division 3 heat exchanger valve, Division 3 diesel-generator start skid, and Division 3 cable trays. The post accident sampling cabinets are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Materials
Plastic, Rubber, Cloth and Paper
Fuel Oil

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

This zone is protected by an automatic carbon dioxide fire suppression system actuated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.4 of the Safe Shutdown Analysis.

3.5.4.2 Fire Zone D-4b; Elevation 737' - 0" Division 3 Diesel Generator Day Tank Room

Description

The zone is the Division 3 diesel-generator oil day tank room. The floor area is 158 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. No safety-related cable trays are located in this fire zone.

The floor is 20-inch minimum reinforced concrete with one 3-inch trench drain and one 2-inch box drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch hollow concrete block. The north and west walls are 1.9-hour fire rated; the south and east walls are 3-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated. There is a 12-inch high concrete curb at the door and walls.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan which operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 3 diesel-generator oil day tank and Division 3 instruments are located in the zone.

Combustible Materials

HVAC Materials
Fuel Oil

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection system is provided for this zone. This zone is protected by an automatic wet pipe suppression system. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.4 of the Safe Shutdown Analysis.

3.5.5 Fire Area D-5

3.5.5.1 Fire Zone D-5a; 737' - 0" Division 1 Diesel Generator Room

Description

The zone is the Division 1 diesel-generator room. The floor area is 3616 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. Safety-related cable trays are shown on cable tray Figure 9.

The floor is 20-inch minimum reinforced concrete with eight 4-inch drains and four 3-inch trench drains. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch minimum hollow concrete block. The walls are 3-hour fire rated, except the interior walls around D-5b which are 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated.

During normal station operating conditions, the non-safety related diesel-generator ventilation makeup supply unit furnishes outside air, conditioned by cooling coils or tempered by heating coils, to this room. The air is then staged to the day tank and oil tank rooms.

When the diesel-generator operates, the safety-related diesel-generator Division 1 ventilation system operates. This system supplies air to this room at a minimum of 70°F by mixing outside air with return air. The air is not only staged to the day tank and oil tank rooms, but also directly exhausted from this room.

When the carbon dioxide fire protection system in this room actuates, all ventilation fans stop.

Safety-Related Equipment

The following safety-related equipment are located within the fire zone: the Division 1 diesel-generator, associated instrument and control panels starting air skid, heat exchanger, oil cooler, expansion bank, cooling water pump and valve, Division 1 diesel-generator day tank room exhaust fan 1A, and Division 1 cable tray.

Combustible Materials

Lubricants
HVAC Materials
Cable Insulation
Fuel Oil
Cloth, Rubber, Plastic and Paper

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

This zone is protected by an automatic carbon dioxide fire suppression system actuated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.5 of the Safe Shutdown Analysis.

3.5.5.2 Fire Zone D-5b; Elevation 737' - 0" Division 1 Diesel Generator Day Tank Room

Description

The zone is the Division 1 diesel-generator oil day tank room. The floor area is 160 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. No safety-related cable trays are located in this fire zone.

The floor is 20-inch minimum reinforced concrete with one 3-inch trench drain and one 2-inch box drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch hollow concrete blocks. The walls are 1.9-hour fire rated, except the south and west walls which are 3-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated. There is a 12-inch high concrete curb at the door and walls.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan which operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 1 diesel-generator oil day tank, Division 1 instrument cable, and Division 1 diesel-generator fuel oil valve are located in the zone.

Combustible Materials

HVAC Materials
Fuel Oil

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection system is installed in this zone. This zone is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual fire fighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.5 of the Safe Shutdown Analysis.

3.5.6 Fire Area D-6

3.5.6.1 Fire Zone D-6a; Elevation 737' - 0" Division 2 Diesel Generator Room

Description

The zone is the Division 2 diesel-generator room. The floor area is 2491 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. Safety-related cable trays are shown on cable tray Figure 9.

The floor is 20-inch minimum reinforced concrete with seven 4-inch drains and three 3-inch trench drains. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch minimum hollow concrete block. The walls are 3-hour fire rated, except the interior walls around D-6b, which are 1.9-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated.

During normal station operating conditions, the non-safety-related diesel-generator ventilation makeup supply unit furnishes outside air, conditioned by cooling coils or tempered by heating coils, to this room. The air is then staged to the day tank and oil tank rooms.

When the diesel-generator operates, the safety-related diesel-generator Division 2 ventilation system operates. This system supplies air to this room at a minimum of 70°F by mixing outside air with return air. The air is not only staged to the day tank and oil tank rooms, but also directly exhausted from this room.

When the carbon dioxide fire protection system in this room activates, all ventilation fans stop.

Safety-Related Equipment

The following safety-related equipment are located within the fire zone: the Division 2 diesel-generator, associated instrument and control panels, starting air compressor skid, cooling water pump and valve, heat exchanger, oil cooler, expansion tank, Division 2 diesel-generator day tank room exhaust fan 1B, and Division 2 cable trays.

Combustible Materials

Lubricants
HVAC Materials
Cable Insulation
Plastic, Rubber, Cloth and Paper
Fuel Oil

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

This zone is protected by an automatic carbon dioxide fire suppression system actuated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.6 of the Safe Shutdown Analysis.

3.5.6.2 Fire Zone D-6b; Elevation 737' - 0" Division 2 Diesel Generator Day Tank Room

Description

The zone is the Division 2 diesel-generator oil day tank room. The floor area is 125 ft^2.

A plan view of this fire zone is shown on Figure FP-10a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-10b. No safety-related cable trays are located in this fire zone.

The floor is 20-inch reinforced concrete with one 3-inch trench drain and one 2-inch box drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete or 7-5/8-inch hollow concrete block. The walls are 1.9-hour fire rated except for the south and west walls which are 3-hour fire rated. The ceiling is 12-inch reinforced concrete and is 3-hour fire rated. There is a 12-inch high concrete curb at the door and walls.

Air is staged to this room from the diesel-generator room under all plant conditions. The air is exhausted from this room by a safety-related exhaust fan which operates under all plant conditions.

When the carbon dioxide fire protection system in the diesel-generator room actuates, all ventilation fans stop.

Safety-Related Equipment

The Division 2 diesel-generator oil day tank and Division 2 diesel-generator fuel oil valve are located in the zone.

Combustible Materials

HVAC Materials
Fuel Oil

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

An ionization fire detection system is installed in this zone. The zone is protected by an automatic wet sprinkler system. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.4.6 of the Safe Shutdown Analysis.

3.5.7 Fire Area D-7; Elevation 762' - 0" Division 3 Diesel Generator HVAC Room

Description

The area is the Division 3 diesel-generator ventilation fan room. The floor area is 1041 ft^2.

A plan view of this fire area is shown on Figure FP-12a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-12b. No safety-related cable trays are located in this fire area.

The floor is 12-inch minimum reinforced concrete with three 4-inch floor drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete. The walls are 3-hour rated except the south wall which is not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

The diesel-generator ventilation fan supplies outside air to the diesel-generator room, the day tank room, and the oil storage tank room. This vane axial fan operates automatically whenever the diesel-generator receives a start signal. The diesel-generator room ventilation system operates to maintain a controlled ambient temperature range in conformance with equipment temperature ratings and requirements for the modes of operation.

Safety-Related Equipment

The safety-related equipment located within the fire area are the Division 3 diesel-generator ventilation fan and panel and Division 2 power cables.

Combustible Materials

Lubricants
Cable Insulation

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire area for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.7 of the Safe Shutdown Analysis.

3.5.8 Fire Area D-8; Elevation 762' - 0" Division 1 Diesel Generator HVAC Room

Description

The area is the Division 1 diesel-generator ventilation fan room. The floor area is 1268 ft^2.

A plan view of this fire area is shown on Figure FP-12a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-12b. No safety-related cable trays are located in this fire area.

The floor is 12-inch minimum reinforced concrete with three 4-inch floor drain. The floor is 3-hour fire rated. The walls are 12-inch minimum reinforced concrete. The walls are 3-hour fire rated except the south wall which is not fire rated. The ceiling is 24-inch minimum reinforced concrete and is not fire rated.

The diesel-generator ventilation fan supplies outside air to the diesel-generator room, day tank room, and oil storage tank room.

This vane axial fan operates automatically whenever the diesel-generator receives a start signal. The diesel-generator room ventilation system operates to maintain a controlled ambient temperature range in conformance with equipment temperature ratings and requirements for the modes of operation.

Safety-Related Equipment

The safety-related equipment located within the fire area are the Division 1 diesel-generator ventilation fan and panel and Division 2 power cables.

Combustible Materials

Lubricants
HVAC Materials
Cable Insulation

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Thermal detectors are installed in the area of the Division 2 power cables. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.8 of the Safe Shutdown Analysis.

3.5.9 Fire Area D-9; Elevation 762' - 0" Division 2 Diesel Generator HVAC Room

Description

The area is the Division 2 diesel-generator ventilation fan room. The floor area is 856 ft^2.

A plan view of this fire area is shown on Figure FP-12a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-12b. No safety-related cable trays are located in this fire area.

The floor is 12-inch minimum reinforced concrete with three 4-inch floor drains. The floor is 3-hour fire rated. The walls are 12-inch minimum concrete. The walls are 3-hour fire rated except the south wall which is not fire rated. The ceiling is 24-inch minimum concrete and not fire rated.

The diesel-generator ventilation fan supplies outside air to the diesel-generator room, day tank room, and oil storage tank room. This vane axial fan operates automatically whenever the diesel-generator receives a start signal. The diesel-generator room ventilation system operates to maintain a controlled ambient temperature range in conformance with equipment temperature ratings and requirements for the modes of operation.

Safety-Related Equipment

The safety-related equipment located within the fire area are the Division 2 diesel-generator ventilation fan and panel and Division 2 power cables.

Combustible Materials

Lubricants
Cable Insulation
HVAC Materials
Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.9 of the Safe Shutdown Analysis.

3.5.10 Fire Area D-10; Elevation 762' - 0" General Access and HVAC Area

Description

This fire area is a general access area and an area containing heating, ventilating, and air-conditioning equipment for the diesel-generator building. There are also three areas (former

Unit 2 diesel-generator ventilation fan rooms) which are used for toolbox maintenance activities and houses the FLEX Diesel Generator. The floor area is 14,917 ft^2.

A plan view of this fire area is shown on Figure FP-12a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-12b. No safety-related cable trays are located in this fire area.

The floor is 12-inch minimum reinforced concrete and is 3-hour fire rated. There are thirty-one 4-inch floor drains. The walls are 12-inch minimum reinforced concrete. The north, west, and the walls common to Fire Areas D-7, D-8, and D-9, and Fire Zone CB-1f are 3-hour fire rated. The remaining walls are not fire rated. The diesel-generator exhaust stack walls are 12-inch concrete and are 3-hour fire rated. The ceiling is 24-inch reinforced concrete and is not fire rated.

Safety-Related Equipment

Building exhaust fans A and B are located in this area. Safety-related Divisions 1, 2, and 3 damper actuators are located in this area.

Combustible Materials

Lubricants
HVAC Materials
Cable Insulation
Plastic, Rubber, Cloth, Paper and Wood
Diesel Fuel for the FLEX Diesel Generator (contained in a double wall tank)

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

An ionization fire detection system is provided throughout the HVAC equipment area. An automatic wet pipe sprinkler system has been installed to cover 10 feet on both sides of Column 129 from Row AC to AF. An automatic wet pipe sprinkler system is installed to cover the Unit 2 DG Ventilation Room (containing the FLEX Diesel Generator) between Rows AG and AF and Columns 132 and 133.6. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.4.10 of the Safe Shutdown Analysis.

FUEL BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
F-1	F-1a	General Access Area - elevation 712'-0"	E3.6-1	FP-2a	FP-2b	2
	F-1b	HPCS Pump Room elevation 712'-0"	E3.6-2	FP-2a	FP-2b	2
	F-1c	Floor Drain Sump Room - elevation 712'-0"	E3.6-3	FP-2a	FP-2b	-
	F-1d	Floor Drain Pump Room - elevation 712'-0"	E3.6-3	FP-2a	FP-2b	-
	F-1e	Equipment Drain Tank Room - elevation 712'-0"	E3.6-4	FP-2a	FP-2b	-
	F-1f	Equipment Drain Pump Room - elevation 712'-0"	E3.6-5	FP-2a	FP-2b	-
	F-1g	Fuel Cask Area Pump Room - elevation 712'-0"	E3.6-6	FP-2a	FP-2b	-
	F-1h	Valve Room - elevation 712'-0"	E3.6-6	FP-2a	FP-2b	-
	F-1i	Fuel Pool Cooling Pump room - elevation 712'-0"	E3.6-7	FP-2a	FP-2b	-
	F-1j	Personnel Change Room - elevation 737'-0"	E3.6-8	FP-3a	FP-3b	-
	F-1k	Workshop and Storage Vault - elevation 737'-0"	E3.6-9	FP-3a	FP-3b	-
	F-1m	General Access Area - elevation 737'-0"	E3.6-10	FP-3a	FP-3b	3
	F-1n	Fuel Pool Heat Exchanger Room - elevation 737'-0"	E3.6-11	FP-3a	FP-3b	-
	F-1o	Radwaste Pipe Tunnel - elevation 737'-0"	E3.6-11	FP-3a	FP-3b	-
	F-1p	Fuel Pools and General Access - elevations 712'-0", 737'- 0", 755'-0", 781'-0"	E3.6-12	FP-2a FP-3a FP-4a FP-5a	FP-2b FP-3b FP-4b FP-5b	- - 4 5

3.6 FUEL BUILDING

3.6.1 Fire Area F-1

3.6.1.1 Fire Zone F-1a; Elevation 712' - 0" General Access Area

Description

The zone consists of the drywell chillers, drywell water chiller pumps, and the gamma scanner room. The floor area is 8640 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. Safety-related cable trays are shown on cable tray Figure 2.

The floor is 9-foot 8-inch minimum concrete with nineteen 4-inch floor drains. The floor is not fire rated. The walls are 24-inch minimum concrete. The walls adjacent to the containment building, service building, auxiliary building, and diesel-generator building are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. There are two stair systems in this zone: one enclosed stair with 1.9-hour fire rated walls and one open stair, both up to elevation 755 feet 0 inch.

Conditioned ventilation air is supplied to this zone through the fuel building HVAC system supply ductwork. A portion of the supplied air is staged unducted through backdraft dampers to various cubicles where it is exhausted through the fuel building HVAC system exhaust ductwork. The balance of the air is staged unducted through the stairs to elevation 737 feet general area (Fire Zone F-1m). Area coolers (supplied by the plant chilled water system) in this area will recirculated air within this zone.

Safety-Related Equipment

Division 1, 2, and 3 control panels, Division 2 cable trays, and Division 2 valves are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

An ionization fire detection system is provided for this zone. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.2 Fire Zone F-1b; Elevation 712' - 0" HPCS Pump Room

Description

The zone consists of the ECCS floor drain sump, HPCS water leg pump, HPCS pump, HPCS instrument panel, and two HPCS pump room fan-coil units. The floor area is 1722 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. Safety-related cable trays are shown on cable tray Figure 2.

The floor is 9-foot 8-inch minimum concrete with two 4-inch floor drains to a sump located within the zone. The floor is not fire rated. The walls are 24-inch minimum concrete. The containment wall, north wall, and west wall are 3-hour fire rated. The remaining walls are not rated. The ceiling is 12-inch minimum concrete with areas of removable concrete slabs. The ceiling is not fire rated.

This zone has two safety-related fan-coil units that recirculate air for room cooling. A small quantity of air from the adjacent fuel building general area (Zone F-1a) is infiltrated into this zone by exhausting air from the zone through the standby gas treatment system (SGTS) piping, which has an exhaust flow path to the fuel building HVAC exhaust system.

Safety-Related Equipment

HPCS water leg pump, HPCS pump, HPCS pump room fan-coil units, HPCS instrument panel, Division 3 cable trays, and Division 2 instrumentation are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone. Portable fire extinguishers (in the zone) and hose stations (in an adjacent fire zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.3 Fire Zone F-1c; Elevation 712' - 0" Floor Drain Sump Room

Description

The zone consists of the fuel building floor drain sump, fuel building floor drain tank, and the fuel building equipment drain sump. The floor area is 361 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete with one equipment drain sump and one floor drain sump in the zone. The floor is not fire rated. The walls are 24-inch minimum concrete or 27-5/8-inch solid concrete block. The containment wall is 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on the elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.4 Fire Zone F-1d; Elevation 712' 0" Floor Drain Pump Room

Description

The zone consists of the fuel building floor drain pumps. The floor area is 194 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone. The floor is 9-foot 8-inch minimum concrete and is not fire rated. The walls are 24-inch concrete or 15 5/8-inch minimum solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.5 Fire Zone F-1e; Elevation 712' - 0" Equipment Drain Tank Room

Description

The zone consists of the fuel building equipment drain tank. The floor area is 295 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete or 27-5/8-inch solid concrete block. The containment wall is a 3-hour fire rated wall. The remaining walls are not fire rated. The ceiling is 24-inch minimum concrete with an open hatch and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.6 Fire Zone F-1f; Elevation 712' - 0" Equipment Drain Pump Room

Description

The zone consists of the fuel building equipment drain pumps. The floor area is 168 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete and is not fire rated. The wall is 24-inch minimum concrete or 27 5/8-inch solid concrete blocks. The north wall and the containment building wall are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.7 Fire Zone F-1g; Elevation 712' - 0" Fuel Cask Area Pump Room

Description

The zone consists of fuel cask area pump. The floor area is 357 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete and is not fire rated. The wall is 24-inch minimum concrete or 19-5/8-inch solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.8 Fire Zone F-1h; Elevation 712' - 0" Valve Room

Description

The zone consists of a valve room. The floor area is 343 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch thick minimum concrete with one 4-inch floor drain discharging into a sump in fire area. The floor is not fire rated. The walls are 24-inch minimum concrete or 27-5/8-inch solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

A Division 1 valve is located in the zone.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.9 Fire Zone F-1i; Elevation 712' - 0" Fuel Pool Cooling Pump Room

Description

The zone consists of the fuel pool cooling and cleanup pump rooms. The floor area is 606 ft^2.

A plan view of this fire zone is shown on Figure FP-2a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-2b. No safety-related cable trays are located in this fire zone.

The floor is 9-foot 8-inch minimum concrete. The floor is not fire rated. The walls are 36-inch minimum concrete or 19-3/8-inch minimum solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork. Area coolers, supplied by the plant chilled water system, will recirculate air within this zone.

Safety-Related Equipment

Division 1 and 2 instruments, Division 1 and 2 area coolers, and Division 1 and 2 fuel pool cooling and cleanup pumps are located in this area.

Combustible Materials

Lubricants
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.10 Fire Zone F-1j; Elevation 737' - 0" Personnel Change Room

Description

The zone consists of the personnel change room. The floor area is 243 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP 3b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum concrete and is not fire rated. There are two 4-inch floor drains. The walls are 24-inch minimum concrete or 23-5/8-inch minimum solid concrete block. The walls are not fire rated. The ceiling is 18-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation (Zone F-1m) through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.11 Fire Zone F-1k; Elevation 737' - 0" Workshop and Storage Vault

Description

The zone consists of a workshop and storage vault. The floor area is 917 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone. The floor is 12-inch minimum concrete with hatchways. The floor is not fire rated. There is one 4-inch floor drain. The walls are 12-inch minimum concrete or 11-5/8-inch minimum solid concrete block. The containment wall is a 3-hour fire rated wall. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated.

Air is staged unducted from the general area on this elevation (Zone F-1m) through a backdraft damper and then exhausted through the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Plastic, Cloth, and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.12 Fire Zone F-1m; Elevation 737' - 0" General Access Area

Description

The zone consists of the general area of this elevation of the fuel building and contains the RCIC storage tank instrument panels, the fuel building motor control centers, and the railroad track. The floor area is 12057 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. Safety-related cable trays are shown on cable tray Figure 3.

The floor is 12-inch minimum concrete with twenty eight 4-inch floor drains, removable concrete slabs, and an open stair. The floor is not fire rated. The walls are 15-inch minimum concrete or 11-5/8-inch minimum solid concrete block. Walls adjacent to the auxiliary building, containment building, diesel-generator building, and service building are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete with areas of removable concrete slabs and steel grating. The ceiling is not fire rated. There are two stair systems in this zone: one enclosed stair with 1.9-hour fire rated walls and one open stair both going up to elevation 755 feet 0 inch and down to elevation 712 feet 0 inch.

Conditioned ventilation air is supplied to this zone through the fuel building HVAC system supply ductwork. Supply air is mixed with staged air from elevation 712 feet in the fuel building (Zone F-1a). Most of the mixed air is staged unducted through the stairs to elevation 755 feet general area (Zone F-1p). The balance of the air is staged unducted through backdraft dampers to various cubicles, where it is exhausted through the fuel building HVAC system exhaust ductwork. Area coolers (supplied by the plant chilled water system) in this area will recirculate air within this zone.

Safety-Related Equipment

Division 1 control panel, RCIC storage tank instrument panels, Division 1 and 2 valves, and Division 1, 2, and 3 cable trays are located in the zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

An ionization fire detection system is installed in this zone. The railroad bay is protected by an automatic preaction sprinkler system activated by thermal detectors and linear thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.13 Fire Zone F-1n; Elevation 737' - 0" Fuel Pool Heat Exchanger Room

Description

The zone consists of the fuel pool heat exchangers A and B. The net floor area is 1456 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum concrete and is not fire rated. There is one 4-inch floor drain. The walls are 24-inch minimum concrete or 23-5/8-inch minimum solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated.

Most air is staged unducted from the general area on this elevation (Zone F-1m) through backdraft dampers and then exhausted through the fuel building HVAC system exhaust ductwork. Some air is staged unducted from the pipe tunnel (Zone F-1o) elevation 737 feet.

Safety-Related Equipment

Fuel pool heat exchanger A, fuel pool heat exchanger B, and Division 1 and 2 valves are located in this zone.

Combustible Materials

Lubricants
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Sub section 3.5.1 of the Safe Shutdown Analysis.

3.6.1.14 Fire Zone F-1o; Elevation 737' - 0" Radwaste Pipe Tunnel

Description

The zone consists of the pipe tunnel. The floor area is 878 ft^2.

A plan view of this fire zone is shown on Figure FP-3a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-3b. No safety-related cable trays are located in this fire zone.

The floor is 12-inch concrete and is not fire rated. There are eight 4-inch floor drains. The walls are 12-inch minimum reinforced concrete. The walls adjacent to the diesel and auxiliary buildings are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated.

Conditioned ventilation air is supplied to this zone through the fuel building HVAC system supply ductwork. The exhaust air is staged unducted through a backdraft damper to the fuel pool heat exchanger B area (Zone F-1n) where it is exhausted by the fuel building HVAC system exhaust ductwork.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

3.6.1.15 Fire Zone F-1p; Elevations 712’ -0”, 737’ - 0” and 755’ - 0” & 781’ - 0” Fuel Pools and General Access

Description

This zone consists of the lower portions of the spent fuel storage pool, the fuel transfer pool, and the fuel cask storage pool. This zone is analyzed in two parts. Since the 712’ 0” elevation is under water it is not considered. First, the 737’ - 0” elevation, the fuel cask washdown area; and second, 755’ - 0” & 781’ - 0” elevations. The floor areas are 375 ft^2 and 22,571 ft^2 respectively.

A plan view of this fire zone is shown on Figures FP-2a through FP-5a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-2b through FP-5a. Safety-related cable trays are located in this fire zone as shown on cable tray Figures 4 and 5.

At elevation 712’ - 0” the floor is 9-foot 8-inch reinforced concrete and is not fire rated. The walls are 36 inch minimum reinforced concrete and are not fire rated. There are eight 2-1/2-inch leak detection drains in this zone.

At elevation 737’ - 0” the floor is 36-inch reinforced concrete and is not fire rated. There are three 4-inch floor drains. The walls are 24-inch minimum reinforced concrete and are not fire rated. Nearly all of this portion of the zone is open to elevation 755 feet 0 inch. Small ceiling areas are of 1/4-inch aluminum checkered plate which are not fire rated.

At elevation 755' - 0" the floor is 12-inch minimum concrete with twenty 4-inch floor drains and four 8-inch by 8-inch by 4-inch box drains, removable concrete slabs, open hatches, steel grating, and open stairwell. The floor is not fire rated. The walls are 24-inch minimum concrete. The walls adjacent to the containment building, auxiliary building, service building, and diesel generator building are 3-hour fire rated. An enclosed stairwell has 1.9-hour fire rated walls. A portion of the ceiling at elevation 781 feet 0 inch is 8-inch concrete on steel decking. The remainder is the fuel building roof.

At elevation 781' - 0" the floor is 8-inch concrete on steel decking and is not fire rated. There are eight 4-inch floor drains. The walls are 24-inch reinforced concrete. The north wall including containment is 3-hour fire rated and the walls adjacent to the auxiliary building, service building, and diesel generator building are 3-hour fire rated; the remaining walls are not fire rated. The ceiling is the fuel building roof and is 24-inch minimum concrete on steel decking and not fire rated.

Conditioned ventilation air is supplied to this zone by the fuel building HVAC system supply ductwork. Supply air is mixed with outside air and with staged air from elevation 737 feet (Zone F-1m) in the fuel building. Mixed air is then exhausted by the fuel building HVAC exhaust system ductwork through pickup points around the periphery of the fuel cask washdown, fuel cask storage, fuel transfer, and spent fuel storage pools.

Safety-Related Equipment

Division 2 and 3, SRM/IRM pre-amp panels, electrical containment penetrations, Division 1, 2, and 3 cable trays, Division 1 and 2 power cable in conduit, fuel pool cooling and cleanup surge tanks, Division 1 and 2 valves, Division 1 and 2 area coolers and heaters, and Division 2 dampers are located in this zone.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone at elevation 737' is **low.**

The fire load for the fire zone at elevations 755' and 781' is **low.**

Fire Detection and Protection

There is an ionization fire detection system located in the zone at elevations 755 and 781. Portable fire extinguishers and hose stations are provided at elevations 755 and 781 for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

CIRCULATING WATER SCREEN HOUSE
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
M-1	-	Division 1 Shutdown Service Water Pump Room – elevation 699'-0"	E3.7-1	FP-25a	FP-25b	-
M-2	M-2a	Division 3 Shutdown Service Water Pump Room – elevation 699'-0"	E3.7-2	FP-25a	FP-25b	-
	M-2b	Division 2 Shutdown Service Water Pump Room – elevation 699'-0"	E3.7-2	FP-25a	FP-25b	-
	M-2c	Screen House and Tunnel - elevations 657'-6", 678'-0", 699'-0"	E3.7-3	FP-25a FP-26a	FP-25b	- 22
M-3	-	Fire Pump B Room – elevation 699'-0"	E3.7-4	FP-25a	FP-25b	-
M-4	-	Fire Pump A Room – elevation 699'-0"	E3.7-5	FP-25a	FP-25b	-

3.7 CIRCULATING WATER SCREEN HOUSE

3.7.1 Fire Area M-1; Elevation 699' - 0" Division 1 Shutdown Service Water Pump Room

Description

The area consists of a room containing the Division 1 shutdown service water (SSW) pump, SSW strainer, SSW cooling unit, and the SSW motor control center. The floor area is 893 ft^2.

A plan view of this fire area is shown on Figure FP-25a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire area.

The floor is 24-inch minimum reinforced concrete with two 4-inch floor drains to a sump located within the area. The floor is 3-hour fire rated. The walls are 24-inch reinforced concrete and are 3-hour rated except for the north wall which is not fire rated. The ceiling is 18-inch minimum concrete with removable concrete slabs and is 3-hour fire rated.

Air is supplied to this room unducted from the circulating water screenhouse HVAC system and is returned unducted to the circulating water screenhouse HVAC system. Air is recirculated in this room by a safety-related cooler.

Safety-Related Equipment

The SSW motor control center 1A, SSW pump 1A room fan-coil unit, SSW pump 1A, SSW pump strainer 1A, and Division 1 valves are located in this area.

Combustible Materials

Lubricants
Cable Insulation

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in the area. Portable fire extinguishers (in the zone) and hose stations (in an adjacent zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.6.1 of the Safe Shutdown Analysis.

3.7.2 Fire Area M-2

3.7.2.1 Fire Zone M-2a; Elevation 699' - 0" Division 3 Shutdown Service Water Pump Room

Description

The zone consists of a room containing the Division 3 shutdown service water (SSW) pump, SSW strainer, SSW cooling unit, and the SSW motor control center. The floor area is 598 ft^2.

A plan view of this fire zone is shown on Figure FP-25a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum reinforced concrete with two 4-inch floor drains to a sump located within the zone. The floor is not fire rated. The walls are 24-inch reinforced concrete and are not fire rated. The ceiling is 18-inch reinforced concrete with removable concrete slabs and is not fire rated.

Air is supplied to this room ducted from the circulating water screen house HVAC system and is returned unducted to the circulating water screen house HVAC system. Air is recirculated in this room by a safety-related cooler.

Safety-Related Equipment

The SSW motor control center 1C, SSW pump 1C room fan-coil unit, SSW pump 1C, SSW strainer 1C, and Division 3 valves are located in this zone.

Combustible Materials

Lubricants
Cable Insulation

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in this zone. Portable fire extinguishers (in the zone) and hose stations (in an adjacent zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.6.1 of the Safe Shutdown Analysis.

3.7.2.2 Fire Zone M-2b; Elevation 699' - 0" Division 2 Shutdown Service Water Pump Room

Description

The zone consists of a room containing the Division 2 shutdown service water (SSW) pump, SSW strainer, SSW cooling unit, and the SSW motor control center. The floor area is 893 ft^2.

A plan view of this fire zone is shown on Figure FP-25a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire zone.

The floor is 30-inch minimum reinforced concrete with two 4-inch floor drains to a sump located within the zone. The floor is not fire rated. The walls are 24-inch reinforced concrete and are not fire rated, except for the north wall which is 3-hour fire rated. The ceiling is 18-inch reinforced concrete with removable concrete slabs and is not fire rated.

Air is supplied to this room ducted from the circulating water screen house HVAC system and is returned unducted to the circulating water screen house HVAC system. Air is recirculated in this room by a safety-related cooler.

Safety-Related Equipment

The SSW motor control center 1B, SSW pump 1B room fan-coil unit, SSW pump 1B, SSW strainer 1B, and Division 2 valves are located in this zone.

Combustible Materials

Lubricants
Cable Insulation

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

There is an ionization fire detection system in this zone. Portable fire extinguishers (in the zone) and hose stations (in an adjacent zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.6.2 of the Safe Shutdown Analysis.

3.7.2.3 Fire Zone M-2c ; Elevations 657’ - 0”, 678’ - 0”, & 699’ - 0” Screen House and Tunnel

Description

This zone consists of the circulating water screen house and the below-grade pipe tunnel. The total floor area is 15,177 ft^2.

A plan view of this fire zone is shown on Figure FP-25a and FP-26a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum concrete with nine 4-inch floor drains. The floor is not fire rated, except for the floor of Fire Zone M-1 which is 3-hour fire rated. Walls are 24-inch reinforced concrete, 11-5/8-inch hollow concrete block, or 3-1/2-inch insulated metal siding. Walls adjacent to Fire Areas M-4 and M-1 are 3-hour fire rated. Other walls are unrated.

Ceilings are 3-1/2-inch precast concrete channel slabs, 8-inch concrete on steel decking or 18-inch reinforced concrete. The ceilings are not fire rated, except for the ceiling under Fire Zones M-4 which is 3-hour fire rated.

This zone contains service water pumps, strainers, traveling screens, chlorinators, and related service water system components. Air is supplied to the general area from the circulating water screen house ventilation supply fans and outside air towers. Air is exhausted from this area through roof exhaust fans. The pipe tunnel is supplied air-ducted from the circulating water screen house ventilation system. Air is returned unducted to the general screen house area.

Safety-Related Equipment

Cables and valves are located below elevation 699 feet.

Combustible Materials

Lubricants
Cable Insulation
HVAC Materials
Paper, Plastic and PVC

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.6.2 of the Safe Shutdown Analysis.

3.7.3 Fire Area M-3; Elevation 699' - 0" Fire Pump B Room

Description

The area consists of a room containing the diesel-driven fire pump B, diesel fire pump day tank, and the fire pump control panel. The floor area is 440 ft^2.

A plan view of this fire area is shown on Figure FP-25a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire area.

The floor is 24-inch reinforced concrete with two 4-inch floor drains. Below is the pump intake bay. The floor is not fire rated. The walls consist of 11-5/8-inch hollow concrete block and are not fire rated. The ceiling is 8-inch concrete on steel decking and is not fire rated.

Air is supplied to this room through outside air louvers. Air is exhausted from this room through roof exhaust fans.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Fuel Oil
Cable Insulation
Rubber

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

There is an automatic wet pipe fire suppression system located in the area. Portable fire extinguishers (inside the zone) and hose stations (outside the zone door) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.6.3 of the Safe Shutdown Analysis.

3.7.4 Fire Area M-4; Elevation 699' - 0" Fire Pump A Room

Description

The area consists of a room containing the diesel-driven fire pump A, diesel fire pump day tank, and the fire pump control panel. The floor area is 404 ft^2.

A plan view of this fire area is shown on Figure FP-25a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-25b. No safety-related cable trays are located in this fire area.

The floor is 24-inch reinforced concrete with two 4-inch floor drains. The floor is 3-hour fire rated. The walls are 24-inch reinforced concrete or 11-5/8-inch hollow concrete block. The walls are 3-hour fire rated, except for the exterior wall which is not fire rated. The ceiling is 8-inch concrete on steel decking with fireproofed structural steel and is 3-hour fire rated.

Air is supplied to this room by the circulating water screen house HVAC system outside air louver. It leaves the room through a roof exhaust fan.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Fuel Oil
Cable Insulation

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

There is an automatic wet pipe fire suppression system located in the area. Portable fire extinguishers and hose stations are provided in an adjacent zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

In the event of a fire in this fire area, safe shutdown can be achieved as discussed in Subsection 3.6.4 of the Safe Shutdown Analysis.

RADWASTE BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
R-1	R-1a	Makeup Demineralizer System Room - elevation 702'-0"	E3.8-1	FP-16a FP-17a	FP-16b FP-17b	14 15
	R-1b	Charcoal Adsorber Vault - elevation 702'-0"	E3.8-2	FP-16a FP-17a	FP-16b FP-17b	- -
	R-1c	General Access Area - elevations 702'-0", 720'-6"	E3.8-3	FP-16a FP-17a	FP-16b FP-17b	14 15
	R-1d	Radwaste Floor Drain Collector Tank Room elevation 702'-0"	E3.8-4	FP-16a FP-17a	FP-16b FP-17b	- -
	R-1e	Phase Separator Tank Room - elevation 702'-0"	E3.8-5	FP-16a FP-17a	FP-16b FP-17b	- -
	R-1f	Waste Tank Room - elevation 702'-0"	E3.8-6	FP-16a FP-17a	FP-16b FP-17b	- -
	R-1g	Chemical Waste Tank Room - elevation 702'-0"	E3.8-7	FP-16a FP-17a	FP-16b FP-17b	- -
	R-1h	General Access Area - elevation 720-6"	E3.8-7	FP-17a	FP-17b	15
	R-1i	General Access Area and Shops - elevation 737'-0"	E3.8-9	FP-18a	FP-18b	16
	R-1j	Dry Active Waste Baler Room - elevation 737'-0"	E3.8-10	FP-18a	FP-18b	-
	R-1k	Clean and Dirty Oil Storage Room - elevation 737'-0"	E3.8-11	FP-18a	FP-18b	-
	R-1m	Weld Shop and Storeroom - elevation 737'-0"	E3.8-12	FP-18a	FP-18b	16
	R-1n	Paint and Oil Storage Room - elevation 737'-0"	E3.8-13	FP-18a	FP-18b	-
	R-1o	Radwaste Operation Center - elevation 737'-0"	E3.8-14	FP-18a	FP-18b	16

RADWASTE BUILDING, Cont.
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
	R-1p	General Access and Shops - elevation 762'-0" and 783'-6" Elevator Hoistway	E3.8-15	FP-19a	FP-19b	17
	R-1q	Miscellaneous Equipment Area - elevation 762'-0" and 784'-6" Elevator Hoistway	E3.8-16	FP-19a	FP-19b	17
	R-1r	Contractor Staging Area - elevation 762'-0"	E3.8-17	FP-19a	FP-19b	17
	R-1s	Radwaste HVAC Room - elevation 762'-0"	E3.8-18	FP-19a	FP-19b	17
	R-1t	General Access Corridor - elevation 781'-0" and 800'-0" Elevator Access Corridor and Airlocks from Control to Cable Tunnel Roof, and 821'-6" Elevator Motor Room and Instrument Room	E3.8-19	FP-13a	FP-13b	-
	R-1u	Calibration Lab – elevation 781'-0"	E3.8-20	FP-13a	FP-13b	-

3.8 RADWASTE BUILDING

3.8.1 Fire Area R-1

3.8.1.1 Fire Zone R-1a; Elevation 702' - 0" Makeup Demineralizer System Room

Description

This zone contains the makeup demineralizer system, with a floor area of 6688 ft^2.

Compressed hydrogen gas lines pass through this fire zone to supply the main generator hydrogen system and the hydrogen water chemistry system.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

Floors are 108-inch reinforced concrete and are not fire rated. Walls are 36-inch concrete or 11-5/8-inch hollow concrete block and are not fire rated. The ceiling at elevation 737 is 24-inch minimum concrete and is not fire rated, except for the portion below Zone R-1k which is 3-hour fire rated. The ceiling at elevation 725 is 16-inch minimum concrete and is not fire rated. There are thirteen 4-inch floor drains and five 12 x 12-inch box drains. A portion of the zone extends vertically from elevation 702 feet 0 inch to elevation 737 feet 0 inch.

Safety-Related Equipment

None.

Radiological Materials

The demineralizers process Clinton Lake water to create clean makeup water. As such, there is no radiological material present.

Combustible Materials

Lubricants
Cable Insulation
Paper, Plastic, Cloth and Rubber
Hydrogen (compressed)

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.2 Fire Zone R-1b; Elevation 702' - 0" Charcoal Adsorber Vault

Description

This fire zone houses the charcoal adsorber units. The floor area is 616 ft^2.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch concrete and is not fire rated. The walls are 36-inch concrete or 11-5/8-inch minimum solid concrete block, and are 3-hour fire rated. The ceiling is 40-inch concrete, and is not fire rated. There is one 4-inch floor drain in this zone. The zone extends vertically from elevation 702 feet 0 inch to elevation 737 feet 0 inch.

Safety-Related Equipment

None.

Radiological Materials

The charcoal adsorbers process radioactive off-gases and contain radioactive material.

No credible hypothetical fires in the off-gas system could produce doses to the public above those calculated using very conservative assumptions. The charcoal vessel volume is 5 feet in diameter and 20 feet long. However, in the event a fire should occur, a very conservative analysis would assume a release of 100% of the iodine from a fire in the first charcoal bed (this also conservatively assumes the loss of function of the subsequent charcoal beds), and 100% of the noble gas source term passes through the station exhaust stack. The off-gas system charcoal beds are in steel vessels. However, in the unlikely event that the system integrity is not maintained, the results of this analysis would not be changed, since the off-gas charcoal beds are located in the off-gas filter building, and the off-gas filter building HVAC would exhaust through the station exhaust stack. Assuming a fumigation accident meteorology consistent with Regulatory Guide 1.3, the resultant calculated radiological consequences at the exclusion area boundary are 320 mrem thyroid and 65 mrem whole body. These postulated doses are well within 10 CFR 100 limits.

Combustible Materials

Charcoal
Cable Insulation
Cloth

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant with respect to either safe shutdown capability or radiological consequences.

3.8.1.3 Fire Zone R-1c; Elevation 702' - 0" & 720' - 6" General Access Area

Description

This zone consists of the main access corridor and general access for this level, off-gas refrigeration units, spent resin tank, spent resin decant and sludge pumps, phase separator decant and sludge pumps, ultrasonic resin cleaner tank and pumps, laundry sample tanks, evaporator condenser drain tank pumps, laundry collection pumps, floor drain collector pumps and surge pumps, chemical waste surge pumps, waste collection pumps, waste processing pumps, FP F/D sludge tanks, waste sludge tanks, waste sludge pumps, and FP F/D sludge and decant pumps and dry active waste storage. This zone includes elevations 702 feet 0 inch and 720' - 6" and has a total floor area of 37,047 ft^2.

Compressed hydrogen gas lines pass through this fire zone to supply the main generator hydrogen system and the hydrogen water chemistry system.

A plan view of this fire zone is shown on Figures FP-16a and FP-17a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-16b and FP-17b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch concrete and is not fire rated. At 719'-2" there is a steel grating around the deaerator tank. Walls are 28-inch minimum reinforced concrete, 11-5/8-inch minimum solid concrete block, or 11-5/8-inch minimum hollow concrete block. The south wall adjoining the control building is 3-hour fire rated. The walls adjoining Fire Zone R-1b and its entrance are 3-hour fire rated. The two stairway enclosures and elevator hoistways are 1.9-hour fire rated. There are four open and two enclosed stairways in the zone. The ceiling at elevation 720 feet 6 inch is 16-inch minimum concrete and is not fire rated. The ceiling at elevation 737 feet 0 inch is 24-inch minimum concrete and is not fire rated. The ceiling over the entrance to Fire Zone R-1b and the ceiling over the radwaste pump and tank are 3-hour fire rated. There are eighty-nine 4-inch floor drains, and three 12- x 12-inch, eleven 8- x 8-inch, and three 6- x 6-inch box drains located in this zone.

Safety-Related Equipment

None.

Radiological Materials

The spent resin storage tank contains a water slurry of organic resin. Radioactive corrosion products and fission products are on the resin. This liquid is also processed by the spent resin decant and sludge pumps. The equipment drain tank contains water that is considered low-level radioactive waste. The liquid processed by the phase separator pumps is low-level radioactive waste. The resin sludge processed by the ultrasonic resin cleaner collector pump and tank is a low-level radioactive waste. The laundry drain water is considered low-level radioactive waste. The evaporative condenser drain tank pumps handle liquid that contains some radioactive contaminants. All floor drain collector tanks contain radioactive low-level liquid

waste. The chemical waste surge, collection, and processing pumps process low-level radioactive liquid. All remaining sludge tanks and pumps process low-level radioactive waste.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
HVAC Material
Flammable Liquids
Paper, Plastic, Rubber and Cloth
Dry Active Waste (PVC, Rubber and Paper)
Hydrogen (compressed)

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided at elevation 702'-0" for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.4 Fire Zone R-1d; Elevation 702' - 0" Radwaste Floor Drain Collector Tank Room

Description

This zone consists of the radwaste floor drain collector tanks, floor drain surge tanks, and floor drain evaporator feed tanks. There is a floor area of 2761 ft^2.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch concrete and is not fire rated. The walls are 36-inch concrete or 11-5/8-inch minimum solid concrete block and are not fire rated. The ceiling is 40-inch concrete and is not fire rated. There are five 4-inch floor drains and two 8- x 8-inch box drains for the zone.

Safety-Related Equipment

None.

Radiological Materials

All floor drain collector tanks contain low-level radioactive liquid waste.

Combustible Materials

Charcoal
HVAC Material
Cloth, Rubber and Plastic

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.5 Fire Zone R-1e; Elevation 702' - 0" Phase Separator Tank Room

Description

This zone contains the two phase separators. There is a floor area of 776 ft^2.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch concrete, and is not fire rated. Walls are 39-inch concrete or 15-5/8-inch minimum solid concrete block and are not fire rated. The ceiling is 40-inch minimum concrete and is not fire rated. There are three 4-inch floor drains.

Safety-Related Equipment

None.

Radiological Materials

The separators contain radioactive sludge.

Combustible Materials

Charcoal
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.6 Fire Zone R-1f; Elevation 702' - 0" Waste Tank Room

Description

This zone contains waste collector and waste surge tanks. There is a floor area of 2702 ft^2.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch reinforced concrete and is not fire rated. The walls are 19-5/8-inch minimum solid concrete block and are not fire rated. The ceiling is 40-inch minimum reinforced concrete and is not fire rated. There are six 4-inch floor drains. The zone extends from elevation 702 feet 0 inch to elevation 737 feet 0 inch.

Safety-Related Equipment

None.

Radiological Materials

The waste surge tanks and waste collector tanks contain low-level radioactive liquid waste.

Combustible Materials

Charcoal
HVAC Materials
Plastic, Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.7 Fire Zone R-1g; Elevation 702' - 0" Chemical Waste Tank Room

Description

This zone contains chemical waste collection and processing tanks. There is a floor area of 2262 ft^2.

A plan view of this fire zone is shown on Figure FP-16a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-16b. No safety-related cable trays are located in this fire zone.

The floor is 108-inch concrete and is not fire rated. The walls are 23-5/8-inch minimum solid concrete block and are not fire rated. The ceiling is 40-inch concrete and is not fire rated. There are six 4-inch floor drains. The zone extends from elevation 702 feet 0 inch to elevation 737 feet 0 inch.

Safety-Related Equipment

None.

Radiological Materials

The chemical waste collection tanks contain low-level radioactive liquid waste.

Combustible Materials

Charcoal
HVAC Material
Plastic, Rubber and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.8 Fire Zone R-1h; Elevation 720' - 6" General Access Area

Description

This zone consists of the general access on elevation 720 feet 6 inch, the cable tray and piping tunnel, the off-gas recirculating units, evaporator condenser drain tanks, ultrasonic resin cleaning, receiving, and storage tanks, radwaste demineralizer tanks, waste demineralizer

regenerator skid, holding pumps, waste filter assembly rack, F/P filter demineralizer precoat skid, fuel pool cleanup holdup pump, F/P filter demineralizer and waste filters, valve aisle access areas, and area coolers and dry active waste storage. The floor area is 28,708 ft^2.

A plan view of this fire zone is shown on Figure FP-17a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-17b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch minimum concrete and is not fire rated, except for the area over the entrance to Zone R-1b and the stairwell/elevator area, which includes the demineralizer waste, that are 3-hour fire rated. The walls are 36-inch minimum solid concrete, 19-5/8-inch minimum solid concrete block, or 11-5/8-inch minimum hollow concrete block. The stairway and demineralizer waste enclosure walls and internal elevator hoistway walls are 1.9-hour fire rated. The wall adjacent to Zone R-1b and the south wall adjacent to the auxiliary building are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 24-inch minimum reinforced concrete and is not fire rated, except for the portion below Zone R-1k which is 3-hour fire rated, and the ceiling over the demineralizer waste which is 2-hour fire rated. There are seventy-nine 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Radiological Materials

Radioactive off-gas is processed by the off-gas recirculating units. Some slight radioactivity may be present in the evaporator condenser drain tanks if the steam used in the evaporators is extraction steam. The resin to be ultrasonically cleaned is contaminated with radionuclides. The demineralizers process a liquid stream of low-level radioactive waste. The liquid stream processed by the holding pumps is considered slightly radioactive. The ion exchange filter media in the demineralizer vessels are contaminated with radioactive waste, and the waste filters have radioactive suspended particulate adhering to the filter media from the liquid stream flowing through the filter. Liquid low-level radioactive waste is flowing through the valves and piping in the valve aisle.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
HVAC Materials
Plastic, Rubber and Cloth
Dry Active Waste (PVC, Rubber and Paper)

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.9 Fire Zone R-1i; Elevation 737' - 0" General Access Area and Shops

Description

This zone consists of the general access corridor, Radiation Protection offices, floor drain evaporator heater, floor drain evaporator recirculation pump and bottom-out pumps, cold tool room, hot tool room, decontamination room, machine shop, storage area, security ballistics resistant enclosure (BRE) 9, chemical waste evaporator heater, chemical waste evaporator recirculation pump and bottom-out pumps. The floor area is 40,955 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum reinforced concrete and is not fire rated. The walls are 12-inch minimum concrete, 11-5/8-inch minimum solid concrete block, 7-5/8-inch minimum hollow concrete block, 24-inch minimum removable concrete block, or 5/8-inch gypsum board. The south wall is 3-hour fire rated. The wall separating this zone from Zone R-1n and Zone R-1k are 3-hour fire rated. The two stairway enclosure walls and the three elevator hoistway enclosure are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 16-inch minimum reinforced concrete and is not fire rated. There are fifty-eight 4-inch floor drains, six 8- x 8-inch box drains, one 12- x 12-inch box drain, and one 4-inch shower floor drain.

Safety-Related Equipment

None.

Radiological Materials

The floor drain evaporator heater recirculation pump, bottom-out pumps, and chemical waste evaporator handle liquid low-level radioactive waste. Contaminated tools and exhaust filters will be in the hot tool room. Minimal contamination from the decontamination of personnel is expected in the decontamination room.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Plastic, Rubber, Cloth, Paper, Wood and Propane

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.10 Fire Zone R-1j; Elevation 737' - 0" Dry Active Waste Baler Room

Description

This zone consists of the dry active waste baler, radwaste drum filling station, cement silo, metering pumps, drum conveyor, drum and high integrity container shielded storage area, and truck bay. The floor area is 6074 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is 40-inch minimum concrete and is not fire rated. The walls are 12-inch minimum concrete, 23-5/8-inch minimum solid concrete block, or 11-5/8-inch hollow concrete block. The walls are not fire rated, except for the wall adjoining Zone R-1k which is 3-hour fire rated. The ceiling is 16-inch minimum reinforced concrete and is not fire rated. There are fourteen 4-inch floor drains, five 6-inch floor drains, seventeen 4-inch trench drains, and twelve 2-inch drains.

Safety-Related Equipment

None.

Radiological Materials

The dry active waste baler and storage area contains contaminated paper, rags, protective clothing, boots, gloves, etc.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
HVAC Material
Plastic, Rubber and Cloth
High Integrity Containers (Dewatered Waste)

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

The baler room is protected by an automatic preaction sprinkler system activated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.11 Fire Zone R-1k; Elevation 737' - 0" Clean and Dirty Oil Storage Room

Description

This zone consists of clean and dirty oil storage tanks, two oil transfer pumps, two oil purifiers, and two area coolers. The fire zone has a floor area of 1191 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is a minimum of 24-inch reinforced concrete and is 3-hour fire rated. Walls are 11-5/8-inch hollow concrete block. All four zone walls are 3-hour rated. The ceiling is 16-inch minimum reinforced concrete and is 3-hour fire rated. There are four 6-inch floor drains located in the zone.

Safety-Related Equipment

None.

Radiological Materials

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Wood, Paper and Plastic

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

The clean and dirty oil tank room is protected by an automatic preaction sprinkler system activated by thermal detectors. Portable fire extinguishers (in the zone) and hose stations

(outside the zone door) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.12 Fire Zone R-1m; Elevation 737' - 0" Weld Shop and Storeroom

Description

This zone consists of the weld shop, storeroom, and storeroom office. The floor area is 6755 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is 24-inch minimum concrete and is not fire rated. The walls are 11-5/8-inch hollow concrete block. Except for the walls adjacent to the clean and dirty oil storage room (Zone R-1k) which are 3-hour fire rated, the walls are not fire rated. There are seventeen 40-inch floor drains and one 12-inch by 12-inch box drain located in the zone. The ceiling is 16-inch concrete and is not fire rated.

Safety-Related Equipment

None.

Radiological Materials

The weld shop may occasionally contain some contaminated equipment.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
HVAC Material
Flammable Liquids
Wood, Paper, Plastic, Rubber, Cloth and PVC

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

The weld shop and storeroom area are protected by automatic preaction sprinkler systems activated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.13 Fire Zone R-1n; Elevation 737' - 0" Paint and Oil Storage Room

Description

This zone consists of the paint and oil storage room. The floor area is 886 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is 9-inch concrete and is not fire rated. The walls are 24-inch concrete or 11-5/8-inch hollow concrete block. The zone wall adjacent to Zone R-1i is 3-hour fire rated. All other walls are not fire rated. The ceiling is 8-inch flexicore and is not fire rated. There are two 12-inch-wide drain trenches with four 4-inch trench drains.

Safety-Related Equipment

None.

Radiological Materials

None.

Combustible Materials

Lubricants
Solvent
Acetone
Methanol
Propane
Gasoline
Fuel Oil
Flammable Liquids

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

The paint and oil storage room is protected by an automatic sprinkler system. Portable fire extinguishers and hose stations are provided in an adjacent fire zone for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.14 Fire Zone R-1o; Elevation 737' - 0: Radwaste Operation Center

Description

This zone consists of the radwaste filter control panel, demineralizer control panel, solid and liquid radwaste control panel, and radwaste evaporator control panels. The fire zone has a floor area of 2728 ft^2.

A plan view of this fire zone is shown on Figure FP-18a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-18b. No safety-related cable trays are located in this fire zone.

The floor is a minimum of 23-inch concrete and is not fire rated. Walls are 24-inch concrete, 35-5/8-inch solid concrete block, or 11-5/8-inch hollow concrete block. The north walls adjacent to Zone R-1k is 3-hour fire rated. The wall adjacent to the stairwell and elevator enclosure is 1.9-hour fire rated. The remaining zone walls are not fire rated. The ceiling is 16-inch minimum concrete and is not fire rated. There is one 4-inch floor drain located in the zone.

Safety-Related Equipment

None.

Radiological Materials

None.

Combustible Materials

Cable Insulation
HVAC Material
Wood, Paper and Plastic
Carpet

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

There is an ionization fire detection system throughout this zone. Portable fire extinguishers (inside the zone) and hose stations (in adjacent fire zones) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.15 Fire Zone R-1p; Elevation 762' - 0" General Access and Shops and Elevation 783'-6" Elevator Hoistway

Description

This zone consists of the maintenance file room, electrical shop, control and instrumentation shop, maintenance offices, general access area for the maintenance shops and offices, and general access area for the 762-foot level of the radwaste building. The floor area is 10,002 ft^2.

A plan view of this fire zone is shown on Figure FP-19a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-19b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch concrete and is not fire rated. The walls are 24-inch minimum concrete, 11-5/8-inch minimum solid concrete block, 3-5/8-inch hollow concrete block, or 5/8-inch gypsum board. The ceiling is 12-inch minimum concrete and is not fire rated. The south wall of the zone separating the zone from the control building is 3-hour fire rated. The elevator hoistway walls along the east wall near the northeast corner are 1.9-hour fire rated, and the ceiling is not fire rated. The enclosed stairway walls and the wall adjacent to the elevator hoistway are 1.9-hour fire rated. The remaining walls are not fire rated. There are ten 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Radiological Materials

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Paper, Plastic and Cloth

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.16 Fire Zone R-1q; Elevation 762'-0" Miscellaneous Equipment Area and 784'-6" Elevator Hoistways

Description

This zone consists of the concentrate waste tanks and pumps, condenser vacuum pump, floor drain evaporator monitoring tank and pumps, chemical waste evaporator monitoring tank and pump, floor drain evaporator instrument panel, excess water tanks, excess water pumps, waste sample pumps, waste sample tanks, instrument air dryers, service air compressors, chemical waste evaporator, separator, condenser, and subcooler, floor drain evaporators, separators, condensers, and subcoolers. The floor area is 17,574 ft^2.

A plan view of this fire zone is shown on Figure FP-19a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-19b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete, 15-5/8-inch solid concrete block, or 11-5/8-inch hollow concrete block. The stairway enclosures and two elevator hoistways are 1.9-hour fire rated and the remaining walls are not fire rated. The ceiling is 12-inch minimum reinforced concrete or 6-inch concrete on steel decking. The ceiling is not fire rated. There are forty-six 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Radiological Materials

Concentrated liquid low-level radioactive waste is held in the concentrate storage tanks. The concentrate pumps handle a concentrated liquid stream of low-level radioactive waste. The floor drain evaporator monitoring tank and pumps, chemical waste evaporator monitoring tank and pump, water tanks and pumps, and waste sample tanks and pumps handle clean water that is purified from liquid radwaste. There may be some residual radioactive contaminants.

Combustible Materials

Lubricants
Cable Insulation
Charcoal
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.17 Fire Zone R-1r; Elevation 762' - 0" Contractor Staging Area

Description

This zone consists of the 480-volt substations, motor control center, area coolers, and the contractor staging area and offices at elevation 762 feet 0 inch and the storeroom area at elevation 759 feet 0 inch. The floor area is 19,875 ft^2.

A plan view of this fire zone is shown on Figure FP-19a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-19b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete, 15-5/8-inch minimum solid concrete block, or 11-5/8-inch hollow concrete block. The walls are not fire rated, except for the wall adjacent to the elevator hoistway which is 1.9-hour fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. There are twenty-seven 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Paper, Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

There is an ionization fire detection system provided above the 480 volt substations. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.18 Fire Zone R-1s; Elevation 762' - 0" Radwaste HVAC Room

Description

This zone contains the supply air units, vent panel, motor control center, HVAC instrument panel, area coolers, vent supply air handling unit, and vent exhaust. The zone has a floor area of 8937 ft^2.

A plan view of this fire zone is shown on Figure FP-19a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-19b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch minimum concrete and is not fire rated, except for the portion above Zone

R-1k which is 3-hour fire rated. The walls are 24-inch concrete or 11-5/8-inch hollow concrete block. The walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. There are sixteen 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Rubber, Plastic and Cloth

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.19 Fire Zone R-1t; Elevation 781'-0" General Access Corridor, 800'-0" Elevator Access Corridor and Airlocks from Control to Cable Tunnel Roof, and 821'-6" Elevator Motor Room

Description

This zone on the 781-foot elevation is a general access corridor. This zone on the 800'-0" elevation is an elevator access corridor and the two airlocks from the Control building to the Cable Tunnel Roof (ceiling of the 781-foot elevation general access corridor). The zone has a floor area of 4800 ft^2.

A plan view of this fire zone is shown on Figure FP-13a and FP-14a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b and FP-14b. No safety-related cable trays are located in this fire zone.

The floor for the elevation 781'-0" General Access Corridor is 16-inch concrete, and is not fire rated. The walls are 24-inch minimum concrete or 11 5/8-inch hollow concrete block. The south and west walls are 3-hour fire rated. The block wall adjacent to the elevator enclosure is 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 18-inch minimum concrete which is not fire rated. There are seven 4-inch floor drains in the zone.

The floor for the 800'-0" Elevator Access Corridor and Airlocks from Control building to Cable Tunnel Roof is 18-inch minimum concrete (floor is the same as the ceiling for 781'-0" General Access Corridor), and is not fire rated. The walls are 24-inch minimum concrete. The south and west walls are 3-hour fire rated. The concrete on the north and east side of the elevator enclosure is 3-hour fire rated. The remaining walls for the airlocks from Control Building to Cable Tunnel Roof are 3-hour fire rated. The ceiling is 12-inch minimum concrete on the room of the elevator corridor which is not fire rated. The roof of the airlocks from Control to the Cable Tunnel Roof are 18-inch minimum concrete. There are no floor drains in the Elevator Access Corridor and/or Airlocks from Control building to Cable Tunnel Roof, although the nearby Cable Tunnel Roof contains 5 floor drains.

The floor for the 821'-6" Elevator Motor room is 12-inch minimum. The walls are 24-inch minimum concrete and are 3-hour fire rated. The ceiling is 12-inch minimum concrete which is not fire rated. There are no floor drains in the room.

Safety-Related Equipment

None.

Radiological Materials

The I&C storage and maintenance area located within this zone may contain contaminated equipment.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Wood, Paper, Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

Two hose stations and two fire extinguishers are provided in the zone for manual firefighting.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.8.1.20 Fire Zone R-1u; Elevation 781' - 0" Calibration Lab

Description

This fire zone consists of the calibration lab on the 781-foot elevation level and has an area of 2742 ft^2. A plan view of this fire zone is shown on Figure FP-13a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-13b. No safety-related cable trays are located in this fire zone.

The floor is 16-inch concrete and is not fire rated. The walls are 24-inch concrete, 7-5/8-inch hollow concrete block, or 3-1/2-inch insulated fill metal siding and are not fire rated. The ceiling is built-up roofing on 2-inch rigid insulation over steel decking which is not fire rated. There are five 4-inch floor drains.

Safety-Related Equipment

None.

Radiological Materials

None.

Combustible Materials

HVAC Material
Flammable Liquids
Wood, Paper, Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

Fire extinguishers are provided in the zone for manual firefighting.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

TURBINE BUILDING
FIRE AREA/ZONE INDEX

Fire Area	Fire Zone	Area Description	Page Number	Zone Drawing	Barrier Drawing	Cable Tray Drawing
T-1	T-1a	General Access Area - elevation 712'-0"	E3.9-1	FP-20a	FP-20b	18
	T-1b	Condensate Booster Pump Room - elevation 712'-0"	E3.9-2	FP-20a	FP-20b	-
	T-1c	Condensate Pump Room - elevation 709'-0"	E3.9-2	FP-20a	FP-20b	-
	T-1d	Condenser Pit - elevation 712'-0"	E3.9-3	FP-20a	FP-20b	-
	T-1e	Heater Bay and Tunnel - elevations 737'-0", 762'-0", 781'-0"	E3.9-4	FP-21a FP-22a FP-23a	FP-21b FP-22b FP-23b	19 20 21
	T-1f	General Access Area - elevation 737'-0"	E3.9-5	FP-21a	FP-21b	19
	T-1g	Heater Bays - elevation 762'-0", 781'-0"	E3.9-6	FP-22a FP-23a	FP-22b FP-23b	20 21
	T-1h	General Access and Equipment - elevation 762'-0", 785'-0"	E3.9-7	FP-22a FP-23a	FP-22b FP-23b	20 21
	T-1i	Turbine Oil Reservoir Room - elevation 762'-0", 781'-0"	E3.9-8	FP-22a FP-23a	FP-22b FP-23b	- 21
	T-1j	Steam Jet Air Ejector Rooms - elevation 781'-0"	E3.9-9	FP-23a	FP-23b	-
	T-1k	General Access Area (West) - elevation 781'-0"	E3.9-9	FP-23a	FP-23b	21
	T-1m	Turbine Deck - elevation 800'-0" and elevation 819'-10" Elevator Room	E3.9-10	FP-24a	FP-24b	-
	T-1n	Hydrogen Analyzer Room - elevation 800'0"	E3.9-11	FP-24a	FP-24b	-

3.9 TURBINE BUILDING

3.9.1 Fire Area T-1

3.9.1.1 Fire Zone T-1a; Elevation 712' - 0" General Access Area

Description

Fire Zone T-1a consists of the general access area, floor drain pump and tank rooms, condensate polisher tank rooms, LCLC pumps, LCLC tank, cation and anion regenerator tanks, and acid, and caustic reclaim tanks - all at elevation 712 feet 0 inch. The floor area is 33,214 ft^2.

Compressed hydrogen gas lines pass through this fire zone to supply the main generator hydrogen system and the hydrogen water chemistry system. Compressed oxygen bottles are located in this fire zone.

A plan view of this fire zone is shown on Figure FP-20a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-20b. No safety-related cable trays are located in this fire zone.

The floor is 96-inch minimum concrete and is not fire rated. The walls are either 19 5/8-inch minimum solid concrete block, 24-inch minimum concrete, or 3 1/8-inch removable sound attenuation panel. The south wall adjacent to the auxiliary building is 11 5/8-inch minimum hollow concrete block and is 3-hour fire rated. The remaining walls are not fire rated. There are removable19 5/8-inch minimum solid concrete blocks in the floor drain pump and tank rooms and also each condensate polisher tank room. The ceilings are 12-inch minimum concrete and are not fire rated. There are two open and two 1.9-hour fire rated enclosed stairways and one 1.9-hour fire rated enclosed elevator in this zone. There are a total of seventy-eight 4-inch floor drains in this zone.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Wood, Paper, Plastic, Cloth and Rubber
Hydrogen (compressed)
Oxygen (compressed)

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.2 Fire Zone T-1b; Elevation 712' - 0" Condensate Booster Pump Room

Description

Fire Zone T-1b consists of the condensate booster pump room at elevation 712 feet 0 inch. The floor area is 3633 ft^2.

A plan view of this fire zone is shown on Figure FP-20a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-20b. No safety-related cable trays are located in this fire zone.

The floor is 96-inch minimum concrete and is not fire rated. The walls are 11 5/8-inch concrete block and are not fire rated. The ceiling is 22-inch minimum concrete and is not fire rated. There are eight 4-inch floor drains located in this zone.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (inside the zone) and hose stations (outside the zone door) are provided for manual firefighting as shown on the reference drawings.

Design-Basis Fire

The existing fire hazards are not significant enough to present a problem due to the breaching of the radioactive systems and building constraints allowing a release of radioactive material to the environment in excess of 10 CFR 100 limits.

3.9.1.3 Fire Zone T-1c; Elevation 709' - 0" Condensate Pump Room

Description

Fire Zone T-1c consists of the condensate pump room at elevation 709 feet 0 inch. The floor area is 2295 ft^2.

A plan view of this fire zone is shown on Figure FP-20a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-20b. No safety-related cable trays are located in this fire zone.

The floor is 96-inch minimum concrete and is not fire rated. The walls are either 40-inch minimum concrete or 19-5/8-inch minimum concrete block. The walls are not rated. There are

also three sections of the walls that contain a metal siding type of 3-1/8-inch sound attenuation panels that are not fire rated. The ceiling is 48-inch minimum concrete and is not fire rated. This zone contains three 4-inch floor drains.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers (inside the zone) and hose stations (outside the zone doors) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.4 Fire Zone T-1d; Elevation 712' - 0" Condenser Pit

Description

Fire Zone T-1d consists of the bottom portion of the condenser unit at elevation 712 feet 0 inch. The floor area is 7408 ft^2.

A plan view of this fire zone is shown on Figure FP-20a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-20b. No safety-related cable trays are located in this fire zone.

The floor is 96-inch minimum concrete and is not fire rated. The walls are either 40-inch minimum concrete or 43-5/8-inch minimum concrete block and are not fire rated. There is no ceiling for this zone as it is open to elevation 737 feet 0 inch. This zone contains five 4-inch floor drains.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Cable Insulation
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

The condenser tube pull pit and associated areas are protected by a sidewall automatic preaction sprinkler system activated by thermal detectors. Portable fire extinguishers (in the zone) and hose stations (in an adjacent zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.5 Fire Zone T-1e; Elevations 737' - 0" 762' - 0", 781'-0" Heater Bay and Tunnel

Description

This zone consists of the LP heaters, HP heaters, cooler area, and the upper portions of the condenser unit at 737' - 0", and the main steam tunnel at 762' - 0". These two parts are combined for analysis and have a total floor area of 18,163 ft^2.

A plan view of this fire zone is shown on Figures FP-21a, FP-22a and FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figures FP-21b, FP-22b and FP-23b. No safety-related cable trays are located in this fire zone.

At 737' - 0" the floor is 20-inch minimum concrete and is not fire rated. The walls are either 40-inch minimum concrete or 43-5/8-inch minimum solid concrete block. The walls have 56-inch minimum removable solid concrete blocks. The walls are not fire rated. The ceiling of the heater area is 14-inch minimum concrete and is not fire rated. The steam tunnel portion of the zone is open through elevation 781 feet 0 inch. This zone has one open stairway and thirty-nine 4-inch floor drains.

At 762'-0" the floor is 60-inch concrete and is not fire rated. The walls are 56-inch concrete or metal siding and are not fire rated, except for the wall adjoining Zone T-1i through elevation 781 which is 3-hour fire rated. The ceiling at elevation 762'-0" is 60-inch concrete and is not fire rated. There are two 4-inch floor drains in the zone.

Safety – Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for the safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Lubricants
Cable Insulation
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

The area beneath the turbine-generator where oil could spread from a pipe break is protected by an automatic wet pipe sprinkler system. An 8-inch concrete curb is provided along column N between Rows 110 and 114 to isolate potential turbine oil spills within the sprinkler protected area. Hose stations are provided in the zone for elevation 737'-0" and in adjacent zones for other elevations for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.6 Fire Zone T-1f; Elevation 737' - 0" General Access Area

Description

This zone consists of the general access area at elevation 737 feet 0 inch. The floor area is 19,653 ft^2.

A compressed hydrogen gas line passes through this fire zone to supply the main generator hydrogen system.

A plan view of this fire zone is shown on Figure FP-21a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-21b. No safety-related cable trays are located in this fire zone.

The floor is 20-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete. The north exterior wall, the south wall adjacent to the auxiliary building, and the west exterior wall from Column Line J to S (adjacent to the transformers) are 3-hour fire rated. The remaining portion of the west wall and all of the east wall adjacent to the Radwaste Building are not fire rated. The ceiling is 12-inch minimum concrete with areas of 1-1/2-inch steel grating and is not fire rated. There are two open and two enclosed 1.9-hour fire rated stairways, one 1.9-hour fire rated enclosed elevator, and fifty-five 4-inch floor drains in this zone.

Safety-Related Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Wood, Paper, Plastic, Cloth, and Rubber
Hydrogen (compressed)

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

The R.R. bay floor area at elevation 737 feet 0 inch is protected by an automatic preaction sprinkler system activated by thermal detectors. Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.7 Fire Zone T-1g; Elevation 762' - 0" and 781'-0" Heater Bays

Description

The zone on elevation 762 feet 0 inch consists of the LP heaters and main steam stop and control valves. The floor area is 23,343 ft^2.

A plan view of this fire zone is shown on Figure FP-22a and FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-22b and FP-23b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete and is not fire rated. The walls are 48-inch minimum concrete and are not rated except for the wall adjacent to Zone T-1i which is 3-hour fire rated. The ceiling is 14-inch minimum concrete and is not fire rated. At elevation 754 feet 0 inch, the ceiling is 1-1/2-inch steel grating, which is not fire rated. The majority of the zone is open up to elevation 800 feet 0 inch. There are twenty-seven 4-inch floor drains in this zone.

Safety-Related Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Lubricants
Cable Insulation
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

The area beneath the turbine-generator where oil could spread from a pipe break is protected by an automatic wet pipe sprinkler system. Portable fire extinguishers (in an adjacent zone) and hose stations (in the zone) are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.8 Fire Zone T-1h; Elevations 762' - 0" & 785' - 0" General Access and Equipment

Description

This zone consists of the turbine auxiliaries hydrogen seal oil unit, motor-driven RX feed pump, and area coolers. The floor area is 22,774 ft^2.

A compressed hydrogen gas line passes through this fire zone to supply the main generator hydrogen system.

A plan view of this fire zone is shown on Figure FP-22a and FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-22b and FP-23b. No safety-related cable trays are located in this fire zone.

The floor is a minimum 12-inch concrete and is not fire rated. The walls are a minimum 24-inch reinforced concrete, 3-5/8-inch minimum hollow concrete block, and 16-inch minimum solid removable concrete block. The north exterior wall, the south wall adjacent to the auxiliary building, the west exterior wall from Column Line J through S, and the walls adjacent to Zone T-1i are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated.

The majority of the zone is open up to elevation 800 feet 0 inch. There are two open and two enclosed stairways in this zone. There are fifty 4-inch floor drains in the zone. The stairwell enclosures on the north and east walls and the elevator enclosure on the north wall are 1.9-hour fire rated.

Safety-Related Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Spare Battery Cells
Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Paper, Plastic, Cloth, and Rubber
Hydrogen (compressed)

Fire Load

The fire load for the fire zone is **moderate.**

Fire Detection and Protection

The hydrogen seal oil unit is protected by an automatic deluge system activated by thermal detectors. The oil pipe line for the turbine-driven reactor feed pump is protected by a manual preaction sprinkler system. An automatic wet pipe sprinkler system is provided in the motor-driven reactor feedwater pump room. Two 8-inch concrete curbs are provided in the area near

the hydrogen seal oil unit to isolate potential turbine oil spills within the area easily accessible for manual fire suppression. An automatic wet pipe sprinkler system is provided in the mezzanine area at elevations 777'-0" and 783'-0". Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.9 Fire Zone T-1i; Elevation 762' - 0" and 781' - 0" Turbine Oil Reservoir Room

Description

The turbine oil reservoir is located in this zone, which has a floor area of 855 ft^2.

A plan view of this fire zone is shown on Figure FP-22a and FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-22b and FP-23b. No safety-related cable trays are located in this fire zone.

The floor is 60-inch concrete at elevation 766 feet 6 inches and is not fire rated. The walls are 56-inch concrete and 11-5/8-inch hollow concrete block. All walls are 3-hour fire-rated. The zone is open through elevation 781'-0" and the ceiling is 16-inch concrete at elevation 800 feet 0 inch and is not fire rated. There are two 4-inch floor drains in this area.

Safety-Related Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Lubricants
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **high.**

Fire Detection and Protection

The turbine oil reservoir tank room is protected by an automatic wet pipe sprinkler system. A hose station is provided outside the zone door at elevation 762'-0" for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.10 Fire Zone T-1j; Elevation 781' - 0" Steam Jet Air Ejector Rooms

Description

This zone consists of the steam jet air ejectors, cooler condensers, catalytic recombiners, regenerator, desiccant dryer, steam seal evaporator and area cooler, and two steam packing exhausters, all at elevation 781 feet 0 inch. The floor area is 6284 ft^2.

A plan view of this fire zone is shown on Figure FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-23b. No safety-related cable trays are located in this fire zone.

The floor is 14-inch minimum concrete and is not fire rated. The walls are either 24-inch minimum concrete, 43-5/8-inch minimum solid concrete block or 11-5/8-inch hollow concrete block. Some walls have removable solid concrete blocks. A partial wall extending to elevation 791 feet 0 inch separates the catalytic recombiner and the cooler condenser. No walls in this zone are fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. There are twenty 4-inch floor drains in the zone.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
HVAC Material
Plastic, Cloth and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

The zone is protected by a partial automatic wet pipe sprinkler system. Portable fire extinguishers and hose stations are provided outside the zone door for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.11 Fire Zone T-1k; Elevation 781' - 0" General Access Area (West)

Description

This zone consists of a general access area. The floor area is 4397 ft^2.

A plan view of this fire zone is shown on Figure FP-23a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-23b. No safety-related cable trays are located in this fire zone.

The floor is 12-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete, 43-5/8-inch solid concrete block, 11-5/8-inch hollow concrete block, and 64-inch solid removable concrete block. The south walls, the north wall, and the west wall from Column Line J to S are 3-hour fire rated, and the elevator enclosure walls are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling at elevation 800 feet 0 inch is 12-inch minimum concrete and 1-1/2-inch steel grating. The ceiling is not fire rated. There are seventeen 4-inch floor drains in this zone. This zone is open to Zone T-1h.

Safety-Related Equipment

None.

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Plastic, Cloth, and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.12 Fire Zone T-1m; Elevation 800'-0" Turbine Deck and Elevation 819'-10" Elevator Room

Description

Fire Zone T-1m consists of the turbine deck and surrounding operating level, the turbine-driven reactor feed pumps, RFPT control panel, and reactor feed pump instrument panel, all at elevation 800 feet 0 inch. The floor area is 39,792 ft^2. In addition, this fire zone includes the Elevator room and stairwell landing, elevation 819'-10". The floor area of this elevator room and stairwell landing is 743 ft^2.

A compressed hydrogen gas line passes through this fire zone to supply the main generator hydrogen system.

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A plan view of this fire zone is shown on Figure FP-24a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-24b. No safety-related cable trays are located in this fire zone.

The floor of the 800'-0" Turbine elevation is 12-inch minimum concrete and 1-1/2-inch steel grating and is not fire rated. The walls are either 18-inch minimum concrete, 23-5/8-inch solid concrete block, 11-5/8-inch hollow concrete block, or 3-1/2-inch metal siding. The walls of two stairwell enclosures and one elevator enclosure are 1.9-hour fire rated. No other walls are fire rated. The roof is steel decking and is not fire rated. There are forty-one 4-inch floor drains.

Automatic heat vents are provided on the roof of this zone.

The floor area of this elevator room and stairwell landing is 6-inch minimum concrete and is not fire rated. The east and south walls of the elevator enclosure are 1.9-hour fire rated. No other walls are fire rated. The roof is steel decking and is not fire rated.

Safety-Related Equipment

Class 1E electrical cables (in conduits), as well as instrumentation devices, are located in this zone. These cables and devices are not essential for safe shutdown of the plant (see Subsection 3.1.2.11).

Combustible Materials

Lubricants
Cable Insulation
HVAC Material
Flammable Liquids
Wood, Paper, Plastic, Cloth, and Rubber
Hydrogen (compressed)

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided for manual firefighting as shown on the referenced drawings. The main generator exciter is protected by a CO_2 system which is activated by a thermal detector. An automatic preaction sprinkler system is provided in the area of the turbine generator bearings and underskirt. Two automatic deluge sprinkler systems are provided in the two turbine-driven reactor feedwater pump rooms. The three sprinkler systems are activated by thermal detectors.

Design-Basis Fire

No safe shutdown equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

3.9.1.13 Fire Zone T-1n; Elevation 800' - 0" Hydrogen Analyzer Room

Description

Fire Zone T-1n consists of hydrogen analyzers and a preheat air ejector with a floor area of 338 ft^2.

A plan view of this fire zone is shown on Figure FP-24a. Rated barriers, area detection, suppression systems, and major plant equipment are shown on Figure FP-24b. No safety-related cable trays are located in this fire zone.The floor is 12-inch concrete and is not fire rated. The walls are 18-inch minimum concrete and are not fire rated. The roof is 12-inch concrete and is not fire rated. There are three 4-inch floor drains

Safety-Related Equipment

None.

Combustible Materials

Cable Insulation
HVAC Material
Plastic, Cloth, and Rubber

Fire Load

The fire load for the fire zone is **low.**

Fire Detection and Protection

Portable fire extinguishers and hose stations are provided outside the zone door for manual firefighting as shown on the referenced drawings.

Design-Basis Fire

No safety-related equipment is present in this zone. Therefore, a fire in this zone will not affect safe shutdown.

4.0 COMPLIANCE WITH BTP APCSB 9.5-1, APPENDIX A, PLANTS UNDER CONSTRUCTION AND OPERATING PLANTS

A. OVERALL REQUIREMENTS OF NUCLEAR PLANT FIRE PROTECTION PROGRAM	APPLICANT'S POSITION
1. Personnel Responsibility for the overall fire protection program should be assigned to a designated person in the upper level of management. This person should retain ultimate responsibility even though formulation and assurance of program implementation is delegated. Such delegation of authority should be to staff personnel prepared by training and experience in fire protection and nuclear plant safety to provide a balanced approach in directing the fire protection programs for nuclear power plants. The qualification requirements for the fire protection engineer or consultant who will assist in the design and selection of equipment, inspect and test the completed physical aspects of the system, develop the fire protection program, and assist in the fire-fighting training for the operating plant should be stated. Subsequently, the FSAR should discuss the training and the updating provisions such as fire drills provided for maintaining the competence of the station fire-fighting and operating crew, including personnel responsible for maintaining and inspecting the fire protection equipment.	1. Comply: A comprehensive fire protection program has been developed to train, organize, and guide personnel as an effective fire protection team. Responsibilities, organization, and personnel qualifications have been adequately provided for and documented in plant training and administrative procedures, and records. The fire protection system design is a coordinated effort between the Applicant and his consultants. Comprehensive documentation of the system and plant design and coordination are maintained and are retrievable for evaluation. The USAR discusses the training and provisions for maintaining the competence of the station fire-fighting and operating crew, including personnel responsible for maintaining and inspecting the fire protection equipment.
The fire protection staff should be responsible for: a. Coordination of building layout and systems design with fire area requirements, including consideration of potential hazards associated with postulated design basis fires, b. Design and maintenance of fire detection, suppression, and extinguishing systems, c. Fire prevention activities,	Comply: The building layout was coordinated between the applicant's engineering staff and his consultants with identification and consideration of fire hazards dictating portions of the design. A fire protection staff was established and its responsibilities include A.1 b, c, and d.

d. Training and manual fire-fighting activities of plant personnel and the fire brigade.

(NOTE: NFPA 6 - Recommendations for Organization of Industrial Fire Loss Prevention contains useful guidance for organization and operation of the entire fire loss prevention program.)

2. Design Bases

The overall fire protection program should be based upon evaluation of potential fire hazards throughout the plant and the effect of postulated design basis fires relative to maintaining ability to perform safety shutdown functions and minimize radioactive releases to the environment.

2. Comply:

The overall fire protection program is based upon a fire hazards analysis, as documented in the Fire Protection Evaluation Report (FPER); the ability to withstand a design-basis fire and shut down the plant safely, as documented in the Safe Shutdown Analysis (SSA); and the minimization of the release of radioactive material to the environment, as documented in the FPER.

The FPER identifies and quantifies combustibles throughout the plant and provides details related to fire barriers, as well as fire detection and suppression.

The SSA documents the capability to safely shut down the plant using at least one safe shutdown method in the event of a design-basis fire in any single fire area of the plant.

The FPER and SSA form the basis for the design of the fire protection systems.

3. Backup

Total reliance should not be placed on a single automatic fire suppression system. Appropriate backup fire suppression capability should be provided.

3. Comply with intent:

All areas protected by automatic suppression systems are also protected by accessible hose stations with sufficient hose lengths and portable fire extinguishers as a backup means of fire suppression, with the exception of the partial suppression system in Fire Zone A-3f (see Figures FP-5a and b).

The partial fire suppression system in Fire Zone A-3f is not required for safe shutdown, but is provided because portions of this zone have poor

			accessibility for manual fire fighting.
4.	Single Failure Criterion A single failure in the fire suppression system should not impair both the primary and backup fire suppression capability. For example, redundant fire water pumps with independent power supplies and controls should be provided.Postulated fires or fire protection system failures need not be considered concurrent with other plant accidents or the most severe natural phenomena. The effects of lightning strikes should be included in the overall plant fire protection program.	4.	Comply: A single line break will not impair the primary and secondary suppression capability in any fire zone in the RCA. However, a manual fire fighting capability will be provided by hose stations in adjacent areas using additional hose length stored near the station (50 feet maximum additional length). BTP APCSB 9.5-1 Section IV.A, Overall Requirements of Nuclear Plant Fire Protection Program, Item 4 describes the single failure requirement and states: “The fire protection system should, however, retain their original design capability for (1) natural phenomena of less severity and greater frequency (approximately once in 10 years).” At Clinton, there is no 10-year flood level stated in the USAR. However, the 100-year flood level at CPS is 697.0 ft (USAR 2.4.1.1.i.2). This is two feet below the fire pumps elevation of 699 ft (operating floor of the circulating water screen house, USAR 2.4.1.1.h.3). Use of the 100-year flood is conservative, since it is more severe than the requirement in the BTP to consider natural phenomena with frequency of approximately once in 10 years. Lightning protection is provided for the station buildings and the HVAC stack. The lightning protection system is bonded to the station ground mat to provide an adequate low impedance path to lightning surges to ensure that the potential rise during lightning strikes is limited to reasonable values that equipment and personnel can safely withstand.
5.	Fire Suppression Systems Failure or inadvertent operation of the fire suppression system should not incapacitate safety-related systems or components. Fire suppression systems	5.	Comply with intent: A detailed study of the fire protection system with respect to the guidelines of APCSB BTP 3-1 has been performed and compliance established.

that are pressurized during normal plant operation should meet the guidelines specified in APCSB Branch Technical Position 3-1, "Protection Against Postulated Piping Failures in Fluid Systems Outside Containment."	Safe shutdown equipment will be protected from the effects of failure or inadvertent operation of the fire protection system. Such failure or inadvertent operation would not compromise safe shutdown capability, as demonstrated in the Fire Suppression Effects Analysis.
6. Fuel Storage Areas The fire protection program (plans, personnel and equipment) for buildings storing new reactor fuel and for adjacent fire zones which could affect the fuel storage zones should be fully operational before fuel is received at the site. Schedule for implementation of modifications, if any, will be established on a case-by-case basis.	6. Comply: Fire protection is provided by several fire hose stations and portable fire extinguishers in the vicinity of each storage and handling area. Partial automatic detection is installed in the fuel building. Detection is installed in those zones containing new fuel storage. Station administrative procedures specify actions to be taken for control of combustibles, control of ignition sources, control action to be taken in the event of a fire, and fire protection impairment reporting.
7. Fuel Loading The fire protection program for an entire reactor unit should be fully operational prior to initial fuel loading in that reactor unit. Schedule for implementation of modifications, if any, will be established on a case-by-case basis.	7. Comply: The fire protection program as approved by the NRC for the entire reactor unit will be implemented and fully operational prior to fuel load.
8. Multiple-Reactor Sites On multiple-reactor sites where there are operating reactors and construction of remaining units is being completed, the fire protection program should provide continuing evaluation and include additional fire barriers, fire protection capability, and administrative controls necessary to protect the operating units from construction fire hazards. The superintendent of the operating plant should have the lead responsibility for site fire protection.	8. Not applicable.
9. Simultaneous Fires	9. Not applicable.

Simultaneous fires in more than one reactor need not be postulated, where separation requirements are met. A fire involving more than one reactor unit need not be postulated except for facilities shared between units.	
B. ADMINISTRATIVE PROCEDURES, CONTROLS, AND FIRE BRIGADE	
1. Administrative procedures consistent with the need for maintaining the performance of the fire protection system and personnel in nuclear power plants should be provided. Guidance is contained in the following publications: NFPA 4 - Organization for Fire Services NFPA 4A - Organization for Fire Department NFPA 6 - Industrial Fire Loss Prevention NFPA 7 - Management of Fire Emergencies NFPA 8 - Management Responsibility for Effects of Fire on Operations	1. Comply with intent: Procedures are in place for maintaining the performance of the fire protection systems, and competence of plant personnel.
2. Effective administrative measures should be implemented to prohibit bulk storage of combustible materials inside or adjacent to safety-related buildings or systems during operation or maintenance periods. Regulatory Guide 1.39 "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," provides guidance on housekeeping, including the disposal of combustible materials.	2. Comply: Effective administrative procedures have been developed to control bulk storage of combustible materials inside or adjacent to safety-related buildings or systems. Housekeeping procedures have been issued using Regulatory Guide 1.39 as a guideline.
3. Normal and abnormal conditions or other anticipated operations such as modifications (e.g., breaking fire stops, impairment of fire detection and suppression systems) and refueling activities should be reviewed by appropriate levels of management and appropriate special actions and procedures such as fire watches or temporary fire barriers implemented to assure adequate fire protection and reactor safety. In particular:	3. Comply: Normal and abnormal conditions and other anticipated operations which would impair any fire detection or suppression system will be reviewed in accordance with written procedures and approved by the appropriate level of management.

a. Work involving ignition sources such as welding and flame cutting should be done under closely controlled conditions. Procedures governing such work should be reviewed and approved by persons trained and experienced in fire protection. Persons performing and directly assisting in such work should be trained and equipped to prevent and combat fires. If this is not possible, a person qualified in fire protection should directly monitor the work and function as a fire watch.

a. All work, such as welding and flame cutting, is accomplished under controlled conditions, using approved procedures. A trained fire watch will be established. Procedures are reviewed and approved by qualified personnel.

b. Leak testing, and similar procedures such as air flow determination, should use one of the commercially available aerosol techniques. Open flames or combustion generated smoke should not be permitted.

b. Testing will be accomplished under controlled conditions using approved procedures. Leak testing will not be done with open flame or combustion-generated smoke.

c. Use of combustible material, e.g., HEPA and charcoal filters, dry ion exchange resins, or other combustible supplies, in safety-related areas should be controlled. Use of wood inside buildings containing safety-related systems or equipment should be permitted only when suitable noncombustible substitutes are not available. If wood must be used, only fire retardant treated wood (scaffolding, lay down blocks) should be permitted. Such materials should be allowed into safety-related areas only when they are to be used immediately. Their possible and probable use should be considered in the fire hazard analysis to determine the adequacy of the installed fire protection system.

c. Combustible material storage and use is controlled by administrative procedures. All work activities will be controlled using approved procedures.

4. Nuclear power plants are frequently located in remote areas, at some distance from public fire departments. Also, first response fire departments are often volunteer. Public fire department response should be considered in the overall fire protection program. However, the plant should be designed to be self-

4. Comply:

The plant fire brigade is trained to adequately control the effects of a fire. Offsite fire departments will be used only as a supplement to the plant fire brigade.

sufficient with respect to fire-fighting activities and rely on the public response only for supplemental or backup capability.

5. The need for good organization, training, and equipping of fire brigades at nuclear power plant sites requires effective measures be implemented to assure proper discharge of these functions. The guidance in Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants," should be followed as applicable.

5. Comply:

   Regulatory Guide 1.101 is used for guidance in the development of plant emergency plans.

   a. Successful fire fighting requires testing and maintenance of the fire protection equipment, emergency lighting, and communication, as well as practice as brigades for the people who must utilize the equipment. 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.

   a. The maintenance and testing of the fire detection and suppression equipment is accomplished in accordance with an approved test plan. The test plan identifies all phases of testing together with identification of the responsible personnel.

      Administrative procedures establish guidance for maintaining fire protection during those periods when protection systems are impaired or during periods of plant maintenance.

   b. Basic training is a necessary element in effective fire fighting operation. In order for a fire brigade to operate effectively, it must operate as a team. All members must know what their individual duties are. They must be familiar with the layout of the plant and equipment location and operation in order to permit effective fire-fighting operations during times when a particular area is filled with smoke or is insufficiently lighted. Such training can only be accomplished by

   b. The fire brigade members are to be trained to act effectively as a team, under the control of the fire brigade leader.

      All fire brigade members are to be familiar with the nuclear plant operations, plant layout, and equipment location.

      Fire drills are conducted at least quarterly to maintain fire brigade competence. Fire drills are conducted in a manner which

conducting drills several times a year (at least quarterly) so that all members of the fire brigade have had the opportunity to train as a team, testing itself in the major areas of the plant. The drills should include the simulated use of equipment in each area and should be preplanned and post-critiqued to establish the training objective of the drills and determine how well these objectives have been met. These drills should periodically (at least annually) include local fire department participation where possible.

Such drills also permit supervising personnel to evaluate the effectiveness of communications within the fire brigade and with the on-scene fire team leader, the reactor operator in the control room, and the off-site command post.

simulates all fire conditions, and provides the training objectives necessary to demonstrate the fire brigade's competency.

Annually, the local fire department will be invited to participate in a fire drill.

c. To have proper coverage during all phases of operation, members of each shift crew should be trained in fire protection. 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 implemented into the training of the local fire department staff. Local fire departments should be educated in the operational precautions when fighting fires on nuclear power plant sites. Local fire departments should be made aware of the need for radioactive protection of personnel and the special hazards associated with a nuclear power plant site.

c. Shift crew members are trained in fire protection requirements. The plant fire brigade is fully trained in fire protection of the total plant. This training is coordinated with offsite fire departments to assure a coordinated fire protection effort.

Training of offsite fire departments includes operation precautions, and explains the need for radiation protection of department members.

d. 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, the

d. NFPA 27 guidance was used in developing into the fire brigade training program.

following should be utilized.

NFPA 194 Standard for Screw Threads and Gaskets for Fire Hose Couplings

NFPA 196 Standard for Fire Hose

NFPA 197 Training Standard on Initial Fire Attacks

NFPA 601 Recommended manual of Instructions and Duties for the Plant Watchman on Guard

NFPA booklets and pamphlets listed on page 27-11 of Volume 8, 1971-72 are also applicable for good training references. In addition, courses in fire prevention and fire suppression which are recognized and/or sponsored by the fire protection industry should be utilized.

C. QUALITY ASSURANCE PROGRAM

Quality Assurance (QA) programs of applicants and contractors should be developed and implemented to assure that the requirements for design, procurement, installation, and testing and administrative controls for the fire protection program for safety-related areas as defined in this Branch Position are satisfied. The program should be under the management control of the QA organization. The QA program criteria that apply to the fire protection program should include the following:

C. Comply with intent:

Quality assurance for the fire protection system is applied using existing programs. The program was not applied in the earlier stages of design and purchasing activities and cannot be retrofitted to them.

Sargent & Lundy Quality Assurance Program is applied to design control as necessary to meet specification requirements via a unique project instruction. Illinois Power Company and Baldwin Associates quality assurance programs applied to procurement, installation, testing, and administrative controls as appropriate during construction and plant operations until the AmerGen acquisition. Future activities will be conducted in accordance with the Exelon Quality Assurance Topical Report.

Portions of the Quality Assurance Program, as delineated in Appendix A of the Quality Assurance Topical Report, apply to fire protection. This

program includes the required provisions to ensure that the fire protection program is properly implemented, reviewed, and maintained throughout the life of the Clinton Power Station.

1. Design Control and Procurement Document Control

   Measures should be established to assure that all design-related guidelines of the Branch Technical Position are included in design and procurement documents and that deviations therefrom are controlled.

1. Comply with intent:

   The design requirements of the Branch Technical Position appear in the specifications for equipment. Design and procurement document approved procedures.

2. Instructions, Procedures, and Drawings

   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.

2. Comply:

   Procedures to accomplish these provisions have been developed and implemented.

3. Control of Purchased Material, Equipment, and Services

   Measures should be established to assure that purchased material, equipment, and services conform to the procurement documents.

3. Comply:

   Procedures established by Illinois Power Company and Baldwin Associates assured that purchased material, equipment, and services conformed to the procurement documents during construction and plant operations until the AmerGen acquisition. Future activities will be conducted in accordance with the Exelon Quality Assurance Topical Report.

4. Inspection

   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.

4. Comply:

   Specifications require documented inspection by the installer. Illinois Power Company and Baldwin Associates established programs for inspection of activities affecting fire protection during construction and plant operations until the AmerGen acquisition. Future activities will be conducted in accordance with the Exelon Quality Assurance Topical Report.

5. Test and Test Control A test program should be established and implemented to assure 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.	5. Comply: Clinton Power Station has established test and test control programs in its quality assurance program.
6. Inspection, Test, and Operating Status Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections.	6. Comply: Clinton Power Station procedures assure identification of items that have satisfactorily passed the required tests and inspections.
7. Nonconforming Items Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation.	7. Comply: Clinton Power Station procedures have been established to govern identification and control of nonconforming items.
8. Corrective Action Measures should be established to assure that conditions adverse to fire protection, such as failures malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and nonconformance are promptly identified, reported, and corrected.	8. Comply: The Clinton Power Station Quality Assurance Program establishes measures for corrective action on conditions adverse to fire protection.
9. Records Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program.	9. Comply with intent: Records associated with CPS Fire Protection Program are prepared and maintained in accordance with the CPS quality assurance programs.
10. Audits 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.	10. Comply: The CPS quality assurance program established well defined auditing activities.

D. GENERAL GUIDELINES FOR PLANT PROTECTION

1. Building Design

a. Plant layouts should be arranged to:

1. Isolate safety-related systems from unacceptable fire hazards.

a. Comply:

Safety-related equipment is either isolated protected as identified in the Fire Protection Evaluation Report and Safe Shutdown Analysis.

2. Alternatives: a. redundant safety-related systems that are subject to damage from a single fire hazard should be protected by a combination of fire retardant coatings and fire detection and suppression system, or b. a separate system to perform the safety function should be provided.

The fire protection general arrangement drawings depict the plant layout and general location of equipment. The equipment of redundant safe shutdown systems are adequately protected from a single fire hazard as documented by the Safe Shutdown Analysis.

b. In order to accomplish 1.a. above, safety-related systems and fire hazards should be identified throughout the plant. Therefore, a detailed fire hazard analysis should be made. The fire hazards analysis should be reviewed and updated as necessary. Additional fire hazards analyses should be done after any plant modifications.

b. Comply:

A fire hazard analysis is contained in the CPS FPER. Procedures have been developed to update the FPER and to ensure that all design changes will be reflected in the FPER.

For multiple reactor sites cable spreading rooms should not be shared between reactors. Each cable spreading room should be separated from other areas of the plant by barriers (walls and floors) having a minimum fire resistance of three hours. Cabling for redundant safety divisions should be separated by walls having three hour fire barriers.

Not applicable.

c. Alternative guidance for constructed plants is shown in Section F.3, “Cable Spreading Room.”

c. Not applicable.

d. Interior wall and structural components, thermal insulation aterials and radiation shielding materials and sound-proofing should be non-combustible. Interior finishes should be non-combustible or listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters' Laboratory, 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."

d. Comply with intent:

Interior wall and structural components are noncombustible. Minor amounts of combustibles are used. Examples of these are nailers, seals, caulking, and joint fillers. These materials do not present a hazard to safety-related equipment. The thermal insulation, radiation shielding and soundproofing materials are either noncombustible or their fire resistance properties are evaluated with the intent to minimize the fire hazard.

Most of the materials used in the original construction were within the limits of 25 when tested in accordance with the ASTM E-84 protocol. When replacement or new materials are selected, the fire hazard characteristics are reviewed using the results of appropriate testing. The fire test may be other than ASTM E-84, depending on the intended form and application of the material at CPS. For example, floor coverings will be evaluated and accepted if the critical radiant flux, tested in accordance with NFPA 253/ASTM E-648, is 0.45 watts/sq.cm. or greater and the maximum specific optical smoke density, tested in accordance with NFPA 258, is less than 450.

Floor coverings in areas containing systems or equipment required for safe shutdown of the plant are generally Class I material as defined in NFPA 101, or generally a flame spread rating of 25 or less as defined in ASTM E-84. For fire hazard analysis purposes, floor coatings are considered non-combustible if the material has a structural base of non-combustible material, with a nominal depth not

over 1/8 inch thick, and has a flame spread rating not higher than 50 as defined in ASTM E-84. Exceptions to these guidelines are evaluated for acceptability by Engineering on a case-by-case basis.

Consistent with the guidelines of NUREG 0800, Revision 2, Section 9.5.1, the following materials are acceptable for use as interior finish without evidence of test and listing by a nationally recognized laboratory.

- Plaster, acoustic plaster, gypsum plasterboard (gypsum; wallboard) either plain, wall-papered, orpainted with oil-or water-based paint;
- Ceramic tile, ceramic panels: Glass, glass blocks; Brick, stone, concrete blocks, plain or painted; Steel and aluminum panels, plain, or enameled;
- Vinyl tile, vinyl-asbestos tile, linoleum, or asphalt on concrete floors.

The noncombustible materials used at CPS are concrete and steel structural and radiation shielding materials, and the reflective metallic installation installed inside the drywell.

The following are examples of combustible materials utilized at CPS. Silicone foam sealant is used for sealing penetrations through walls and floors. Fiberglass insulation with metal lagging or fiberglass blanket insulation is used for hot piping. Fiberglass insulation with white craft paper and foil reinforced with glass yarns is used for cold piping. HVAC ductwork is insulated with fiberglass insulation with white craft paper and foil reinforced vapor barrier. Foam plastic insulation is used for cold pipe insulation inside the containment and drywell and for insulating cold equipment. Phenolic foam insulation is used for piping

and ductwork subjected to low temperatures. Materials installed to improve building comfort are carpeting and the fiberglass and melamine acoustical panels. The combustible components in the radiation shielding materials are the vinyl cover for the lead blanket and the rubber bladder for the water shield.

Acceptable alternate tests for floor coverings include NFPA-253 "Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source" and NFPA-258 "Standard Research Test Method for Determining Smoke Generation of Solid Materials".

e. Metal deck roof construction should be noncombustible (see the building materials directory of the Underwriter's Laboratory, Inc.) or listed as Class 1 by Factory Mutual System Approval Guide. Where combustible material is used in metal deck roofing design, acceptable alternatives are (i) replace combustibles with noncombustible materials, (ii) provide an automatic sprinkler system, or (iii) provide ability to cover roof exterior and interior with adequate water volume and pressure.

e. Comply:

The materials used in metal deck roofing design are non-combustible and meet the criteria of Factory Mutual Class 1 design and UL Class "A" construction.

f. Suspended ceilings and their supports should be of noncombustible construction. Concealed spaces should be devoid of combustibles. Adequate fire detection and suppression systems should be provided where full implementation is not practicable.

f. Comply with intent:

Suspended ceilings and supports are constructed of non-combustible materials (non-combustible acoustical tiles or metal eggcrate). The fire classification for acoustical tile is: flame spread 15 and smoke developed 0; and for the plaster ceilings: flame spread 10, fuel contribution 0, and smoke developed 0. Fire detection and manual extinguishing capabilities are provided as detailed in Chapter 3.0 of the FPER.

g. High voltage-high amperage transformers installed inside buildings containing safety-related systems should be of the dry type or insulated and cooled with noncombustible liquid. Safety-related systems that are exposed to flammable oil filled transformers should be protected from the effects of a fire by:

   i. Replacing with dry transformers that are insulated and cooled with noncombustible liquid; or

   ii. Enclosing the transformer with a three-hour fire barrier and installing automatic water spray protection.

g. Comply:

All transformers located inside buildings are of the dry type.

The oil filled main (MPTs), unit auxiliary (UATs), and reserve auxiliary power (RAT B) transformers are located outdoors and are equipped with automatic deluge systems.

Portions of Category 1 buildings within 50 feet of an oil filled transformer are 3-hour fire barriers, except for the main bus duct feeds to the unit auxiliary transformers. Oil filled transformers located farther than 50 feet from Category 1 buildings (RAT A and RATC) are equipped with fire detection systems.

h. Buildings containing safety-related systems having openings in exterior walls closer than 50 feet to flammable oil filled transformers should be protected from the effects of a fire by:

   i. Closing of the opening to have fire resistance equal to three hours;

   ii. Constructing a three-hour fire barrier between the transformers and the wall openings; or

   iii. Closing the opening and grade providing the capability to maintain a water curtain in case of fire.

h. Comply with intent:

Portions of Category 1 buildings within 50 feet of an oil filled transformer are 3-hour fire barriers, except for the main bus duct feeds from the unit auxiliary transformers.

The turbine building also contains safety-related cables and instruments, but these are not required for safe shutdown. Portions of the turbine building within 50 feet of an oil filled transformer are 3-hour fire barriers up to approximately 60 feet above grade elevation, except for the main bus duct feeds to the main and unit auxiliary transformers.

The transformers (except Main Power Transformers and RATs A & C) and associated bus ducts are protected by an automatic deluge system initiated by heat detectors that annunciate in the main control room. Main Power Transformers A, B, & C are protected by deluge systems initiated automatically by sudden pressure and differential relay actuation, and manually by

Operator after receiving the MPT fire detection alarm in the main control room. RAT A and RAT C utilitize heat detectors that annunciate in the main control room. In addition, oil retention berms and barrier walls between transformers are provided to prevent the spread of a fire.

As evaluated by a fire protection engineer, the construction of the bus duct assembly for the unit auxiliary transformer, as well as the bolted attachment of the duct to both sides of the wall, provides protection equivalent to that of a fire door or damper.

i. Floor drains, sized to remove expected fire-fighting water flow, should be provided in those areas where fixed water fire suppression systems are installed. Drains should also be provided in other areas where hand hose lines may be used if such fire-fighting water could cause unacceptable damage to equipment in the area. Equipment should be installed on pedestals, or curbs should be provided as required to contain water and direct it to floor drains. (See NFPA 92M, "Waterproofing and Draining of Floors.") Drains in areas containing combustible liquids should have provisions for preventing the spread of fire throughout the drain system. Water drainage from areas which may contain radioactivity should be sampled and analyzed before discharge to the environment. In operating plants or plants under construction, if accumulation of water from the operation of new fire suppression systems does not create unacceptable consequences, drains need not be installed.

i. Comply with intent:

Floor drains are provided in areas where fixed water fire suppression systems are installed.

Water for controlling a fire can be introduced virtually anywhere in the plant and a floor drain system has been provided to reduce accumulation of water from fire suppression systems. Provisions, such as pedestals for equipment and curbs around openings, have been provided, as required, to assure that excess water is directed away from equipment, particularly safety-related equipment, and will run off into areas where it will not impair the safe shut down of the plant. It is not possible to mount some electrical equipment, such as switchgear, on pedestals. (See Section A.5 in this chapter.) A fire suppression effects analysis was performed to determine the consequences of spraying safe shutdown equipment with water, either from a sprinkler system or a fire hose. The analysis resulted in several required modifications in order to protect such equipment from the effects of initiation of fire suppres-

sion measures and subsequent flooding. With the installation of the required modifications, it is concluded that initiation of either automatic or manual fire suppression measures along with any associated buildup of fire protection water will not preclude safe shutdown of the plant. Drains have provisions for preventing the spread of fire through the drainage system. Drainage which is potentially radioactive goes to the liquid radwaste area where it is analyzed and processed.

j. Floors, walls, and ceilings enclosing separate fire areas should have minimum fire rating of three hours. Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire-resistance rating at least equal to that of the fire barrier itself. Door openings should be protected with equivalent rated doors, frames and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room. Penetrations for ventilation system should be protected by a standard "fire door damper" where required. (Refer to NFPA 80, "Fire Doors and Windows") The fire hazard in each area should be evaluated to determine barrier requirements. If barrier fire resistance cannot be made adequate, fire detection and suppression should be provided, such as:

   i. Water curtain in case of fire,

   ii. Flame retardant coatings,

   iii. Additional fire barriers.

j. Comply with intent:

Fire areas are enclosed by barriers commensurate with the fire hazards and protection within each area, as defined in the FPER. Openings in these rated barriers are described in the FPER.

Doors to vital areas are closed and locked in accordance with the station security requirements. These doors will alarm and annunciate in the security control room if they are used for unauthorized entry, exit, or set ajar.

The locking of many doors would interfere with the normal and safe operation of the plant. Doors that should not be locked are provided with self-closing devices. Rolling steel fire doors, which do not have self-closing devices, are monitored every twenty-four hours or, if open for extended periods of time, then appropriate compensatory measures will be taken in accordance with applicable CPS procedures. Door openings are protected with equivalent doors, frames and hardware tested and approved by a nationally recognized laboratory. Deviations have been provided in the Safe Shutdown Analysis.

2. Control of Combustibles

a. Safety-related systems should be isolated or separated from combustible materials. When this is not possible because of thenature 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. Comply with intent:

Safety-related systems are isolated or separated from combustibles. When this is not possible, protection is provided to prevent a fire from defeating the ability to safely shut down the plant.

1. Emergency diesel generator fuel oil day tanks

1. The diesel day tank rooms are separated from the diesel generator rooms by 1.9-hour barriers. An automatic wet-pipe suppression system is provided in each day tank room.

   Curbing is provided in the day tank rooms that will contain 110% of the oil inventory. In addition, drain capacity allows for a 20-minute sprinkler system accumulation.

2. Turbine generator oil and hydraulic control fluid systems.

2. The turbine generator oil system is located in a non-safety-related building. Portions of the system are provided with automatic sprinkler fire suppression. The hydraulic control fluid is a synthetic fire resistive fluid. Some equipment in the turbine building is designated as safety-related in the Clinton design; however, none of this equipment has a safe shutdown-related function.

3. Reactor coolant pump lube oil system.

3. The reactor recirculation pumps nonpressurized lube oil systems are integral with the reactor recirculation pump motors except for 1 gallon automatic oilers which may be added to the lower bearing reservoir fill line.

   Infrared flame detectors are provided in the area of the reactor recirculation pumps.

b. 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.")

b. Comply with intent:

   Bulk gas storage facilities are provided remote from any safety-related structures.

   Bulk storage of flammable gas is located outdoors in separate facilities and away from any safety-related structures.

c. The use of plastic materials should be minimized. In particular, halognated plastics such as polyvinyl chloride (PVC) and neoprene should be used only when substitute non-combustible 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 haloginated plastics also release free chlorine and hydrogen chloride when burning which are toxic to humans and corrosive to equipment.	c. Comply: The use of plastic materials is minimized.
d. Storage of flammable liquids should, as a minimum, comply with the requirements of NFPA 30, "Flammable and Combustible Liquids Code."	d. Comply: Administrative procedures covering the storage and handling of flammable liquids have been developed.
3. Electric Cable Construction,Cable Trays, and Cable Penetrations	
a. Only noncombustible materials should be used for cable tray construction.	a. Comply: All cable trays are constructed of steel.
b. See Section F.3 for fire protection guidelines for cable spreading rooms.	b. See Section F.3 for responses.

c. Automatic water sprinkler systems should be provided for cable trays outside the cable spreading room. Cables should be designed to allow wetting down with deluge water without electrical faulting. Manual hose stations and portable hand extinguishers should be provided as backup. Safety-related equipment in the vicinity of such cable trays, that does not itself require water fire protection, but is subject to unacceptable damage from sprinkler water discharge, should be protected from sprinkler system operation or malfunction. When safety-related cables do not satisfy the provisions of Regulatory Guide 1.75, all exposed cables should be covered with an approved fire retardant coating and a fixed automatic water fire suppression system should be provided.

c. Partial compliance:

Automatic suppression systems will be installed as required by the Fire Protection Evaluation Report and the Safe Shutdown Analysis. Automatic sprinkler systems are not provided for cable trays outside the cable spreading room, based on a detailed review of heavy cable tray concentration areas in Category 1 buildings. Cables are designed to withstand wetting without electrical failure. The justification for not providing sprinkler systems for cable trays in areas outside the cable spreading rooms is:

1. Fire detection is provided in areas of high cable concentration associated with safe shutdown cables.
2. Cable tray loadings are low.
3. Use of solid bottom cable trays with all instrumentation cable trays totally enclosed.
4. Low fire loading in the fire zone.
5. Cables are generally flame retardant and nonpropagating per IEEE-383.
6. Conservative separation per IEEE-384.

Conformance with Regulatory Guide 1.75 is covered in Subsections 7.1.2.6.19 and 8.1.6.1.14 of the USAR.

Manual hose stations and portable hand extinguishers are provided throughout the plant. Their locations are shown on the "b"

series figures in the Fire Protection Evaluation Report.

Safe shutdown equipment that can be subjected to unacceptable damage from sprinkler water discharge is protected from sprinkler system operation or malfunction, as documented in the Fire Suppression Effects Analysis, calculation 01FP14.

d. Cable and cable tray penetration of fire barriers (vertical and horizontal) should be sealed to give protection at least equivalent to that fire barrier. The design of fire barriers for horizontal and vertical cable trays should, as a minimum, meet the requirements of ASTM E-119, "Fire Test of Building Construction and Materials," including the hose stream test. Where installed penetration seals are deficient with respect to fire resistance, these seals may be protected by covering both sides with an approved fire retardant material. The adequacy of using such material should be demonstrated by suitable testing.

d. Comply with intent:

Conduit and cable tray penetrations of fire barriers are sealed with fire stops of a rating equivalent with that of the fire barrier, except as noted in Appendix F, Section 4.2.2.22.

A deviation has been requested from the NRC such that the 325°F temperature end point limitation on the unexposed side of cable insulation may be exceeded.

e. Fire breaks should be provided as deemed necessary by the fire hazards analysis. Flame or flame retardant coatings may be used as a fire break for grouped electrical cables to limit spread of fire in cable ventings. (Possible cable derating owing to use of such considered during design.)

e. Comply:

Fire breaks are provided as required by the Fire Protection Evaluation Report and the Safe Shutdown Analysis. All vertical cable tray risers are provided with fire breaks where they penetrate a floor/ceiling. Fire breaks are also provided within the PGCC in the control room as deemed necessary by GE Licensing Topical Report NED0-10466-A.

f. Electrical cable constructions should, as a minimum, pass the current IEEE No. 383 flame test. (This does not imply that cables passing this test will not require additional fire protection.) For cable installation in operating plants under construction that do not meet the IEEE No. 383 flame test requirements, all cables must be covered with an approved flame retardant coating and properly derated.	f. Comply: Cables used are of EPR/hypalon or tefzel construction, which is certified as having passed the IEEE-383 flame test, and is flame retardant with self-extinguishing characteristics. A small amount of cables furnished by manufacturers for their equipment (e.g., turbine control cables) do not meet IEEE-383 requirements. Also, fire detection, lighting, and communication cabling does not meet IEEE-383 requirements. However, these cables are a small quantity compared to the total quantity of cables installed; they will have a negligible impact.
g. To the extent practical, cable construction that does not give off corrosive gases while burning should be used.	g. Comply.
h. Cable trays, raceways, conduit, trenches, or culverts should be used only for cables. Miscellaneous storage should not be permitted, nor should piping for flammable or combustible liquids or gases be installed to these areas. Installed equipment in cable tunnels or culverts need not be removed if they present no hazard to the cable runs as determined by the fire hazards analysis.	h. Comply: Only cables occupy cable trays and conduits. Piping is not routed through cable trenches or culverts. Piping associated with flammable or combustible liquids or gases is not routed in the vicinity of safety-related cables.
i. The design of cable tunnels, culverts, and spreading rooms should provide for automatic or manual smoke venting as required to facilitate manual fire fighting capability.	i. Comply with intent: Venting is described in the CPS Smoke Removal Plan.

j. Cables in the control room should be kept to a minimum necessary for operation of the control room. All cables entering the control room should terminate there. Cables should not be installed in floor trenches or culverts in the control room. Existing cabling installed in concealed floor and ceiling spaces should be protected with an automatic total flooding Halon system.

j. Comply with intent:

Cables in the control room are kept to the minimum necessary for operation of the control room. Generally, cables entering the control room terminate there. The control room is part of the Power Generation Control Complex (PGCC) designed by General Electric. The design of the PGCC is addressed in Licensing Topical Report NEDO-10466-A. A Halon fire suppression system automatically initiated by thermal detectors is provided as part of the PGCC.

4. Ventilation

a. The products of combustion that need to be removed from a specific fire area should be evaluated to determine how they will be controlled. Smoke and corrosive gases should generally be automatically discharged directly outside to a safe location. Smoke and gases containing radioactive materials should be monitored in the fire area to determine if release to the environment is within the permissible limits of the plant Technical Specifications. The products of combustion which need to be removed from a specific fire area should be evaluated to determine how they will be controlled.

a. Comply:

In the event of a fire, the situation will be thoroughly evaluated before venting the area, and venting will take place under the direction and control of cognizant personnel. The CPS Smoke Removal Plan identifies acceptable methods of smoke removal.

In most cases throughout the plant, ventilation systems were not specifically designed for smoke/heat removal, but for the ventilation requirements of the areas that they serve. However, these systems may aid in smoke removal once a fire is extinguished.

Effluent from areas that contain radioactive or potentially radio-active materials that are discharged to the outdoors through ventilation are constantly monitored.

b. Any ventilation system designed to exhaust smoke or corrosive gases should be evaluated to ensure that inadvertent operation or single failures will not violate the controlled areas of the plant design. This requirement includes containment functions for protection of the public and maintaining habitability for operations personnel.

b. Comply:

A single failure or inadvertent operation of any ventilation system will not affect habitability or present a hazard to the public. Ventilation systems which are related to habitability of personnel are under the control of the cognizant personnel.

c. The power supply and controls for mechanical ventilation systems should be run outside the fire area served by the system.

c. Comply:

The power supply and controls for mechanical ventilation systems are run outside the area served by the system. Some ventilation systems, such as area recirculation cooling systems, are located inside the fire area. These systems are not used for smoke removal.

d. Fire suppression systems should be installed to protect charcoal filters in accordance with Regulatory Guide 1.52, "Design Testing and Maintenance Criteria for Atmospheric Cleanup Air Filtration."

d. Comply with intent:

To protect the charcoal filters against the effects of iodine decay heat after a postulated accident, the control room (VC), the standby gas treatment (VG), and the drywell purge (VQ) filter units are equipped with heat sensors that auto-matically annunciate in the control room, as well as manually operated water spray systems. In addition the VG filter units are protected with low-flow charcoal adsorbent cooling fans.

The temperature detection panels are not in full compliance with the NFPA Code for fire detection systems, as the primary function is for adsorbent cooling with a secondary function of fire detection.

These panels are not UL listed. NFPA Code conformance is documented in the CPS NFPA Code Conformance Evaluation.

e. 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.

e. Comply:

The intake and exhaust of each area are physically remote to prevent recirculation.

f. Stairwells should be designed to minimize smoke infiltration during a fire. Staircases should serve as escape routes and access routes for fire fighting. Fire exit routes should be clearly marked. Stairwells, elevators, and chutes should be enclosed in masonry towers with a minimum fire rating of three hours and automatic fire doors at least equal to the enclosure construction, at each opening into the building.

Elevators should not be used during fire emergencies. Where stairwells or elevators cannot be enclosed in three-hour fire rated barriers with equivalent fire doors, escape and access routes should be established by prefire plan and practiced in drills by operating and fire brigade personnel.

f. Comply with intent:

Stairwells are designed to minimize smoke infiltration during a fire. There is at least one enclosed stairway located in or within quick access to each building, except the containment building. Elevators are enclosed in 1.9-hour rated masonry towers and have 1-1/2-hour fire rated hoistway doors. Enclosed stairways have minimum 1.9-hour fire rated walls and 1-1/2-hour automatic closing fire rated doors. Some unprotected steel is located inside the stairwells.

Three fire dampers installed in ducts penetrating Radwaste Building Stairwell walls may not completely close under designed airflow due to their respective airflow velocities. The ducts containing these fire dampers have no openings in the stairwell. Since the sheet metal duct can withstand a one-hour fire, the ability of the stairway to provide access and egress for approximately one hour during a fire is not jeopardized.

Where stairwells or elevators are not enclosed in 1.9-hour fire rated barriers, access and egress routes are established and included in fire brigade procedures and practiced in drills by operating and fire brigade personnel.

g. Smoke and heat vents may be useful in specific areas such as cable spreading rooms and diesel fuel oil storage areas and switchgear rooms. When natural-convection ventilation is used, a minimum ratio of 1 sq. ft. of venting area per 200 sq. ft. of floor area should be provided. If forced-convection ventilation is used, 300 cfm should be provided for every 200 sq. ft. of floor area. See NFPA No. 204 for additional guidance on smoke control.

g. Comply with intent:

Smoke vents are used for the turbine building only. Smoke and heat vents will not be used for the areas identified due to building security and missile protection. In addition, many of these areas are located in the lower levels of the plant, making gravity venting unfeasible. These areas are provided with mechanical ventilation. The flow rates are based on HVAC requirements and in most cases are less than 300 cfm per 200 ft^2. The ventilation systems will be used for post-fire purging as required, for which they are adequate.

The CPS Smoke Removal Plan provides acceptable methods for removing products of combustion from fire areas.

h. 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. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or operating life should be a minimum of one-half hour for the self-contained units.

At least two extra air bottles should be located onsite for each self-contained breathing unit. In addition, an onsite 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

h. Comply:

Self-contained breathing apparatus (SCBA) with approved full-face positive pressure masks approved by NIOSH with a minimum I-hour operating life have been supplied for fire brigade personnel. The Radiation Protection Department controls and provides full-face masks SCBA for fire brigade use and controls all spare bottles.

A minimum 6-hour reserve supply of control room breathing air is furnished by a manifold breathing system.

Two extra air bottles are maintained on the site for each fire brigade SCBA. A 6-hour air supply is maintained for the reserve air requirement.

breathing air should be used. Special care must be taken to locate the compressor in areas free of dust and contaminants.

i. Where total flooding gas extinguishing systems are used, area intake and exhaust ventilation dampers should close upon initiation of gas flow to maintain necessary gas concentration. (See NFPA 12, "Carbon Dioxide Systems," and 12A, "Halon 1301 Systems.")

i. Comply:

The ventilation air intake and exhaust dampers located in the fan rooms above the diesel generator close upon initiation of the CO_2 system. The can be opened manually for post-fire purging.

In addition, the ventilation systems in areas served by Halon systems are isolated upon initiation to achieve and maintain Halon concentration.

5. Lighting and Communication

5. Comply:

See USAR Sections 9.5.1 and 9.5.3.

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 devices should be provided to satisfy the following requirements:

Communication and emergency lighting are provided throughout the station as noted below:

a. Fixed emergency lighting should consist of sealed beam units with individual eight hour minimum battery power supplies.

a. Comply with intent:

Fixed sealed-beam lighting units with 8-hour minimum battery supplies are provided for manned workstations and remote manual action locations needed for safe shutdown and the credited access and egress paths thereto. Emergency lighting consisting of 1.5-hour minimum battery supplies units and 125-Vdc incandescent light fixtures are provided in other areas of the plant for evacuation of personnel, which is consistent with NUREG-0800 and NFPA-101.

b. Suitable sealed beam battery powered portable hand lights should be provided for emergency use.	b. Comply: Suitable 8-hour sealed beam battery powered portable hand lights are provided for one-time remote manual actions and access and egress paths thereto.
c. Fixed emergency communication should use voice powered headsets at preselected stations.	c. Comply: Sound-powered phone jacks are installed at selected locations throughout the plant for voice powered communication.
d. Fixed repeaters installed to permit use of portable radio communication units should be protected from exposure to fire damage.	d. Comply with intent: Fixed repeaters are not protected from fire damage but are backed up by the three independent systems: PA, telephone, and sound powered phones.
E. FIRE DETECTION AND SUPPRESSION	
1. Fire Detection	
a. Fire detection systems should, as a minimum, comply with NFPA 72D, "Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems." Deviations from the requirements of NFPA 72D should be identified and justified.	a. Comply with intent: The fire detection system for the station complies with NFPA 72D with deviation as documented in the CPS NFPA Code Conformance Evaluation.
b. Fire detection systems should give audible and visual alarm and annunciation in the control room. Local audible alarms should also sound at the location of the fire.	b. Comply with intent: The fire detection system for the station gives audible and visual alarm and annunciation in the control room. Local audible alarms are only provided for fire suppression systems excluding the filter train deluge and the FLEX diesel generator systems.
c. Fire alarms should be distinctive and unique. They should not be capable of being confused with any other plant system alarms.	c. Comply with exception: Audible fire alarms are distinctive and unique except for some panel alarms in the fuel and turbine buildings, as documented in the CPS NFPA Code Conformance Evaluation.

d. Fire detection and actuation systems should be connected to the plant emergency power supply.

d. Comply with intent:

The fire detection system for the station is connected to the station Class 1E power system. The fire suppression systems in safety related buildings are connected to the station Class 1E power system. The non-safety-related filter train deluge systems, with the exception of those for drywell purge, are connected to the station Class 1E power system. For those exceptions, the deluge valves may be operated manually as well as via electric operator.

2. Fire Protection Water Supply Systems

a. An underground yard fire main loop should be installed to furnish anticipated fire 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). Lined steel or cast iron pipe should be used to reduce internal tuberculation. Such tuberculation deposits in an unlined pipe over a period of years can significantly reduce water flow through the combination of increased friction and reduced pipe diameter. Means for treating and flushing the systems should be provided.

a. Comply with intent:

The underground yard fire main loop is designed and installed in compliance with applicable NFPA 24 requirements. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.

Unlined carbon steel pipe is provided in the underground yard loop. Possible tuberculation of pipe is accounted for in the hydraulic calculations by using a conservative C-factor of 75. The calculations demonstrate adequate fire protection water supply during the life of the plant.

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 entire system. Visible location marking signs for underground valves are acceptable. Alternative valve position indicators should also be provided.

For operating plants, fire main system piping that can be isolated from service or sanitary water system piping is acceptable.

Comply:

Sectional control valves with post indicators allow the isolation of any one section without affecting the balance of the system.

b. A common yard fire main loop may serve multiunit 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.

The water supply should be sized for the largest single expected flow. For multiple reactor sites with widely separated plants (approaching one mile or more), separate yard fire main loops should be used. Sectionalized systems are acceptable.

b. Not applicable:

The Clinton Power Station utilizes a single fire main loop with section isolation valves.

c. If pumps are required to meet system pressure or flow requirements, a sufficient number of pumps should be provided so that 100% capacity will be available with one pump inactive (e.g., three 50% pumps or two 100% pumps). The connection to the yard fire main loop from each fire pump should be widely separated, preferably located on opposite sides of the plant. Each pump should have its own driver with independent power supplies and control. At least one pump (if not powered from the emergency diesels) should be driven by non-

c. Comply with intent:

Normally the fire protection system is pressurized by a jockey pump fed from the filtered water system.

Fire protection is provided by two 100% capacity (2500 gpm each) diesel driven fire pumps.

The connections to the yard main loop from each fire pump are widely separated, located on opposite sides of the screen house, and diverge as they connect to the underground yard main.

Pumps and drivers are located in

	electrical means, preferably diesel engine. Pumps and drivers should be located in rooms separated from the remaining pumps and equipment by a minimum three-hour fire wall.	separate rooms. The fire pump located at the north end of the screen house is enclosed in a 3-hour fire rated wall on three sides. The exterior wall is not rated. The ceiling in this zone is rated; however, the floor is not. The walls surrounding the fire pump at the south end of the screen house are not rated; however, a separation distance of approximately 140 feet exists between the two fire pump rooms. Approximately half of this distance was intended for Unit 2 use and now contains minimal combustibles.
	Alarms indicating pump running, driver availability, or failure to start should be provided in the control room.	The recommended alarms are provided in the control room.
	Details of the fire pump installation should, as a minimum, conform to NFPA 20, "Standard for the Installation of Centrifugal Fire Pumps."	An automatic water suppression system is provided in each fire pump room. The fire pump installation is in accordance with applicable NFPA 20 requirements. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.
d.	Two separate reliable water supplies should be provided. If tanks are used, two 100% (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 leak in one tank or its piping should not cause both tanks to drain. The main plant fire water supply capacity should be capable of refilling either tank in a minimum of eight hours. 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 means of a vertical standpipe for	d. Not applicable. See Section 2.f.

other water services.

e. The fire water supply (total capacity and flow rate) should be calculated on the basis of the largest expected flow rate for a period of two hours, but not less than 300,000 gallons.

This flow rate should be based (conservatively) on 1,000 gpm for manual hose streams plus the greater of:

1. All sprinkler heads opened and flowing in the largest designed fire area; or
2. The largest open head deluge system(s) operating.

e. Comply with intent:

The inventory of water in the ultimate heat sink allocated to fire protection is 900,000 gallons.

For safety-related buildings, the fire pump flow rate is based on the sprinkler flow requirements of NFPA 13 and 15 plus 500 gpm for manual hose streams.

f. Lakes or fresh water ponds of sufficient size may qualify as sole source of water for fire protection, but require at least two intakes to the pump supply. When a common water supply is permitted for fire protection and the ultimate heat sink, the following conditions should also be satisfied:

1. The additional fire protection water requirements are designed into the total storage capacity; and
2. Failure of the fire protection system should not degrade the function of the ultimate heat sink.

f. Comply:

A common water supply is used for fire protection and the ultimate heat sink, but the size is adequate for both. Each pump has its own supply tunnel and screens. Under no circumstances is the safety function of the ultimate heat sink compromised.

1. Comply:

   Fire protection requirements were designed into the storage capacity of the ultimate heat sink.

2. Comply:

   Failure of the fire protection system does not degrade the function of the ultimate heat sink.

g. Outside manual hose installation should be sufficient to reach any location with an effective hose stream. To accomplish this, hydrants should be installed approxi-mately every 250 feet on the yard main system. The lateral to each hydrant from the yard main should be controlled by a visually indicating or key operated (curb)

g. Comply with intent:

Hydrants are provided in the area of the power block at a spacing of approximately 325 feet. In other areas of the plant (Unit 2 excava-tion area) distances approach 400 feet. Sufficient hose lengths are provided in hose houses to permit fire fighters to reach all areas between hydrants. Hydrants

valve. 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 feet.	are controlled by individual curb box valves. Hose houses are provided for all hydrants in the power block area. Additional hose houses are provided for the majority of hydrants outside the power block area. Distances never exceed 1000 feet between hose houses. All hose houses are equipped in accordance with applicable NFPA 24 requirements.
Threads compatible with those used by local fire departments should be provided on all hydrants, hose couplings, and standpipe risers.	Threads compatible with those used by local fire departments are provided for hydrants, hose couplings, and standpipe risers, or adapters are available.

3. Water Sprinklers and Hose Standpipe Systems

a. Each automatic sprinkler system and manual hose station standpipe should have an independent connection to the plant underground water main. Headers fed from each end are permitted inside buildings to supply multiple sprinkler and standpipe systems. When provided, such headers are considered an extension of the yard main system. The header arrangement should be such that no single failure can impair both the primary and backup fire protection systems.	a Comply with intent: . All sprinkler systems, with the exception of those in the diesel generator storage tank rooms, are supplied by ring headers that are supplied from redundant connections to the yard main. The diesel generator storage tank rooms and day tank rooms are not supplied by redundant connections; however, adequate hose lengths installed at nearby hose stations can be coupled together to attain a 150 foot maximum length, and permit secondary suppression capability in the event of a pipe break. Those systems connected directly to the yard main are independent. Multiple sprinkler and standpipe systems are supplied from independent connections to the building ring headers. OS&Y valves are provided for each sprinkler and standpipe system. A water flow alarm is also provided for each sprinkler and standpipe with the two

exceptions. An alarm is not provided for the standpipe feeding two hose stations in the gate house, which is not part of the power block, and flow switch IFS FP054, which is located on one of the three standpipes feeding containment hose stations, will alarm at a water flow of approximately 250 gpm. This is acceptable for the following reasons:

- The piping is primarily of welded construction, which minimizes leakage.
- Access to the containment is normally restricted and inadvertent operation of the hoses is not likely.
- The flow switch will identify a pipe break in the hose station with a flow of approximately 250 gpm.
- If there is significant flow in the system, the main fire pumps will initiate, thereby annunciating in the control room.

Each sprinkler and standpipe system should be equipped with OS&Y (outside screw and yoke) gate valve, or other approved shutoff valve, and water flow alarm. Safety-related equipment that does not itself require sprinkler water fire protection, but is subject to unacceptable damage if wetted by sprinkler water discharge should be protected by water shields or baffles.

Safe shutdown-related equipment that does not itself require sprinkler water fire protection, but is subject to unacceptable damage if wetted by sprinkler water discharge, will be protected by water shields or baffles.

b. All valves in the fire water systems should be electrically supervised. The electrical supervision signal should indicate in the control room and other appropriate command locations in the plant. (See NFPA 26, "Supervision of Valves.") When electrical supervision of fire protection valves is not practical, an adequate management supervision program should be provided. Such a program should include locking valves open with strict key control; tamper-proof seals; and periodic visual check of all valves.

b. Comply with intent:

All main isolation valves will be electrically supervised or administratively controlled. The isolation valves for sprinkler systems, except for the filter train deluge systems, will be electrically supervised. The isolation valve for the FLEX diesel generator system is not electrically supervised but is locked open and monitored by administrative procedures. The interior loop isolation valves and those for standpipes will not be electrically supervised, but will be monitored by administrative procedures.

c. Automatic sprinkler systems should, as a minimum, 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."

c. Comply with intent:

The automatic sprinkler systems conforms, with deviations, to all applicable NFPA codes, including NFPA 13 and 15, and include components approved by a nationally recognized laboratory such as UL, where practical. NFPA code conformance including deviations is documented in the CPS NFPA Code Conformance Evaluation.

d. Interior manual hose installation should be able to reach any location with at least one effective hose stream. To accomplish this, standpipes with hose connections equipped with a maximum of 75 feet of 1-1/2 inch woven jacket lined fire hose and suitable nozzles should be provided in all buildings, including containment, on all floors and should be spaced at not more than 100 foot intervals. Individual standpipes should be of at least 4 inch diameter for multiple hose connections and 2-1/2 inch diameter for single hose connections. These systems should follow the requirements of NFPA No. 14 for sizing, spacing, and pipe support requirements.

d. Comply with intent:

The standpipe system will conform to the appropriate requirements of NFPA 14. All areas in the plant can be reached by at least one hose stream. Hose stations have a maximum of 100 feet of 1-1/2-inch hose with suitable spray nozzles. Two hose stations (located outside the main steam tunnel and outside the control room) have an additional 50 feet of hose stored nearby to provide adequate coverage. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.

Standpipes are a minimum of 4 inches in diameter for multiple-hose connections and a minimum of 2.5 inches in diameter for a single-hose connection.

Hose stations should be located outside entrances to normally unoccupied areas and inside normally occupied areas. Standpipes serving hose stations in areas housing safety-related equipment should have shutoff valves and pressure reducing devices (if applicable) outside the area.

Hose stations are located to provide accessibility and coverage to all areas of the plant with the exception of the manually inaccessible pipe tunnel in Fire Zone A-3f, which is inaccessible for manual fire fighting and is provided with automatic suppression. A second exception exists for drywell Zone C-1, where coverage is provided only for the two recirculation water pumps. One hose station is located inside the drywell wall. An isolation valve is provided to fully isolate this station. All hose standpipes have shutoff valves.

e. 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 may cause unacceptable mechanical damage (for example, the delicate electronic equipment in the control room) and be unsuitable.

e. Comply:

Consideration was given to the type of fire hazard and the safety of equipment in the selection of hose nozzles. Electrically safe hose nozzles provided at locations where electrical equipment or cabling is located.

f. Certain fires such as those involving flammable liquids respond well to foam suppression. Consideration should be given to use of any of the available foams for such specialized protection application. These include the more common chemical and mechanical low expansion foams, high expansion foam, and the relatively new aqueous film forming foam (AFFF).

f. Not applicable.

Clinton design does not utilize foam systems, but instead utilizes water, CO_2, and Halon systems.

4. <u>Halon Suppression Systems</u>

The use of Halon fire extinguishing agents should, as a minimum, comply with the requirements of NFPA 12A and 12B, "Halogenated Fire Extinguishing Agent Systems – Halon 1301 and Halon 1211." Only UL or FM approved agents should be used.

4. Comply with intent:

The Halon 1301 systems provided in the plant are designed and installed to the applicable requirements of NFPA 12A. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.

In addition to the guidelines of NFPA 12A and 12B, preventative maintenance

Inspection and maintenance procedures will be conducted by authorized plant

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: a. Minimum required Halon concentration and soak time; b. Toxicity of Halon; and c. Toxicity and corrosive characteristics of thermal decomposition products of Halon.	personnel. Halon storage tank weight and pressure checks are performed periodically to ensure adequate system supply The Halon 1301 system for the Auxiliary Electric Equipment Room Panel (781' Control) is designed for total flooding and meets a Halon concentration of not less than 10% maintained for 10 minutes. The Halon 1301 system for the Main Control Room Panels (800' Control) is designed for total flooding under floor of each protected MCR panel with a minimum Halon concentration of 6% by volume with 10 seconds of bottle initiation and sustained concentration of greater than or equal to 6% by volume after ten minutes. This system is set to discharge a second bottle with similar concentration and soak time within a few minutes of the first bottle.
5. <u>Carbon Dioxide Suppression Systems</u> The use of carbon dioxide extinguishing systems should, as a minimum, comply with the requirements of NFPA 12, "Carbon Dioxide Extinguishing Systems." Particular consideration should also be given to: a. Minimum required CO_2 concentration and soak time; b. Toxicity of CO_2; c. Possibility of secondary thermal shock (cooling) damage; d. Offsetting requirements for venting during CO_2 injection to prevent over-pressurization versus sealing to prevent loss of agent;	5. Comply: All CO_2 systems will conform to the applicable requirements of NFPA 12. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation. The CPS CO_2 system was designed to comply minimum NFPA 12 requirements for CO_2 concentration and soak time. Provisions (horns, lights, signage) for personnel safety were installed. Thermal shock and overpressurization versus sealing have been accounted for. The CO_2 System for each Diesel Generator (Division 1, 2, and 3) room is designed for

e. Design requirements from over-pressurization; and

total flooding and was tested to verify the design concentration minimum of 34% CO_2 was obtained within 1 minue and maintained for 10 minutes.

The CO_2 System for the Main Turbine Exciter Enclosures is designed for local application with liquid CO_2 discharged at the nozzles for a minimum of 30 seconds, with the CO_2 discharge blanketing the protected hazard.

f. Possibility and probability of CO_2 systems being out-of-service because of personnel safety consideration. CO_2 systems are disarmed whenever people are present in an area so protected. Areas entered frequently (even though duration time for any visit is short) have often been found with CO_2 systems shut off.

Procedures have been written to caution personnel who will be working in areas protected by CO_2 systems.

6. Portable Extinguishers

Fire extinguishers should be provided in accordance with guidelines of NFPA 10 and 10A, "Portable Fire Extinguishers Installation, Maintenance and Use." Dry chemical extinguishers should be installed with due consideration given to cleanup problems after use and possible adverse effects on equipment installed in the area.

6. Comply:

Portable fire extinguishers are provided and will conform to the applicable requirements of NFPA 10. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.

F. GUIDELINES FOR SPECIFIC PLANT AREAS

1. Primary and Secondary Containment

a Normal Operation

Fire protection requirements for the primary and secondary containment areas should be provided on the basis of specific identified hazards. For example:

a. Comply with intent:

Fire protection is provided based on the Fire Protection Evaluation Report.

i. Lubricating oil or hydraulic fluid system for the primary coolant pumps;	i. Each reactor recirculation pump motor utilizes self-lubricating bearings with the lubricating oil cooled by cooling coils installed within the reservoirs. A pressurized oil system is not used. Infrared fire detection is provided for each pump with alarm and annunciation in the control room. All cables except those attached beneath the reactor or those for RR pump vibration instrumentation are in raceways.
ii. Cable tray arrangements and cable penetrations; and	ii. Linear thermal detectors with alarm and annunciation in the control room are provided for all cable trays containing safe shutdown cables in primary containment outside the drywell. In the same area all safety related cable trays greater than approximately 40% full are provided with linear thermal detectors.
iii. Charcoal filters.	iii. Not applicable. No charcoal filters are located in the primary or secondary containment.
Fire suppression systems should be provided based on the fire hazard analysis.	Fire suppression systems have been provided based on the FPER.
Fixed fire suppression capability should be provided for hazards that could jeopardize safe plant shutdown. Automatic sprinklers are preferred. An acceptable alternate is automatic gas (Halon or CO_2) for hazards identified as requiring fixed suppression protection.	Portable fire extinguishers and hose stations are provided for manual firefighting in both primary and secondary containment. The atmosphere of the reactor containment is not inerted during plant operation.
An enclosure may be required to confine the agent if a gas system is used. Such enclosures should	

not adversely affect safe shutdown, or other operating equipment in containment.Automatic fire suppression capability need not be provided in the primary containment atmospheres that are inerted during normal operation. However, special fire protection requirements during refueling and maintenance operations should be satisfied as provided below.

b. Refueling and Maintenance

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 fuel gas supply). Possible fires would not necessarily be in the vicinity of fixed detection and suppression systems.

Management procedures and controls necessary to assure adequate fire protection are discussed in Section 3a.

Equivalent protection for portable systems should be provided if it is impractical to install standpipes with hose stations.

Adequate self-contained breathing apparatus should be provided near the containment entrances for fire fighting and damage control personnel. These units should be independent of any breathing apparatus or air supply systems provided for general plant activities.

b. Comply with intent:

Procedures are in place which establish the controls to ensure adequate fire protection during maintenance and refueling operations.

Hose stations and portable extinguishers are provided as shown on the fire protection drawings.

Adequate self-contained breathing apparatus will be provided for emergency teams. This equipment will be maintained in emergency kits in strategic locations throughout the plant.

2. Control Room

The control room is essential to safe reactor operation. It must be protected against disabling fire damage and should be separated from other areas of the

2. Comply with intent:

The control room complex (including computers) is separated from other areas of the plant by floors and ceilings having a fire resistance rating of 3 hours. The

plant by floors, walls, and roofs having minimum fire resistance ratings of three hours.	supporting steel has a 3-hour protective covering. The control room is protected from a fire in the peripheral rooms by a 1.9-hour fire rated barrier (see Figures FP-14a and b).
Control room cabinets and consoles are subject to damage from two distinct fire hazards: a. Fire originating within a cabinet or console; and b. Exposure fire involving combustibles in the general room area.	Comply: Ionization detection is provided in the control room area and in cabinets and consoles. The control room is part of the PGCC designed by GE. The PGCC is provided with a Halon fire suppression system. The design of the PGCC is addressed in GE Licensing Topical Report NED0-10466-A.
Hose stations adjacent to the control room with portable extinguishers in the control room are acceptable.	Comply: Hose stations and portable fire extinguishers are adjacent to, and portable fire extinguishers are located in, 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 fire-fighting needs, satisfy electrical safety, and minimize physical damage to electrical equipment from hose stream impingement.	Comply.
Fire protection in the control room cabinets and consoles should be provided by smoke and heat detectors in each fire area. Alarm and annunciation should be provided in the control room. Fire alarms in other parts of the plant should also be alarmed and annunciated in the control room.	Comply: The PGCC Halon fire suppression system provides ionization fire detection in control room cabinets and consoles, and alarms and annunciators in the control room. Fire alarms in other parts of the station are also alarmed and annunciated in the control room.
Breathing apparatus for control room operators should be readily available. Control room floors, ceilings, supporting structures, and walls, including penetrations and doors, should be designed to a minimum fire rating of three hours. All	Comply with intent: A manifold breathing air system is provided for control room operators. Control room floors, ceilings, and supporting structures, including pene-

penetration seals should be airtight.	trations and doors, are designed to a minimum fire rating of 3 hours. The north and west walls are 3-hour rated. The south and east walls are 1.9-hour rated. All fire rated penetration seals are airtight.
Manually operated ventilation systems are acceptable.	Manually operated ventilation systems are provided.
Cables should not be located in concealed floor and ceiling spaces. All cables that enter the control room should terminate in the control room. That is, no cabling should be simply routed through the control room from one area to another. If such concealed spaces are used, however, they should have fixed automatic total flooding Halon protection.	Comply with intent: Generally, all cables that enter the control room terminate there. Fire detection is provided above the non-combustible suspended ceiling in the control room. The PGCC Halon fire suppression system provides fire detection and automatically initiated suppression for the PGCC floor sections.
3. <u>Cable Spreading Room</u>	
a. The preferred acceptable methods are:	
1. Automatic water system such as closed head sprinklers, open head deluge, or open directional spray nozzles. Deluge and open spray systems should have provisions for manual operation at a remote station; however, there should also be provisions to reclude inadvertent operation. Location of sprinkler heads or spray nozzles should consider cable tray sizing and arrangements to assure adequate water coverage. Cables should be designed to allow wetting down with deluge water without electrical faulting. Open head deluge and open directional spray systems should be zoned so that a single failure will not deprive the entire area of auto-matic fire suppression capability. The use of foam is acceptable provided it is of a type capable of being delivered by a sprinkler or deluge system, such as an Aqueous Film	1. Comply: An automatic wet pipe system is provided for the Division 1 and Division 2 cable spreading rooms. Locations of sprinkler heads consider cable tray sizing, arrangement, and obstructions to ensure adequate water coverage. All cables and their installation are designed to be wetted without electrical failure.

Forming Foam (AFFF).

2. Manual hoses and portable extinguishers should be provided as backup.

2. Comply:

   Hose stations are readily accessible from both entrances to each cable spreading room. In addition, hose stations and portable fire extinguishers are provided inside each cable spreading room.

3. Each cable spreading room of each unit should have divisional cable separation, and be separated from the other and the rest of the plant by a minimum three hour rated fire wall (refer to NFPA 251 or ASTM E-119 for fire test resistance rating).

3. Comply with intent:

   Each cable spreading room is separated from the other by two 1.9-hour fire rated walls that contain the auxiliary electric room, except for a small portion of a 1.9-hour fire rated wall where they abut together. The auxiliary electrical equipment room is also protected by an automatic preaction sprinkler system. The floor and ceiling of each cable spreading room is 3-hour fire rated. The north and west walls are 3-hour fire rated, and the south and east walls are 1.9-hour fire rated. For details of the separation of cable spreading areas of the plant, refer to Section 3.0 and the SSA.

4. At least two remote and separate entrances are provided to the room for access by fire brigade personnel.

4. Comply:

   Each cable spreading room has at least two remote and separate entrances for access by the plant fire brigade.

5. Aisle separations provided between tray stacks should be at least three feet wide and eight feet high.

5. Comply:

   Main aisle separations provided between tray stacks are at least 3 feet wide and 8 feet high.

b. For cable spreading rooms that do not provide divisional cable separation of a.3., in addition to meeting a.1., 2., 4., and 5. above, the following should also be provided:

1. Divisional cable separation should meet the guidelines of Regulatory Guide 1.75, "Physical Independence of Electric Systems."

2. All cabling should be covered with a suitable fire-retardant coating.

3. As an alternate to a.1. above, automatically initiated gas systems (Halon or CO_2) may be used for primary fire suppression, provided a fixed water system is used as a backup.

4. Plants that cannot meet the guidelines of Regulatory Guide 1.75, in addition to meeting a.1., 2., 4., and 5. above, an auxiliary shutdown system with all cabling independent of the cable spreading room should be provided.

b. Not applicable based on Section F.3.a. and the Safe Shutdown Analysis.

4. Plant Computer Room

Safety-related computers should be separated from other areas of the plant by barriers having a minimum three hour fire resistant rating. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Manual hose stations and portable water and Halon fire extinguishers should be provided.

4. Not applicable:

The computer is not safety-related, but is an integral part of the GE PGCC control room complex and cannot be separated from the control room. Automatic fire detection, as well as manual hose stations and portable fire extinguishers, are provided.

5. Switchgear Rooms

Switchgear rooms should be separated from the remainder of the plant by minimum three hour rated fire barriers to the extent practicable. Automatic fire detection should alarm and annunciate in the control room and alarm locally. Fire hose stations and portable extinguishers

5. Comply (except as noted):

Division 1 and 2 switchgear areas are separated from each other and other plant areas by 3-hour fire rated barriers. The Division 3 switchgear area is enclosed by 1.9-hour fire-rated barriers.

The switchgear rooms do not have automatic suppression systems but do

should be readily available.

Acceptable protection for cables that pass through the switchgear room is automatic water or gas agent suppression. Such automatic suppression must consider preventing unacceptable damage to electrical equipment and possible necessary containment of agent following discharge.

have automatic detection that alarms and annunciates in the control room. Hose stations and portable fire extinguishers are readily accessible to the areas. Detectors do not alarm locally.

6. Remote Safety-Related Panels

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 provided.

6. Comply with intent:

Detection is provided throughout the zone containing the remote shutdown panel that alarms and annunciates in the control room. As required by the Safe Shutdown Analysis, other general areas have detection that alarms in the main control room to protect any required safe shutdown components. Detectors do not alarm locally. Combustible materials are controlled and limited to those required for operation. Portable extinguishers and manual hose stations are provided.

7. Station Battery Rooms

Battery rooms should be protected against fire 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. (See NFPA 69, "Standard on Explosion Prevention Systems.")

Ventilation systems in the battery rooms should be capable of maintaining the hydrogen concentration well below 2 vol. % hydrogen concentration. Standpipe and hose and portable extinguishers should be provided.

Alternatives:

a. Provide a total fire rated barrier enclosure of the battery room complex that exceeds the fire load contained in the room,

7. Comply:

Battery rooms are protected against fire and explosions. Safe shutdown battery rooms are enclosed by 3-hour fire barriers. Other battery rooms have 1.9-hour fire rated barrier enclosures.

Ventilation is designed to maintain hydrogen concentrations below 2% for the maximum postulated rate of hydrogen release.

Fire hose stations and portable extinguishers are accessible to the battery rooms. Loss of ventilation is alarmed in the control room.

a. Comply.

b. Reduce the fire load to be within the fire barrier capability of 1-1/2 hours, or

b. Not applicable.

c. Provide a remote manual actuated sprinkler system in each room and provide the 1-1/2 hour fire barrier separation.

c. Not applicable.

8. Turbine Lubrication and Control Oil Storage and Use Areas

A blank fire wall having a minimum resistance rating of three hours should separate all areas containing safety-related systems and equipment from the turbine oil system. When a blank wall is not present, open head deluge protection should be provided for the turbine oil hazards, and automatic open head water curtain protection should be provided for wall openings.

8. Comply:

The turbine oil area is separated from all safety-related equipment by walls having a 3-hour rating, except the main steam tunnel on elevation 755 feet of the turbine building (see Subsection .2.2.2 of the Safe Shutdown Analysis). In general, tubine oil hazards are protected by wet-pipe automatic sprinkler systems. There are safety-related cables and instruments located in the turbine oil area; however, they are not required for safe shutdown.

9. Diesel Generator Areas

Diesel generators should be separated from each other and other areas of the plant by fire barriers having a minimum fire resistance rating of three hours. Automatic fire suppression such as AFFF foam, or sprinklers, should be installed to combat any diesel generator or lubricating oil fires. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Drainage for fire fighting water and means for local manual venting of smoke should be provided.

9. Comply:

The three safety-related standby, emergency diesel generators are separated from each other and all other plant equipment by 3-hour rated enclosures. An automatic total flooding CO_2 system is provided for each diesel generator room. The automatic fire detection provided alarms and annunciates in the control room and alarms locally. Drainage for fire-fighting water is provided.

An automatic wet pipe suppression system is provided for the non-safety related FLEX diesel generator. A flow switch on the suppression system alarms and annunciates in the control room. Drainage for fire-fighting water is provided.

Means for local manual venting of smoke is provided as described in the CPS Smoke Removal Plan.

When day tanks cannot be separated from the diesel generator, one of the following should be provided for the diesel generator area:

The day tanks are separated from the diesel generator by a 1.9-hour fire rated enclosure. An automatic wet-pipe sprinkler system is provided for the day tanks. Ionization fire detection will be provided for each day tank room that alarms and annunciates in the control room.

a. Automatic open head deluge or open head spray nozzle system(s),

b. Automatic closed head sprinklers,

c. Automatic AFFF that is delivered by a sprinkler deluge or spray system, or

d. Automatic gas system (Halon or CO_2) may be used in lieu of foam or sprinklers to combat diesel generator and/or lubricating oil fires.

10. Diesel Fuel Oil Storage Areas

10. Comply with intent:

Diesel fuel oil tanks with a capacity greater than 1,100 gallons should not be located inside the buildings containing safety-related equipment. 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. Buried tanks are considered as meeting the three hour fire resistance requirements. See NFPA 30, "Flammable and Combustible Liquids Code," for additional guidance.

The diesel generator oil day tanks (600 gallons) are totally enclosed in 1.9-hour rated structures, and are protected by an automatic wet-pipe sprinkler system.

The diesel generator oil storage tanks (nominally 35,000/50,000 gallons) are located directly below the diesel generators and are not buried. They are totally enclosed in a 3-hour rated structure. Fire suppression capability consists of automatic wet-pipe sprinkler with hose stations and portable fire extinguishers as backups. An ionization fire detection system that alarms and annunciates in the control room will be provided for each oil storage room.

When located in a separate building, the tank should be protected by an automatic fire suppression system such as AFFF or sprinklers.

Not applicable: Diesel tanks are located in the same building.

In operating plants where tanks are located directly above or below the diesel generators and cannot reasonably be moved, separating floors and main structural members should, as a

Structural members are concrete encased to provide a 3-hour fire rating.

Doors are located 7 feet 6 inches above the finish floor to prevent oil from spreading to other zones in the unlikely

minimum, have a fire resistance rating of three hours. Floors should be liquid tight to prevent leaking of possible oil spills from one level to another. Drains should be provided to remove possible oil spills and fire-fighting water to a safe location.	event of an oil spill. Drains are provided to remove possible oil spills and fire-fighting water to a local sump.
One of the following acceptable methods of fire protection should also be provided:	
a. Automatic open head deluge or open head spray nozzle system(s);	a. Not applicable.
b. Automatic closed head sprinklers; or	b. Comply.
c. Automatic AFFF that is delivered by a sprinkler system or spray	c. Not applicable.
11. Safety-Related Pumps Pump houses and rooms housing safety-related pumps should be protected by automatic sprinkler protection unless a fire hazards analysis can demonstrate that a fire will not endanger other safety-related equipment required for safe plant shutdown. Early warning fire detection should be installed with alarm and annunciation locally and in the control room. Local hose stations and portable extinguishers should also be provided.	11. Comply with intent: Fire protection and detection are provided in accordance with the FPER and SSA. The SSA demonstrates that the plant will maintain the ability to perform safe shutdown functions. Fire hose stations and portable fire extinguishers are located in the area
12. New Fuel Area Hand portable extinguishers should be located within this area. Also, local 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 criticality for any water density that might occur during fire water application.	12. Comply (except as noted below): An ionization type smoke detection system is provided which annunciates and alarms in the control room. Detectors do not alarm locally. Fire hose stations and portable extinguishers are located within the area. Combustibles are limited to a minimum in the new fuel area. The storage area is provided with a drainage system to preclude accumulation of water. The storage configuration of new fuel will always be maintained so as to preclude criticality.

13. Spent Fuel Pool Area Protection for the spent fuel pool area should be provided by local fire hose stations and portable extinguishers. Automatic fire detection should be provided to alarm and annunciate in the control room and to alarm locally.	13. Comply (except as noted below): An ionization type smoke detection system is provided which annunciates and alarms in the control room. Detectors do not alarm locally. Fire hose stations and portable fire extinguishers are located in the area.
14. Radwaste Building The radwaste building should be separated from other areas of the plant by fire barriers having at least three hour ratings. Automatic sprinklers should be used in all areas where combustible materials are located. Automatic fire detection should be provided to annunciate and alarm in the control room and alarm locally. During a fire, the ventilation systems in these areas should be capable of being isolated. Water should drain to liquid radwaste building sumps. Acceptable alternative fire protection is automatic fire detection to alarm and annunciate in the control room, in addition to manual hose stations and portable extinguishers consisting of handheld and large wheeled units.	14. Comply: The radwaste building is separated from safety-related areas of the plant by 3-hour fire barriers. Automatic preaction sprinklers are provided for the radwaste building paint/oil storage room and baler areas. The sprinkler systems alarm and annunciate in the control room and alarm locally. Automatic fire detection is provided in selected areas which annunciates and alarms in the control room. The ventilation systems are capable of being isolated. Adequate drainage has been provided to the liquid radwaste building sumps. Fire hose stations and portable fire extinguishers are located throughout the building with the exception of high-radiation areas. Extinguishers located outside of these areas can be brought in for manual fire fighting.
15. Decontamination Areas The decontamination areas should be protected by automatic sprinklers if flammable liquids are stored. Automatic fire detection should be provided to annunciate and alarm in the control room and alarm locally. The ventilation system should be capable of being isolated. Local hose stations and hand portable extinguishers should be provided as backup to the sprinkler system.	15. Comply: Manual fire fighting equipment is provided, consisting of fire hose stations and portable fire extinguishers. Automatic suppression and detection is not provided in this area since flammable materials will not be stored there. The ventilation systems are capable of being isolated.

APPLICANT'S POSITION

16. Safety-Related Water Tanks

Storage tanks that supply water for safe shutdown should be protected from the effects of fire. Local hose stations and portable extinguishers should be provided. Portable extinguishers should be located in nearby hose houses. Combustible materials should not be stored next to outdoor tanks. A minimum of 50 feet of separation should be provided between outdoor tanks and combustible materials where feasible.

16. Not applicable:

Storage tanks that supply water for safe shutdown are not employed in the Clinton Power Station design.

17. Cooling Towers

Cooling towers should be of noncombustible construction or so located 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. Cooling towers of combustible construction, so located that a fire in them could adversely affect safety-related systems or equipment, should be protected with an open head deluge system installation with hydrants and hose houses strategically located.

17. Not applicable:

Cooling towers are not employed in the Clinton Power Station design.

18. Miscellaneous Areas

Miscellaneous areas such as records storage areas, shops, warehouses, and auxiliary boiler rooms should be so located that a fire or effects of a fire, including smoke, will not adversely affect any safety-related systems or equipment. Fuel oil tanks for auxiliary boilers should be buried or provided with dikes to contain the entire tank contents.

18. Comply:

The records storage area, machine shop, and storerooms are located in the radwaste and service buildings and are remote from safety-related equipment. The storeroom in the radwaste building has an overhead sprinkler system.

The auxiliary boiler system employs an electrode boiler and steam reboiler, and is located in non-safety-related buildings. No oil-fired equipment is present.

APPLICANT'S POSITION

G. SPECIAL PROTECTION GUIDELINES

1. Welding and Cutting Acetylene-Oxygen Fuel Gas Systems

   This equipment is used in various areas throughout the plant. Storage locations should be chosen to permit fire protection by automatic sprinkler systems. Local hose stations and portable equipment should be provided as backup. The requirements of NFPA 51 and 51B are applicable to these hazards. A permit system should be required to utilize this equipment. (Also refer to 2f herein.

1. Comply:

   Combustible gas tanks are stored in the radwaste building storeroom and are protected by an automatic preaction system. Use of combustible gases will be controlled in accordance with approved procedures. Local hose stations andportable extinguishers will be utilized for additional fire protection as required.

2. Storage Areas for Dry Ion Exchange Resins

   Dry ion exchange resins should not be stored near essential safety-related systems. Dry unused resins should be protected by automatic wet pipe sprinkler installations. Detection by smoke and heat detectors should alarm and annunciate in the control room and alarm locally. Local hose stations and portable extinguishers should provide backup for these areas. Storage areas of dry resin should have curbs and drains. (Refer to NFPA 92M, "Waterproofing and Draining of Floors."

2. Partial compliance:

   New resins (greater than or equal to 70% moisture) will be stored in an area remote from safety-related equipment or stored in a fire retardant container. Local hose stations and portable extinguishers provide the primary means of protection.

3. Hazardous Chemicals

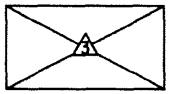
   Hazardous chemicals should be stored and protected in accordance with the recommendations of NFPA 49, "Hazardous Chemicals Data." Chemicals storage areas should be well ventilated and protected against flooding conditions since some chemicals may react with water to produce ignition.

3. Comply:

   Permanent storage of hazardous chemicals is in accordance with NFPA 49. Chemical storage areas are well ventilated and protected against flooding conditions. NFPA code conformance is documented in the CPS NFPA Code Conformance Evaluation.

BTP APCSB 9.5-1, APPENDIX A, PLANTS UNDER CONSTRUCTION AND OPERATING PLANTS	APPLICANT'S POSITION
4. Materials Containing Radioactivity 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 isotopic decay heat from entrained radioactive materials.	4. Comply: Materials that could collect radioactivity will be stored in closed metal containers and will be protected from other fire areas. Consideration has been given to decay heat which wouldcome from any entrained radioactive materials

REVISION 13
JANUARY 2009

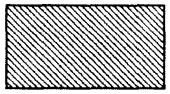


FIRE FLOOR SLAB
NUMBER IN
REPRESENTS HRS.
(PLAN DWG'S ONLY)

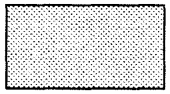
ZONE BOUNDARY

1.9 HR. FIRE BARRIER

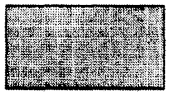
3 HR. FIRE BARRIER



SAFE SHUTDOWN
EQUIPMENT



FIRE PROTECTION AREA
COVERAGE CO_2 OR HALON



FIRE PROTECTION AREA
COVERAGE H_2O

TRANSIENT
COMBUSTIBLE FREE ZONE
(AS DESCRIBED IN
SEC 4.2 OF APPENDIX F)

FIRE HOSE STATION

AREA FIRE DETECTION

LINEAR DETECTION

FIRE EXTINGUISHER

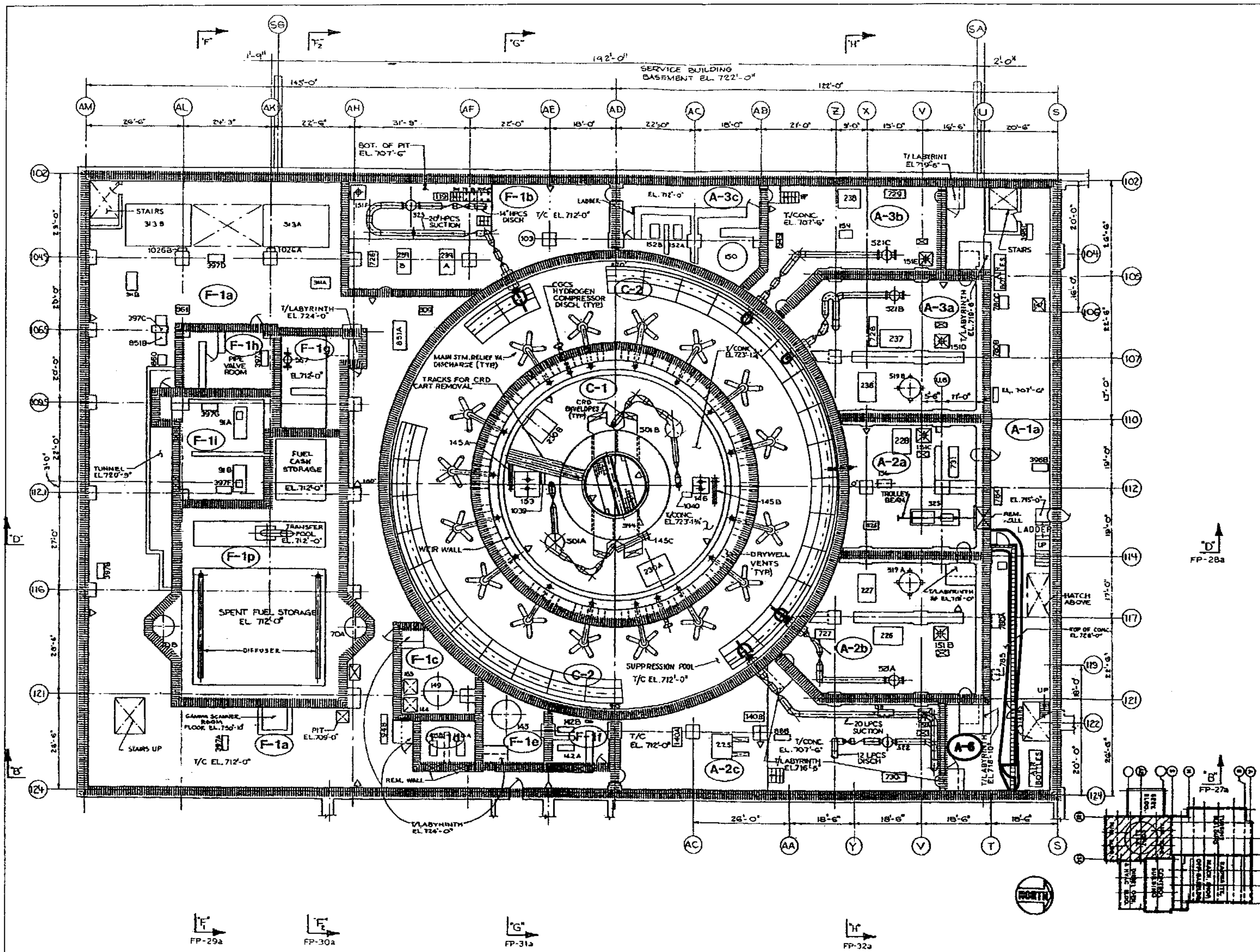
NON-FIRE RATED
WATERTIGHT DOOR

NON-FIRE RATED
SPECIAL DOOR

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-1
FIRE PROTECTION LEGEND

REVISION 10
OCTOBER 2001



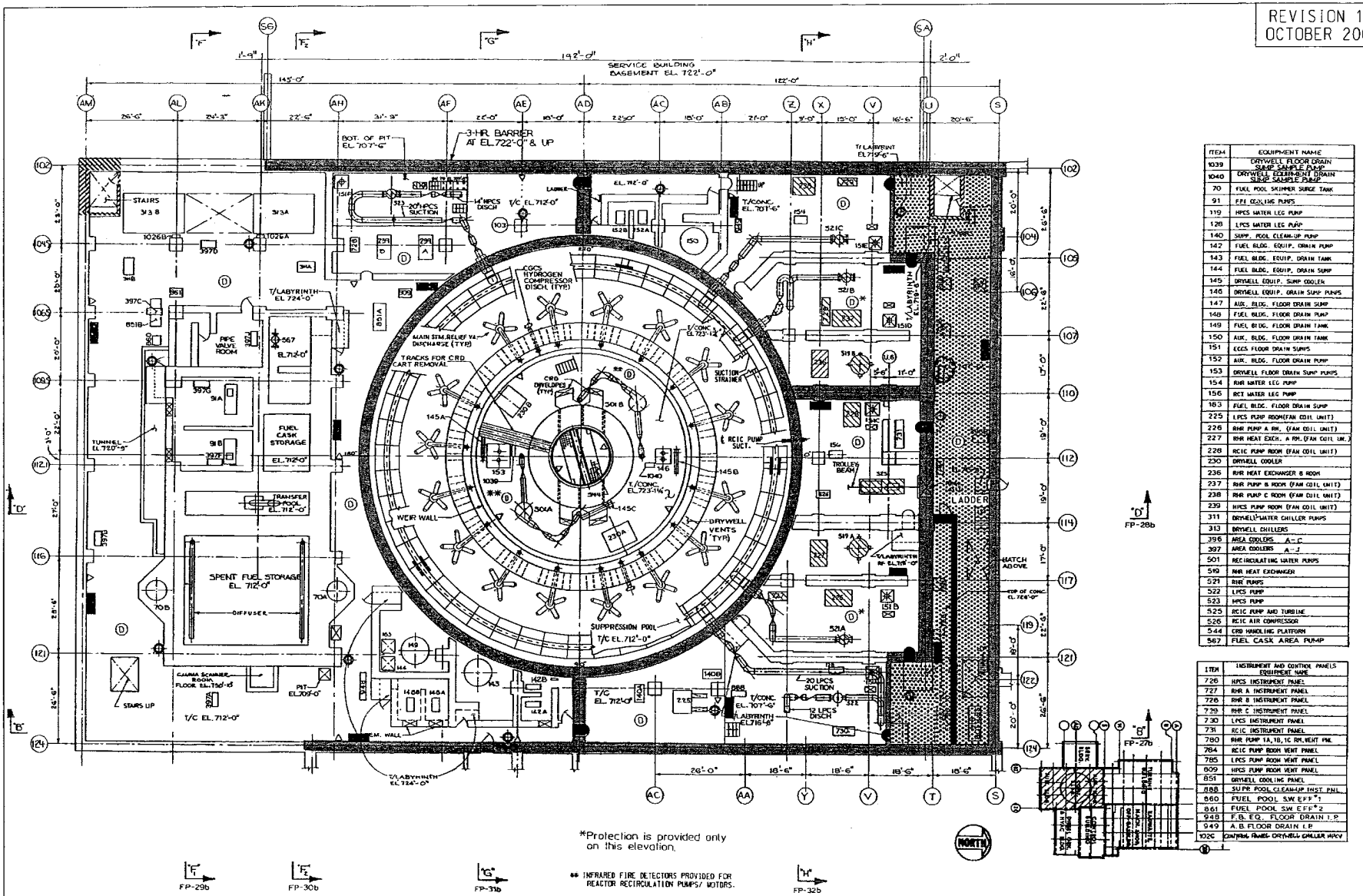
ITEM	EQUIPMENT NAME
1039	DRYWELL FLOOR DRAIN SUMP SAMPLE PUMP
1040	DRYWELL EQUIPMENT DRAIN SUMP SAMPLE PUMP
70	FUEL POOL SKIMMER SURGE TANK
91	FPI COOLING PUMPS
119	HPCS WATER LEG PUMP
128	LPCS WATER LEG PUMP
140	SUPP. POOL CLEAN-UP PUMP
142	FUEL BLDG. EQUIP. DRAIN PUMP
143	FUEL BLDG. EQUIP. DRAIN TANK
144	FUEL BLDG. EQUIP. DRAIN SUMP
145	DRYWELL EQUIP. SUMP COOLER
146	DRYWELL EQUIP. DRAIN SUMP PUMPS
147	AUX. BLDG. FLOOR DRAIN SUMP
148	FUEL BLDG. FLOOR DRAIN PUMP
149	FUEL BLDG. FLOOR DRAIN TANK
150	AUX. BLDG. FLOOR DRAIN TANK
151	ECCS FLOOR DRAIN SUMPS
152	AUX. BLDG. FLOOR DRAIN PUMP
153	DRYWELL FLOOR DRAIN SUMP PUMPS
154	RHR WATER LEG PUMP
156	RCI WATER LEG PUMP
183	FUEL BLDG. FLOOR DRAIN SUMP
225	LPCS PUMP ROOM(FAN COIL UNIT)
226	RHR PUMP A RM. (FAN COIL UNIT)
227	RHR HEAT EXCH. A RM. (FAN COIL UN.)
228	RCIC PUMP ROOM (FAN COIL UNIT)
230	DRYWELL COOLER
236	RHR HEAT EXCHANGER B ROOM
237	RHR PUMP B ROOM (FAN COIL UNIT)
238	RHR PUMP C ROOM (FAN COIL UNIT)
239	HPCS PUMP ROOM (FAN COIL UNIT)
311	DRYWELL WATER CHILLER PUMPS
313	DRYWELL CHILLERS
396	AREA COOLERS A - C
397	AREA COOLERS A - J
501	RECIRCULATING WATER PUMPS
519	RHR HEAT EXCHANGER
521	RHR PUMPS
522	LPCS PUMP
523	HPCS PUMP
525	RCIC PUMP AND TURBINE
526	RCIC AIR COMPRESSOR
544	CRD HANDLING PLATFORM
567	FUEL CASK AREA PUMP

ITEM	INSTRUMENT AND CONTROL PANELS EQUIPMENT NAME
726	HPCS INSTRUMENT PANEL
727	RHR A INSTRUMENT PANEL
728	RHR B INSTRUMENT PANEL
729	RHR C INSTRUMENT PANEL
730	LPCS INSTRUMENT PANEL
731	RCIC INSTRUMENT PANEL
780	RHR PUMP 1A, 1B, 1C RM. VENT PNL
784	RCIC PUMP ROOM VENT PANEL
785	LPCS PUMP ROOM VENT PANEL
809	HPCS PUMP ROOM VENT PANEL
851	DRYWELL COOLING PANEL
888	SUPP. POOL CLEAN-UP INST. PNL.
860	FUEL POOL SW EFF #1
861	FUEL POOL SW EFF #2
948	F.B. EQ. FLOOR DRAIN I.P.
949	A.B. FLOOR DRAIN I.P.
102C	CONTROL PANEL DRYWELL CHILLER HVAC

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-2a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
BASEMENT FLOOR PLAN - EL. 707'-6" & 712'-0"

REVISION 10
OCTOBER 2001



*Protection is provided only on this elevation.

** INFRARED FIRE DETECTORS PROVIDED FOR REACTOR RECIRCULATION PUMPS/ MOTORS.

ITEM	EQUIPMENT NAME
1039	DRYWELL FLOOR DRAIN SUMP SAMPLE PUMP
1040	DRYWELL EQUIPMENT DRAIN SUMP SAMPLE PUMP
70	FUEL POOL SKIMMER SURGE TANK
91	FPC COOLING PUMPS
119	HPCS WATER LEG PUMP
128	LPCS WATER LEG PUMP
140	SUPP. POOL CLEAN-UP PUMP
142	FUEL BLDG. EQUIP. DRAIN PUMP
143	FUEL BLDG. EQUIP. DRAIN TANK
144	FUEL BLDG. EQUIP. DRAIN SUMP
145	DRYWELL EQUIP. SUMP COOLER
146	DRYWELL EQUIP. DRAIN SUMP PUMPS
147	AUX. BLDG. FLOOR DRAIN SUMP
148	FUEL BLDG. FLOOR DRAIN PUMP
149	FUEL BLDG. FLOOR DRAIN TANK
150	AUX. BLDG. FLOOR DRAIN TANK
151	ECCS FLOOR DRAIN SUMPS
152	AUX. BLDG. FLOOR DRAIN PUMP
153	DRYWELL FLOOR DRAIN SUMP PUMPS
154	RHR WATER LEG PUMP
156	RCI WATER LEG PUMP
183	FUEL BLDG. FLOOR DRAIN SUMP
225	LPCS PUMP ROOM (FAN COIL UNIT)
226	RHR PUMP A RM. (FAN COIL UNIT)
227	RHR HEAT EXCH. A RM. (FAN COIL UN.)
228	RCIC PUMP ROOM (FAN COIL UNIT)
230	DRYWELL COOLER
236	RHR HEAT EXCHANGER B ROOM
237	RHR PUMP B ROOM (FAN COIL UNIT)
238	RHR PUMP C ROOM (FAN COIL UNIT)
239	HPCS PUMP ROOM (FAN COIL UNIT)
311	DRYWELL WATER CHILLER PUMPS
313	DRYWELL CHILLERS
396	AREA COOLERS A-C
397	AREA COOLERS A-J
501	RECIRCULATING WATER PUMPS
510	RHR HEAT EXCHANGER
521	RHR PUMPS
522	LPCS PUMP
523	HPCS PUMP
525	RCIC PUMP AND TURBINE
526	RCIC AIR COMPRESSOR
544	CRD HANDLING PLATFORM
567	FUEL CASK AREA PUMP

ITEM	INSTRUMENT AND CONTROL PANELS EQUIPMENT NAME
726	HPCS INSTRUMENT PANEL
727	RHR A INSTRUMENT PANEL
728	RHR B INSTRUMENT PANEL
729	RHR C INSTRUMENT PANEL
730	LPCS INSTRUMENT PANEL
731	RCIC INSTRUMENT PANEL
780	RHR PUMP 1A, 1B, 1C RM. VENT PNL
784	RCIC PUMP ROOM VENT PANEL
785	LPCS PUMP ROOM VENT PANEL
809	HPCS PUMP ROOM VENT PANEL
851	DRYWELL COOLING PANEL
888	SUPR POOL CLEAN-UP INST PNL
860	FUEL POOL SW EFF*1
861	FUEL POOL SW EFF*2
948	F.B. EQ. FLOOR DRAIN I.P.
949	A.B. FLOOR DRAIN I.P.
102C	CONTROL PANEL- DRYWELL CHILLER HVAC

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-2b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
BASEMENT FLOOR PLAN - EL. 707'-6" & 712'-0"

PEVISION 14
JANUARY 2011

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-3a
FIRE ZONE BOUNDARIES
AUXILIARY FUEL BUILDING AND CONTAINMENT
GRADE FLOOR PLAN-EL. 737'-0"

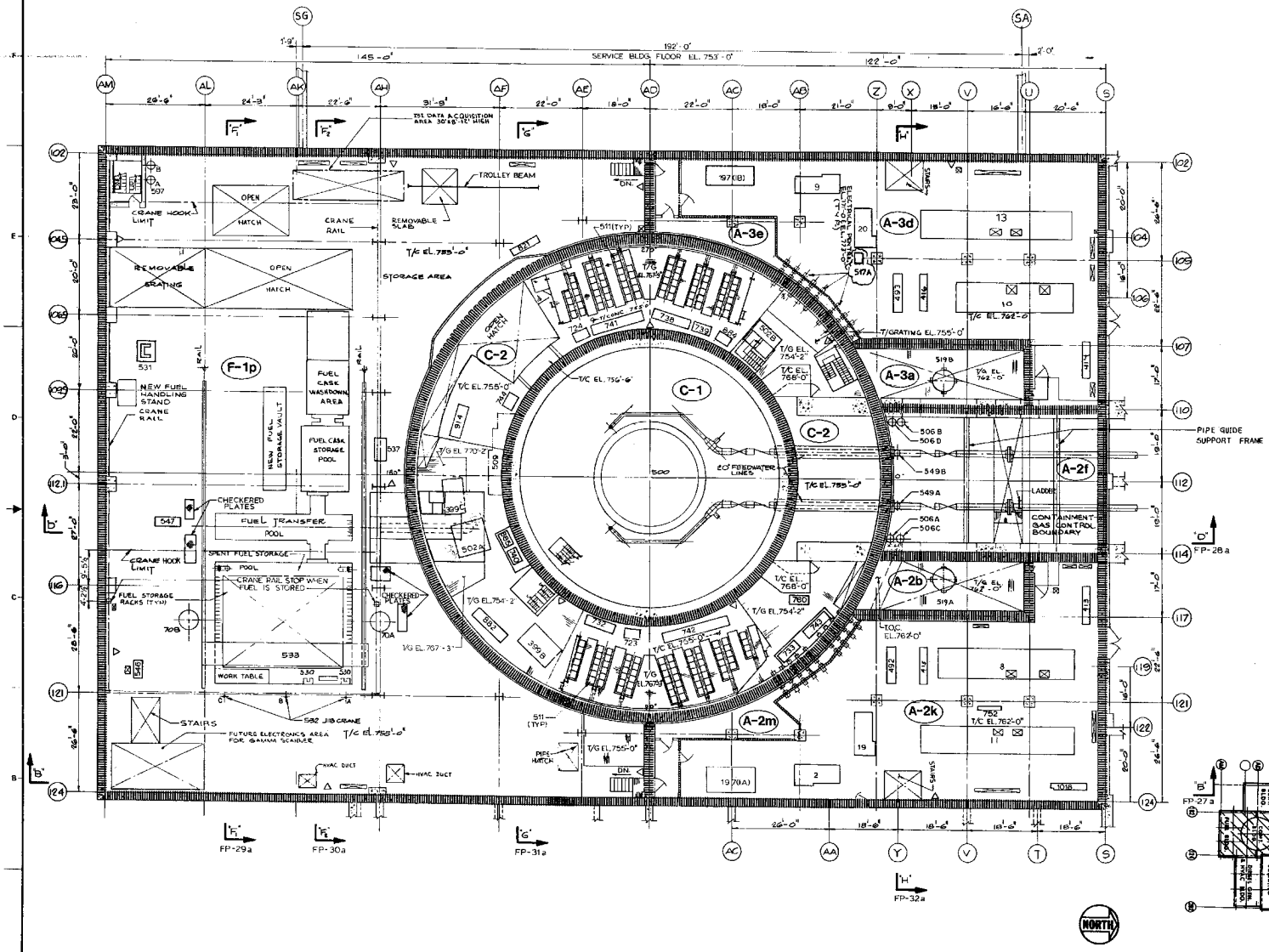
Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-3b
FIRE PROTECTION FEATURES
AUXILIARY FUEL BUILDING AND CONTAINMENT
GRADE FLOOR PLAN-EL.737'-0"

REVISION 7
JUNE 1997

MO1-1107



ITEM	EQUIPMENT NAME
70	SURGE TANKS
197	SWITCHGEAR HEAT REMOVAL UNIT
506	ACCUMULATOR TANKS
549	FEEDWATER CHECKVALVE ACCUMULATOR TANK A & B
399	AREA COOLERS
500	REACTOR VESSEL
502	HYD. POWER UNIT
509	CRD MASTER CONTROLS
511	HCU MODULES
519	RHR HEAT EXCHANGERS
530	FUEL PREP MACHINE
531	NEW FUEL INSPECTION STAND
532	JIB CRANE
533	FUEL HANDLING PLATFORM

ITEM	INSTRUMENT AND CONTROL PANELS, EQUIPMENT NAME
723	RECIRC. PUMP A INSTR. PANEL
724	RECIRC. PUMP B INSTR. PANEL
732	JET PUMP INSTR. PANEL A
733	REACTOR WATER CLEANUP INSTR.PANEL
738	JET PUMP INSTR. PANEL B
739	REACTOR VESSEL LVL. & PRESS. INSTR. PNL. D
740	REACTOR VESSEL LVL. & PRESS. INSTR. PNL. C
741	REACTOR VESSEL LVL. & PRESS. INSTR. PNL. B
742	REACTOR VESSEL LVL. & PRESS. INSTR. PNL. A
743	MAIN STEAM FLOW INSTR. PANEL A
744	MAIN STEAM FLOW INSTR.PANEL B
752	SRM/IRM DRIVE CONTROL RELAY PANEL
760	CONT BUILDING PROCESS SAMPLE INSTR. PANEL
821	CRD & VESSEL TEMP. RECORDER PNL.
882	REACTOR SAMPLE PANEL
884	MAIN STEAM INST. PANEL
885	MAIN STEAM INST. PANEL
914	CRD. PRESS. CNT. I.P.
537	HYDRAULIC UNIT
548	MASTER RELAY PNL.
547	FUEL BLDG. OPER. PNL.
567	CHILLED WATER COMP. TANK

517A	IRD VIBRATION PN.

ITEM	ELECTRICAL EQUIPMENT
1018	RADIO BASE STATIONS A & C COMM DIST CAB D, COMP. CAB. E
8	6.9 KV SWITCHGEAR 1A
10	6.9 KV SWITCHGEAR 1B
11	4.1 KV SWITCHGEAR 1A
13	4.1 KV SWITCHGEAR 1B
19	480 V UNIT SUBSTATION 1D
20	480 V UNIT SUBSTATION 1E
2	480 V UNIT SUBSTATION 1L
9	480 V UNIT SUBSTATION 1M
413	AB MCC 1D
414	AB MCC 1E
415	AB MCC 1F
416	AB MCC 1G
492	AB MCC 1H
493	AB MCC 1I

CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-4a

FIRE ZONE BOUNDARIES
AUXILIARY FUEL BUILDING AND CONTAINMENT
MEZZANINE FLOOR PLAN EL. 755'-0" & EL. 762'-0"

REVISION 15
JANUARY 2013

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION

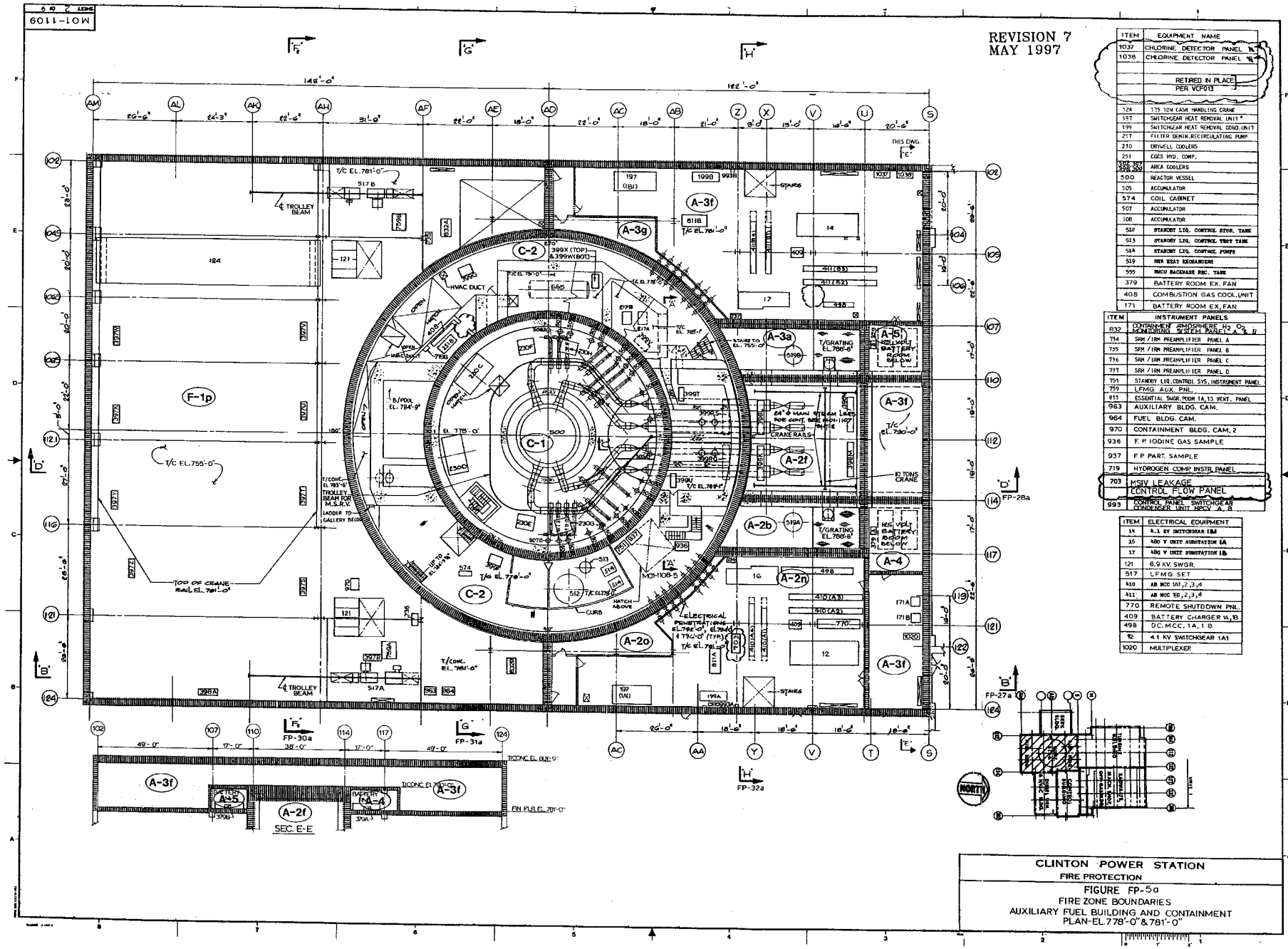
FIRE PROTECTION

FIGURE FP-4b

FIRE PROTECTION FEATURES

AUXILIARY FUEL BUILDING AND CONTAINMENT

MEZZANINE FLOOR PLAN EL. 755'-0" & EL. 762'-0"


REVISION 7
MAY 1997
ITEM | EQUIPMENT NAME
1037 | CHLORINE DETECTOR PANEL
1038 | CHLORINE DETECTOR PANEL
RETIRED IN PLACE PER VCF013
124 | 125 TON CASK HANDLING CRANE
197 | SWITCHGEAR HEAT REMOVAL UNIT
199 | SWITCHGEAR HEAT REMOVAL COND.UNIT
217 | FILTER DEMIN.RECIRCULATING PUMP
230 | DRYWELL COOLERS
251 | CGCS HYD. COMP.
328-332 328-332 | AREA COOLERS
500 | REACTOR VESSEL
509 | ACCUMULATOR
574 | COIL CABINET
507 | ACCUMULATOR
308 | ACCUMULATOR
512 | STANDBY LIQ. CONTROL STOR. TANK
513 | STANDBY LIQ. CONTROL TEST TANK
514 | STANDBY LIQ. CONTROL PUMPS
519 | RHR HEAT EXCHANGERS
555 | HNCU BACKWASH REC. TANK
379 | BATTERY ROOM EX. FAN
408 | COMBUSTION GAS COOL.UNIT
171 | BATTERY ROOM EX. FAN
ITEM | INSTRUMENT PANELS
632 | CONTAINMENT ATMOSPHERE H2 O2 MONITORING SYSTEM PANEL A, B
734 | SRM / IRM PREAMPLIFIER PANEL A
735 | SRM / IRM PREAMPLIFIER PANEL B
736 | SRM / IRM PREAMPLIFIER PANEL C
737 | SRM / IRM PREAMPLIFIER PANEL D
751 | STANDBY LIQ.CONTROL SYS. INSTRUMENT PANEL
759 | LFMG AUX. PNL.
811 | ESSENTIAL SWGR.ROOM 1A,1B VENT. PANEL
963 | AUXILIARY BLDG. CAM.
964 | FUEL BLDG. CAM.
970 | CONTAINMENT BLDG. CAM. 2
936 | F.P. IODINE GAS SAMPLE
937 | F.P. PART. SAMPLE
719 | HYDROGEN COMP. INSTR. PANEL
703 | MSIV LEAKAGE CONTROL FLOW PANEL
993 | CONTROL PANEL SWITCHGEAR CONDENSER UNIT MOV A, B
ITEM | ELECTRICAL EQUIPMENT
14 | 4.1 KV SWITCHGEAR 1B4
15 | 480 V UNIT SUBSTATION 1A
17 | 480 V UNIT SUBSTATION 1B
121 | 6.9 KV. SWGR.
517 | LFMG SET
410 | AB MCC 1A1,2,3,4
411 | AB MCC 1B1,2,3,4
770 | REMOTE SHUTDOWN PNL.
409 | BATTERY CHARGER 1A,1B
498 | DC. MCC. 1A, 1B
102 | 4.1 KV SWITCHGEAR 1A1
1020 | MULTIPLEXER
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-5a
FIRE ZONE BOUNDARIES
AUXILIARY FUEL BUILDING AND CONTAINMENT
PLAN-EL.778'-0" & 781'-0"
SEC. E-E
NORTH

REVISION 7
JANUARY 1997

6011-1109

ITEM	EQUIPMENT NAME
1037	CHLORINE DETECTOR PANEL
—	RETIRED IN PLACE PER VCF-0
1038	CHLORINE DETECTOR PANEL
	RETIRED IN PLACE PER VCF-0
124	175 TON CASK HANDLING CRANE
197	SWITCHGEAR HEAT REMOVAL UNIT *
199	SWITCHGEAR HEAT REMOVAL COND. UNIT
217	FILTER DEMIN. RECIRCULATING PUMP
230	DRYWELL COOLERS
251	CGCS HYD. COMP.
396-397 398-399	AREA COOLERS
500	REACTOR VESSEL
505	ACCUMULATOR
574	COIL CABINET
507	ACCUMULATOR
508	ACCUMULATOR
512	STANDBY LIQ. CONTROL STOR. TANK
513	STANDBY LIQ. CONTROL TEST TANK
514	STANDBY LIQ. CONTROL PUMPS
539	RHR HEAT EXCHANGERS
555	RWCU BACKWASH REC. TANK
379	BATTERY ROOM EX. FAN
403	COMBUSTION GAS COOL. UNIT
171	BATTERY ROOM EX. FAN

ITEM	INSTRUMENT PANELS
832	CONTAINMENT ATMOSPHERE H_2 O_2 MONITORING SYSTEM PANEL A & B
754	SRM / IRM PREAMPLIFIER PANEL A
755	SRM / IRM PREAMPLIFIER PANEL B
756	SRM / IRM PREAMPLIFIER PANEL C
757	SRM / IRM PREAMPLIFIER PANEL D
791	STANDBY LIQ. CONTROL SYS. INSTRUMENT PANEL
759	LFMG, AUX. PNL.
811	ESSENTIAL SWGR. ROOM 1A, 1B VENT. PANEL
963	AUXILIARY BLDG. CAM.
964	FUEL BLDG. CAM.
970	CONTAINMENT BLDG. CAM. 2
936	F. P. IODINE GAS SAMPLE
937	F.P. PART. SAMPLE
719	HYDROGEN COMP. INSTR. PANEL
703	HSW LEAKAGE CONTROL FLOW PANEL
993	CONTROL PANEL, SWITCHGEAR CONDENSER UNIT HECV A, B

ITEM	ELECTRICAL EQUIPMENT
14	4.1 KV SWITCHGEAR 1B1
16	480 V UNIT SUBSTATION 1A
17	480 V UNIT SUBSTATION 1B
121	6.9 KV SWGR.
517	LFMG SET
610	AB MCC 1A1, 2, 3, 4
611	AB MCC 1B1, 2, 3, 4
770	REMOTE SHUTDOWN PNL.
409	BATTERY CHARGER 1C, 1B
498	GC. MCC. 1A, 1B
12	4.1 KV SWITCHGEAR 1A1
1020	MULTIPLEXER

SEC E-E

(D)* PARTIAL DETECTION INFRARED DETECTION BY STBY. LIQ. CONTROL PUMPS

(D)† LINEAR THERMAL DETECTORS, PARTIAL DETECTION

CLINTON POWER STATION
FIRE PROTECTION

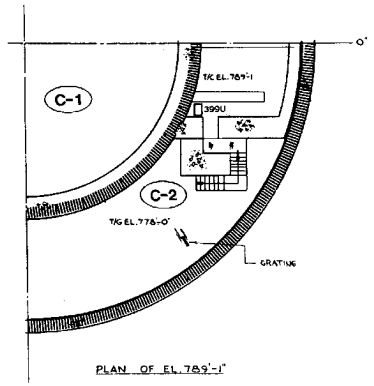
FIGURE FP-5b
FIRE PROTECTION FEATURES
AUXILIARY FUEL BUILDING AND CONTAINMENT
PLAN-EL. 778'-0" & 781'-0"

MO1-11 08

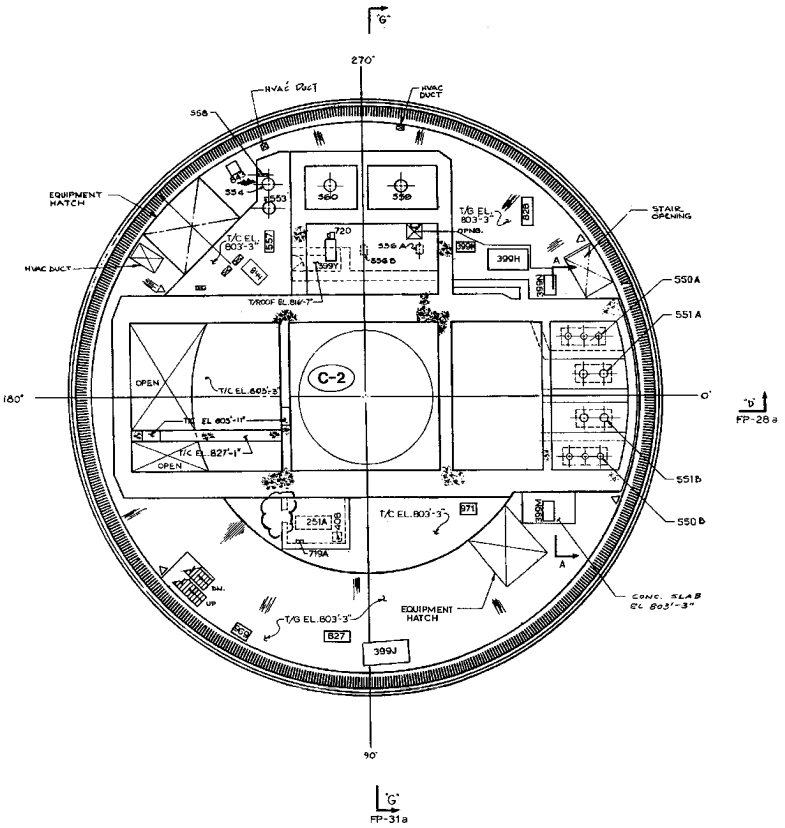
SHEET 5 OF 8

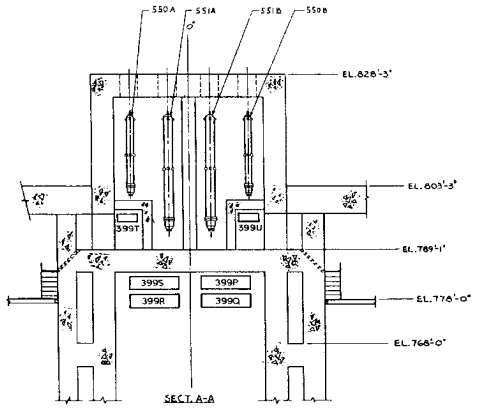
REVISION 7
JANUARY 1997

ITEM	EQUIPMENT NAME
251	CG HYDROGEN COMPRESSOR
399	AREA COOLERS
550	REGEN. HEAT EXCH.
551	NON-REGEN. HEAT EXCH.
553	RWCU PRE-COAT TANK
554	RWCU RESIN TANK
555	RWCU BACKWASH REC. TANK
556	FILT./DEMIN. HOLDING PUMPS
557	RWCU PRE-COAT PUMP
558	RWCU RESIN PUMP
559	FILT / DEMIN. VESSEL
560	FILT / DEMIN. VESSEL
827	MULTI - PLEXER
828	MULTI - PLEXER
843	RWCU INST. RACK
844	CONTROL PANEL
719	HYDROGEN COMP. INSTR. PANEL
989	CONTAINMENT AIR MONITOR
720	CONTAINMENT BLDG. TRANFER FAN
971	CONTAINMENT AIR MONITOR
408	COMB. GAS VENT

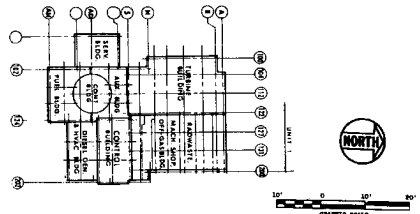


PLAN OF EL. 789'-1"





SECT. A-A



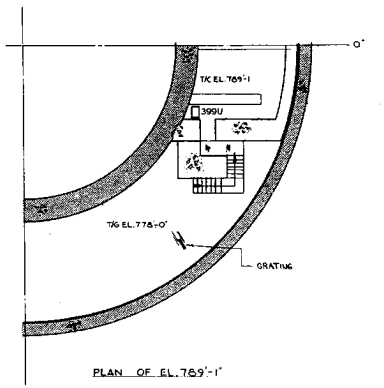
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-6a
FIRE ZONE BOUNDARIES
CONTAINMENT FLOOR PLAN - EL. 803'-3"

MO1-11 08

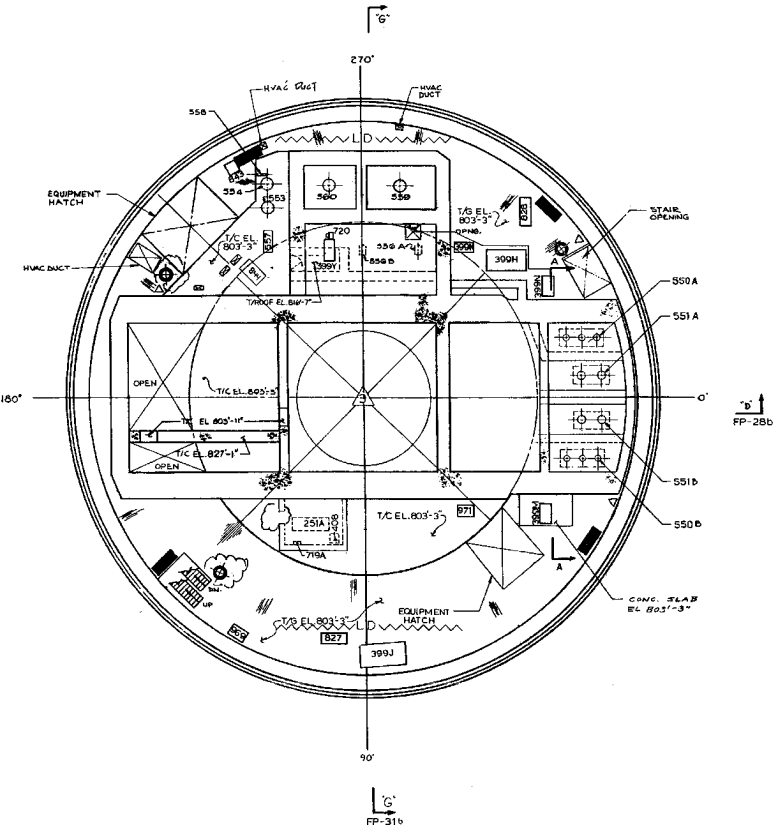
SHEET 5 OF 8

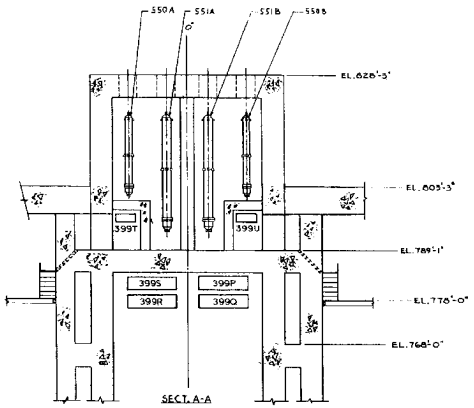
REVISION 7
JANUARY 1997

ITEM	EQUIPMENT NAME
251	C.G. HYDROGEN COMPRESSOR
399	AREA COOLERS
550	REGEN. HEAT EXCH.
551	NON-REGEN. HEAT EXCH.
553	RWCU PRE-COAT TANK
554	RWCU RESIN TANK
555	RWCU BACKWASH REC. TANK
556	FILT./DEMIN. HOLDING PUMPS
557	RWCU PRE-COAT PUMP
558	RWCU RESIN PUMP
559	FILT./DEMIN. VESSEL
560	FILT./DEMIN. VESSEL
827	MULTI-PLEXER
828	MULTI-PLEXER
843	RWCU INST. RACK
844	CONTROL PANEL
719	HYDROGEN COMP. INSTR. PANEL
969	CONTAINMENT AIR MONITOR
720	CONTAINMENT BLDG. TRANFER FAN
971	CONTAINMENT AIR MONITOR
408	COMB. GAS VENT

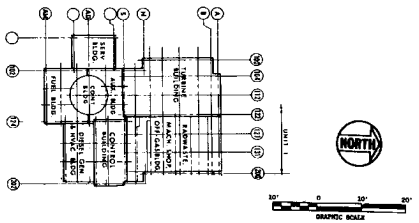


PLAN OF EL. 789'-1"





SECT. A-A



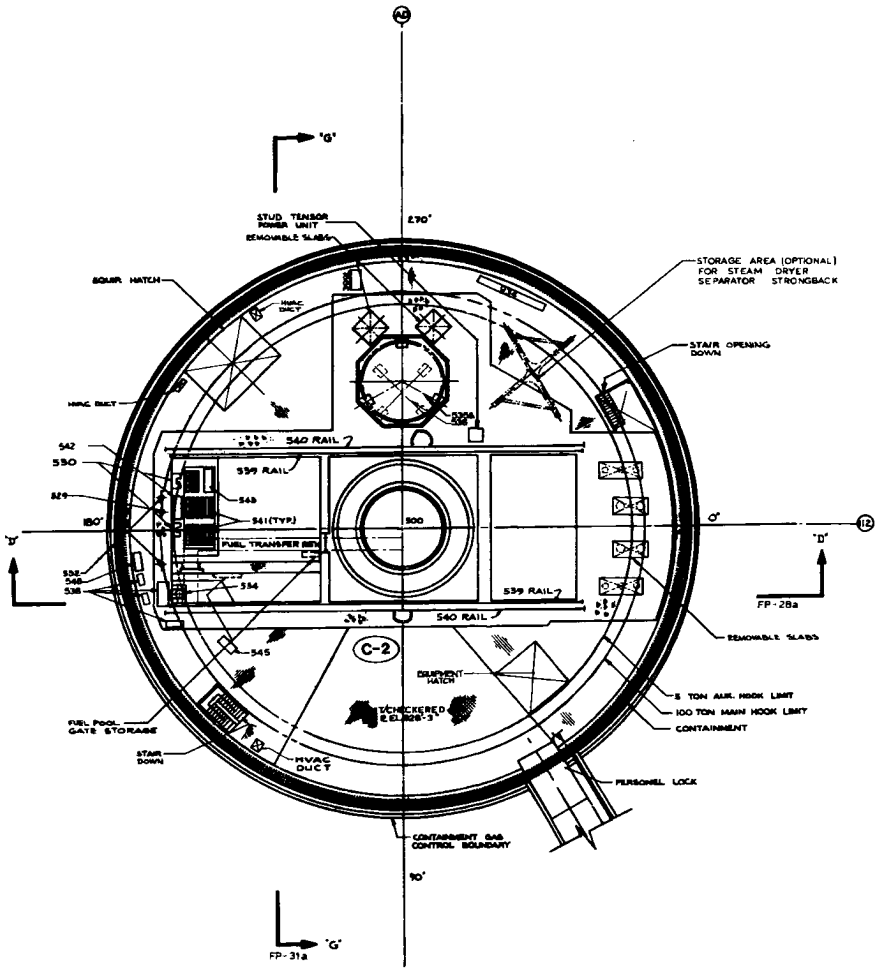
CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-6b
FIRE PROTECTION FEATURES
CONTAINMENT FLOOR PLAN - EL. 803'-3"

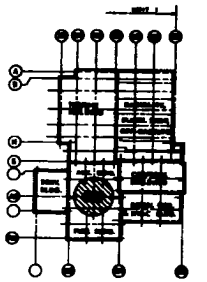
M01-1109

REVISION 10
OCTOBER 10

ITEM	EQUIPMENT NAME
500	REACTOR VESSEL
529	CHANNEL HANDLING BOOM
530	FUEL PREP.
532	JIB CRANE
534	FUEL TRANSFER TUBE
535	RPV HEAD SUPPORT
539	AUXILIARY PLATFORM
540	REFUELING PLATFORM
541	FUEL STORAGE RACK
542	CHANNEL RACK
543	CONTROL ROD STORAGE RACK
538	WINCH & CONTROLLER
545	HYDRAULIC UNIT
548	REACTOR BLDG. OPER. PANEL
399	AREA COOLER
934	REACTOR WATER CLEAN-UP SOL. PANEL
538	HEAD STRONGBACK CAROUSEL



CONTAINMENT BLDG. EL. 828'-3"
(REFUELING FLOOR)



KEY PLAN
CLINTON POWER STATION

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-7a
FIRE ZONE BOUNDARIES
CONTAINMENT REFUELING
FLOOR - EL 828'- 3"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-7b
FIRE PROTECTION FEATURES
CONTAINMENT REFUELING
FLOOR - EL. 828'- 3"

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Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-8a
FIRE ZONE BOUNDARIES
CONTROL & DIESEL-GENERATOR BUILDING
BASEMENT FLOOR PLAN-EL. 702'-0" & EL. 712'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-6b
FIRE PROTECTION FEATURES
CONTROL & DIESEL-GENERATOR BUILDING
BASEMENT FLOOR PLAN-EL.702'-0"& EL.712'-0"

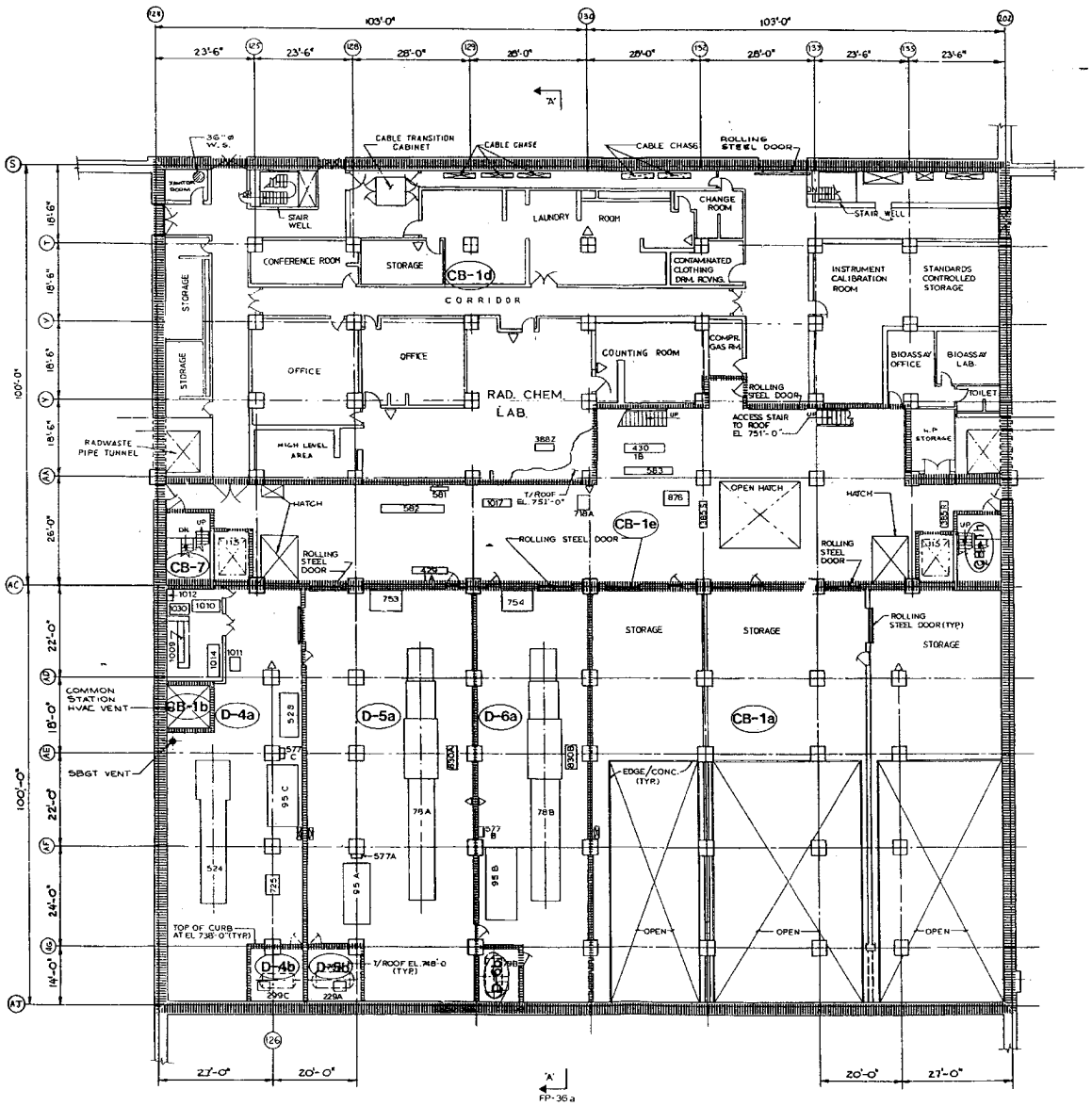
Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-9a
FIRE ZONE BOUNDARIES
CONTROL & DIESEL GEN BUILDING
FLOOR PLAN EL.719'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-9b
FIRE PROTECTION FEATURES
CONTROL & DIESEL GEN BUILDING
FLOOR PLAN EL.719'-0"

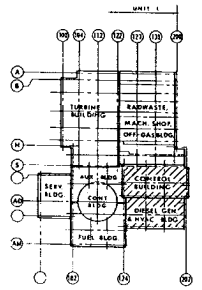
Revision 6
Aug 1994



ITEM	EQUIPMENT NAME
1030	PASS GAS BOTTLE SUPPORT RACK
365/366	AREA COOLERS
78	DIESEL GENERATORS 1A 1B 2A 2B
79	DIESEL GEN. DAY TANK
95	D-G AIR START SKID
115	CONTROL BLDG. ELEVATOR
299	OIL ROOM EX. FAN
577	DESSICANT DRYERS
524	DIESEL GENERATOR

ITEM	ELECTRICAL
429	DIESEL GEN. MCC 1A
430	DIESEL GEN. MCC 1B

ITEM	INSTRUMENT AND CONTROL PANELS EQUIPMENT NAME
725	HPCS VERT BD
753	DIESEL GENERATOR 1A & 2A CONTR. PANEL
754	DIESEL GENERATOR 1B & 2B CONTROL PANEL
876	LAB HVAC SUP. PANEL
718	HYD RECOMB. INST. PANEL
1009	PASS SAMPLE ANALYSIS PANEL
1010	PASS SAMPLE MONITOR PANEL
830	D-G 1A, 1B GRND TRANSFORMER PANEL
528	CONTROL PANEL
581	DG CO_2 CONTROL PANEL
582	DIV. I DAMPER MCC A
583	DIV. II DAMPER MCC B
1011	CLOSED LOOP COOLING SYS. PASS HEAT X PUMP
1012	PASS HVAC CONTROL PANEL
1014	POST ACCIDENT SAMPLE PANEL CUBICLE COOLER
1017	LAB HUMIDIFICATION STM. BLR. MCC



KEY PLAN
CLINTON POWER STATION

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-10 a
FIRE ZONE BOUNDARIES
CONTROL & DIESEL-GENERATOR BUILDING
GRADE FLOOR PLAN-EL.737'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION

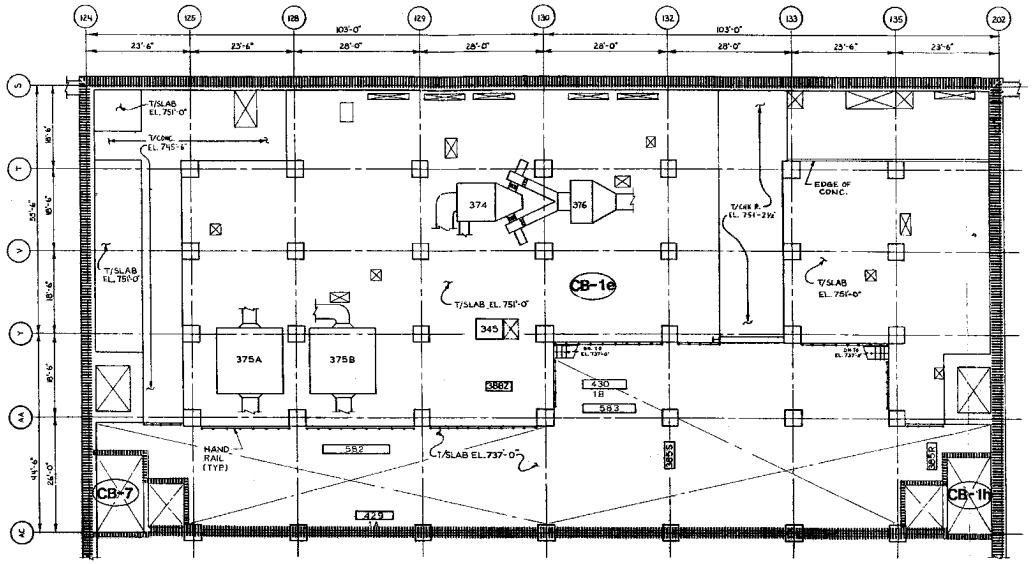
FIRE PROTECTION

FIGURE FP-10 b

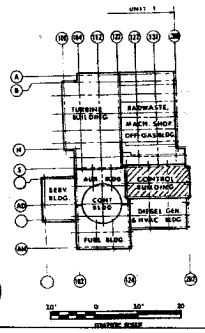
FIRE PROTECTION FEATURES

CONTROL & DIESEL-GENERATOR BUILDING

GRADE FLOOR PLAN-EL.737'-0"



ITEM	EQUIPMENT NAME
345	LAB HUMID STEAM BOILER
374	LABORATORY HVAC SUPPLY FANS
375	LABORATORY EXHAUST AIR FILTER FAN CABINET
376	LABORATORY HVAC DUAL DUCT UNIT
385	
388	AREA COOLERS



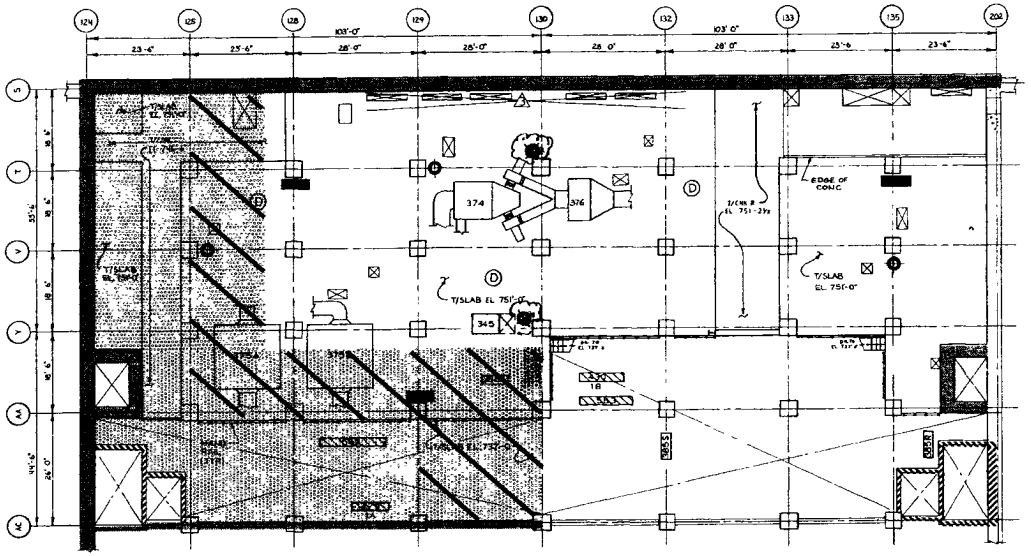
CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-11a

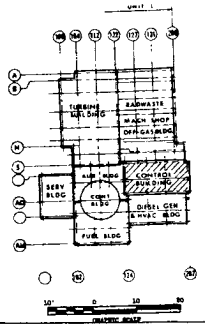
FIRE ZONE BOUNDARIES
CONTROL BLDG.
INTERMEDIATE-ROOF PLAN EL. 751'-0"

REVISION 10
OCTOBER 2001



ITEM	EQUIPMENT NAME
345	AIR HUMID STEAM BOILER
374	LABORATORY HVAC SUPPLY FANS
375	LABORATORY EXHAUST AIR FILTER PACKAGES
376	LABORATORY HVAC DUCT UNIT
380	AREA COOLERS
388	

NOTE ITEM 429 430 582 & 583 ARE ALSO SHOWN ON FP-10b



NORTH

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP- 11b
FIRE PROTECTION FEATURES
CONTROL BLDG
INTERMEDIATE-ROOF PLAN EL 751'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

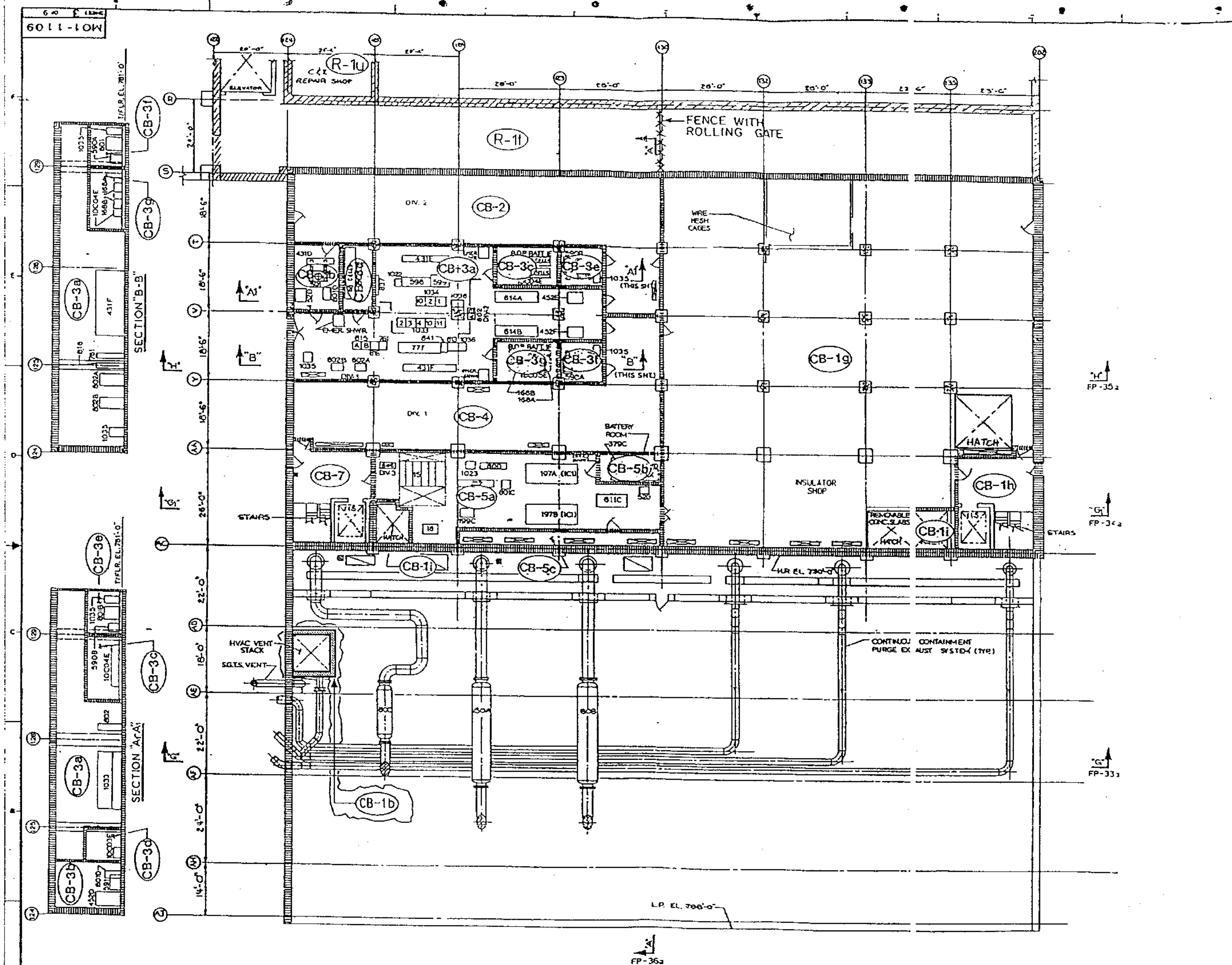
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-12a
FIRE ZONE BOUNDARIES
CONTROL & DIESEL-GENERATOR BUILDING
MEZZANINE FLOOR PLAN - EL. 762'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP–12B
FIRE PROTECTION FEATURES
CONTROL % DIESEL GENERATOR BUILDING
MESSANINE FLOOR PLAN – EL.762'–Ø"

REVISION 8
FEBRUARY 1999

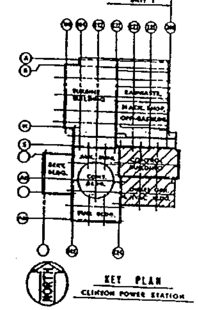


ITEM	INSTR. AND CONTROL PANELS
1022	MET TOWER INTERFACE CABINET
1023	REGULATED TRANSFORMER
1033	COMPUTER INPUT-OUTPUT CAB.

ITEM	EQUIPMENT NAME
80	[illegible]
135	CONTROL BLDG. ELEVATOR
199	SWGEAR HEAT REM. CONDENSING UNIT
379	BATT. ROOM EXHAUST FAN
168	SWGR. RETURN FAN
500	DIV. 1&DIV. 2 INVERTER RM COIL CAB
591	DIV. 4 INVERTER RM COIL CAB
1022	MET TOWER INTERFACE CABINET

ITEM	ELECTRICAL EQUIPMENT NAME
431	125V DC MCC 1E, 1D, 1F
452	125V BATT. CHARGER
530	DIV. 3 BATT. CHARGER
15	4.16 KV SWITCHGEAR 1C1
18	480 V TRANSFORMER 1C
397	[illegible]
[illegible]	MOTOR CONTROL CENTER 1C1

ITEM	INSTR. AND CONTROL PANELS
837	IONIZATION FIRE DETECTION PANEL
1005	INVERTER ROOM CUBICLE HVAC PNL
761	ERAT PROT. RELAY PANEL
600	AUX. BLDG. MCC 1C
777	TURBINE EHC CABINET
811	SWITCHGEAR RM 1C VENT PANEL
815	GEN. PROTECTIVE RELAY PANEL 1A(G1-1), 1B(G1-2)
816	RAT-1 PROTECTIVE RELAY PANEL
601	INVERTER
602	OPT. ISO. CABINET DIV. 1,2,3
841	TSI CABINET
598	T & S PWR. SUP. CAB.
599	MISC. AUTO CONT. CAB.
813	LOAD DISPATCH
814	120V COMP. UPS 1A, 1B



CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-13a
FIRE ZONE BOUNDARIES
CONTROL BUILDING
FLOOR PLAN-EL. 781'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-13b

FIRE PROTECTION FEATURES
CONTROL BUILDING
FLOOR PLAN-EL. 781'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-14a

FIRE ZONE BOUNDARIES
CONTROL BUILDING
MAIN FLOOR PLAN EL. 800' 0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-14b

FIRE PROTECTION FEATURES
CONTROL BUILDING
MAIN FLOOR PLAN EL. 800' 0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-15.0
FIRE ZONE BOUNDARIES
CONTROL BUILDING
VENTILATION ROOM FLOOR PLAN EL. 825'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

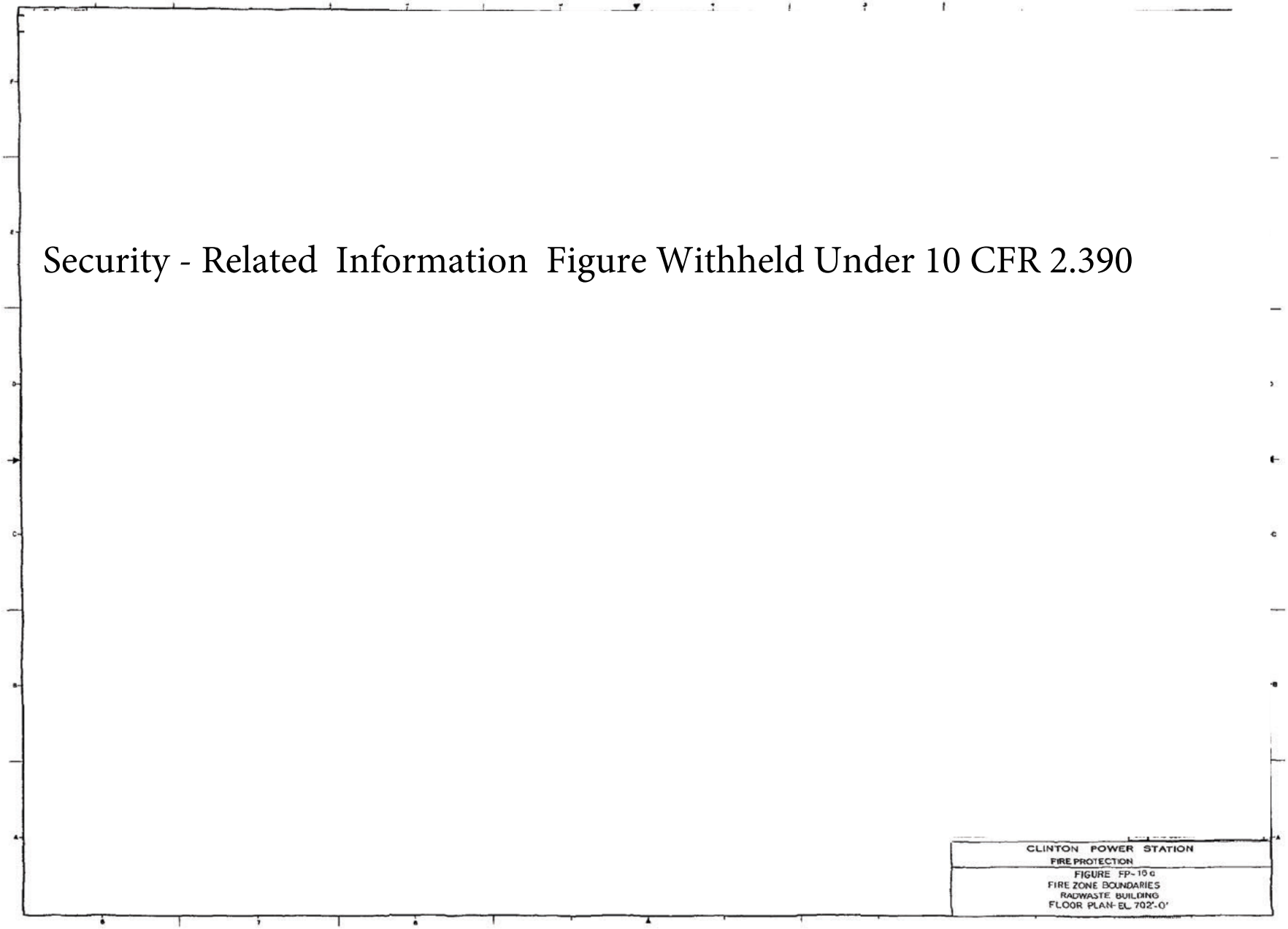
CLINTON POWER STATION

FIRE PROTECTION

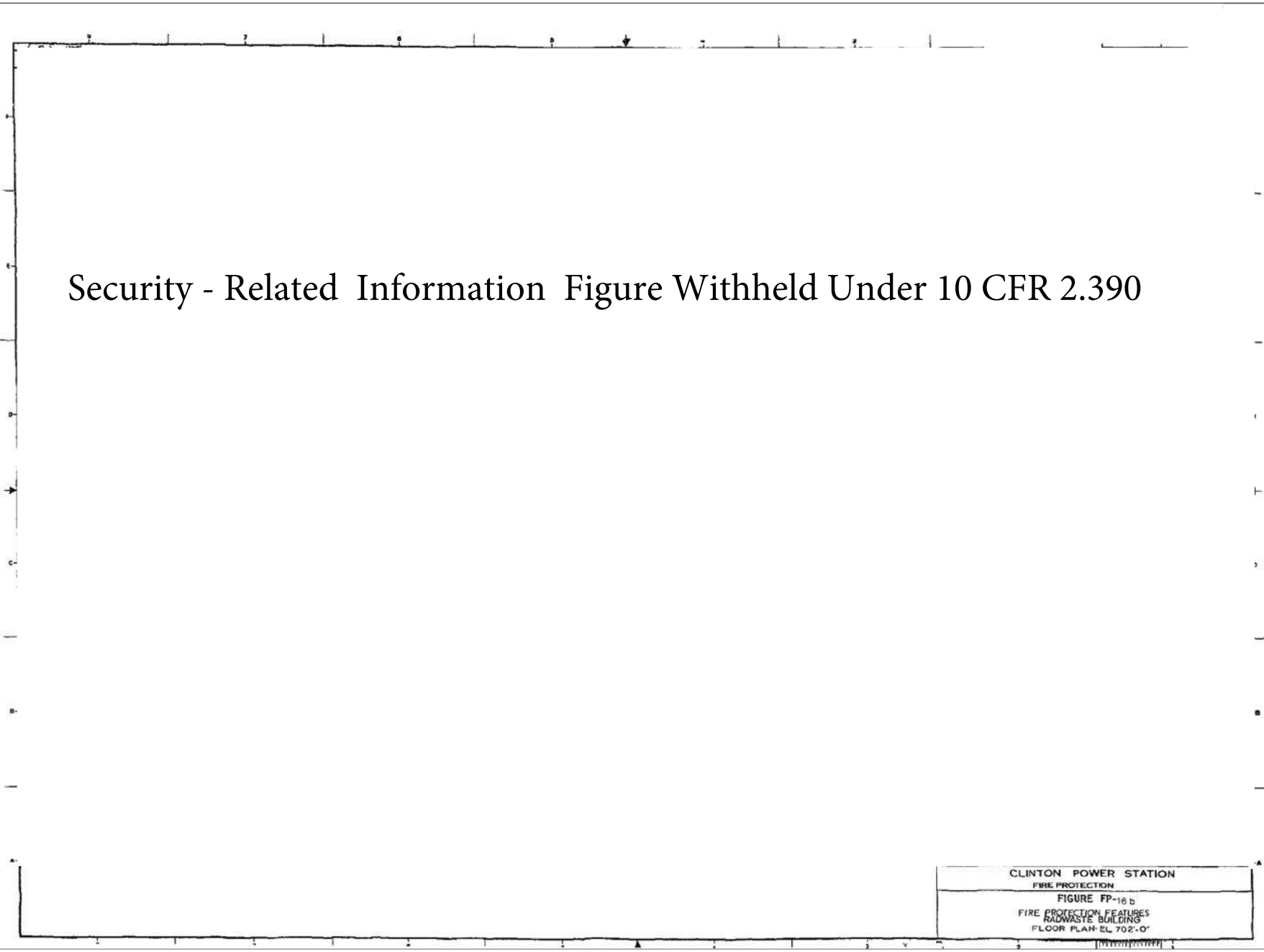
FIGURE FP-15b

FIRE PROTECTION FEATURES
CONTROL BUILDING
VENTILATION ROOM FLOOR PLAN EL. 825'-0"

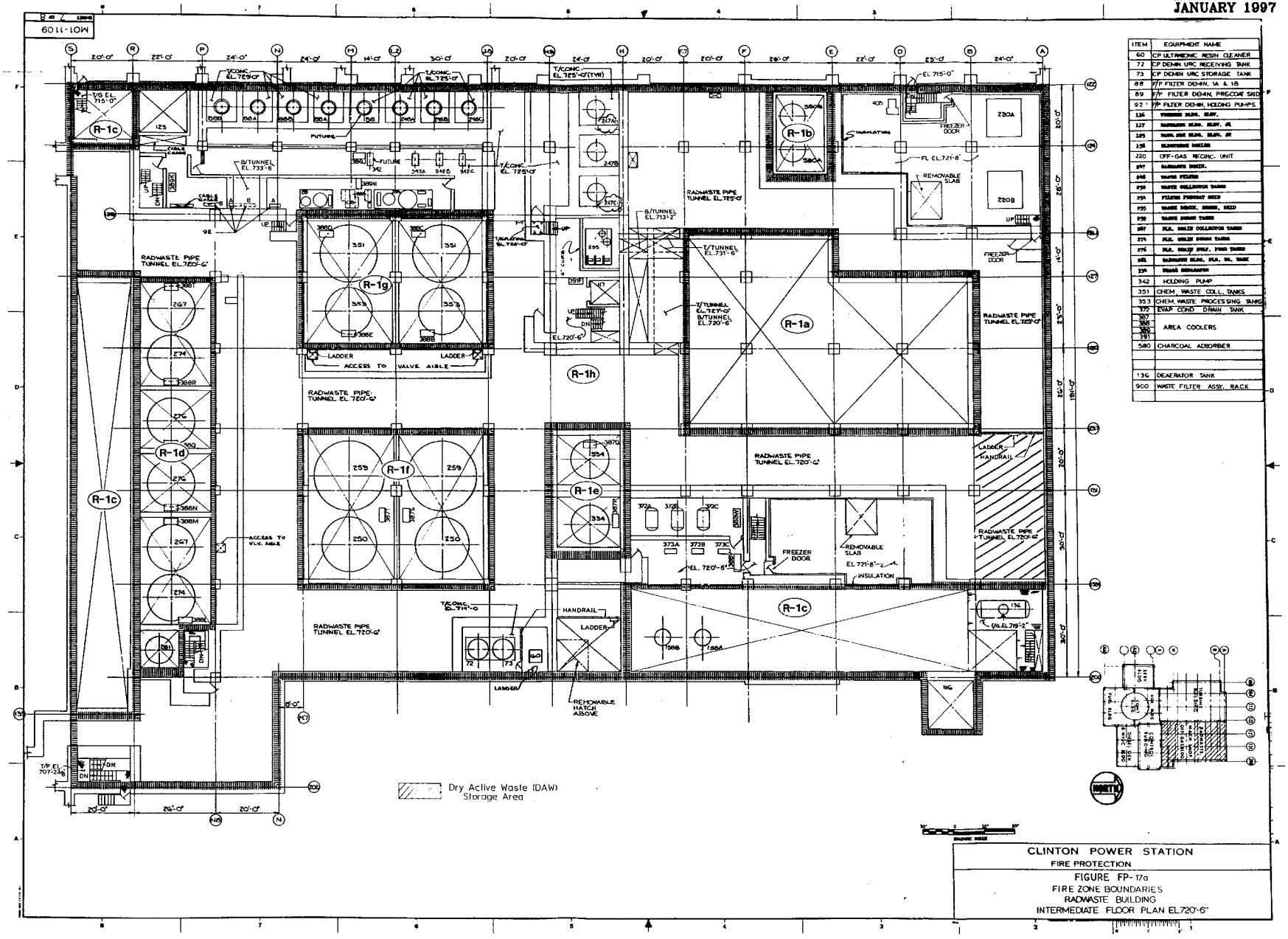
Security - Related Information Figure Withheld Under 10 CFR 2.390



Security - Related Information Figure Withheld Under 10 CFR 2.390



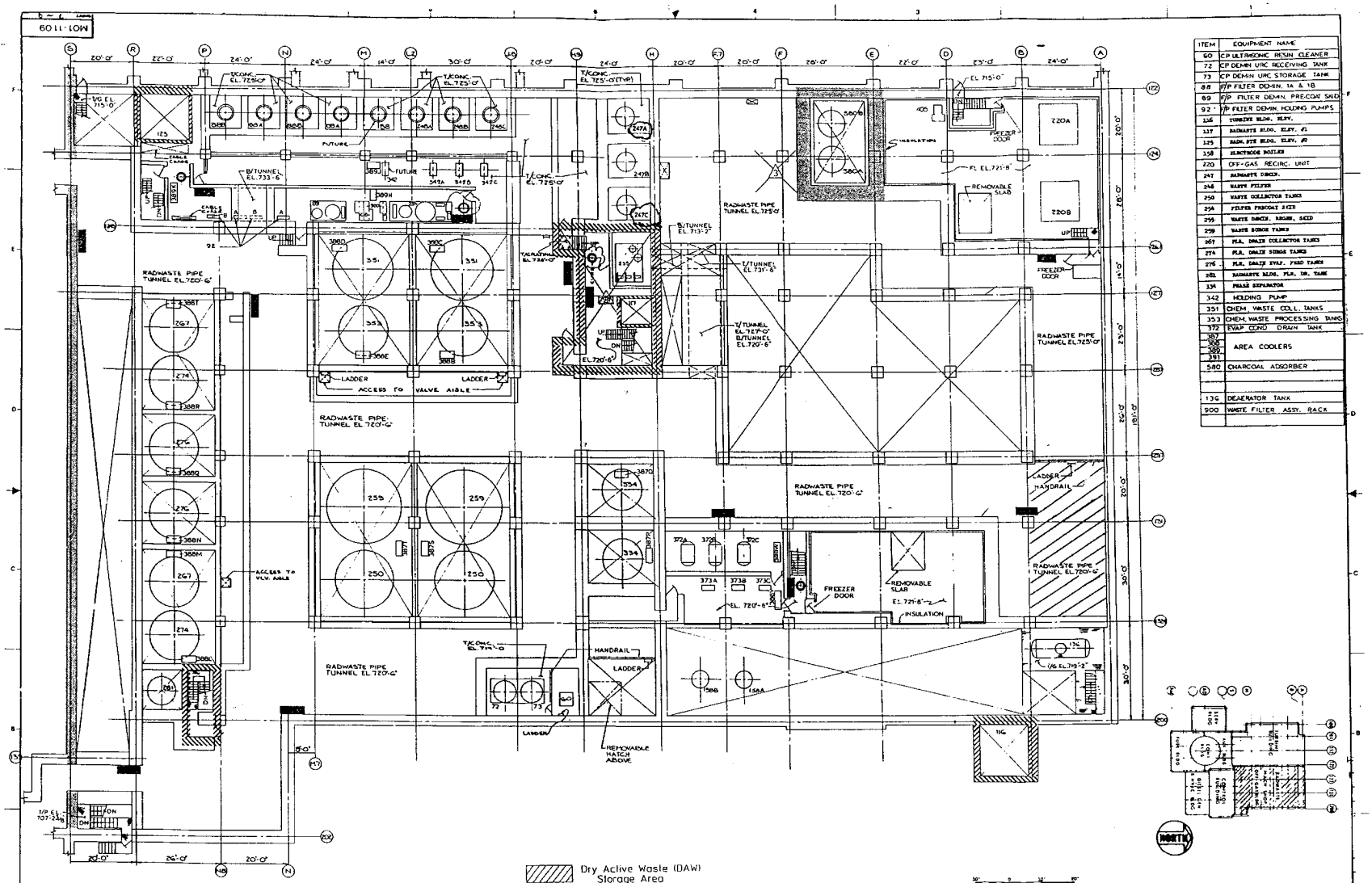
REVISION 7
JANUARY 1997



ITEM	EQUIPMENT NAME
60	CP ULTRASONIC RESIN CLEANER
72	CP DEMIN URC RECEIVING TANK
73	CP DEMIN URC STORAGE TANK
88	F/P FILTER DEMIN. 1A & 1B
89	F/P FILTER DEMIN. PRECOAT SKID
92	F/P FILTER DEMIN. HOLDING PUMPS
136	[illegible]
137	[illegible]
185	[illegible]
198	[illegible]
220	OFF-GAS RECIRC. UNIT
247	[illegible]
248	[illegible]
250	[illegible]
254	[illegible]
255	[illegible]
259	[illegible]
267	[illegible]
274	[illegible]
276	[illegible]
281	[illegible]
334	[illegible]
342	HOLDING PUMP
351	CHEM. WASTE COLL. TANKS
353	CHEM. WASTE PROCESSING TANKS
377	EVAP COND DRAIN TANK
387	AREA COOLERS
388	
390	
391	
580	CHARCOAL ADSORBER
136	DEAERATOR TANK
900	WASTE FILTER ASSY. RACK

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-17a
FIRE ZONE BOUNDARIES
RADWASTE BUILDING
INTERMEDIATE FLOOR PLAN EL.720'-6"

REVISION 7
JANUARY 1997



ITEM	EQUIPMENT NAME
60	C/P ULTRASONIC RESIN CLEANER
72	C/P DEMIN URC RECEIVING TANK
73	C/P DEMIN URC STORAGE TANK
88	F/P FILTER DEMIN. 1A & 1B
89	F/P FILTER DEMIN. PRECOAT SWD
92	F/P FILTER DEMIN. HOLDING PUMPS
116	TURBINE BLDG. ELEV.
117	RADWASTE BLDG. ELEV. 41
125	RADW. STE BLDG. ELEV. 40
158	ELECTRODE BOILER
220	OFF-GAS RECIRC. UNIT
247	RADWASTE DISCH.
248	WASTE FILTER
250	WASTE COLLECTOR TANKS
254	FILTER PRECOAT SWD
255	WASTE DISCH. RECIRC. SWD
259	WASTE SURGE TANKS
267	FLR. DRAIN COLLECTOR TANKS
274	FLR. DRAIN SURGE TANKS
276	FLR. DRAIN EVAP. FEED TANKS
281	RADWASTE BLDG. FLR. DR. TANK
334	PHASE SEPARATOR
342	HOLDING PUMP
351	CHEM. WASTE COLL. TANKS
353	CHEM. WASTE PROCESSING TANK
372	EVAP COND DRAIN TANK
387	
388	
389	AREA COOLERS
391	
580	CHARCOAL ADSORBER
136	DEAERATOR TANK
900	WASTE FILTER ASSY. RACK

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-17b
FIRE PROTECTION FEATURES
RADWASTE BUILDING
INTERMEDIATE FLOOR PLAN EL.720'-6"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-18q
FIRE ZONE BOUNDARIES
RADWASTE BUILDING
GRADE FLOOR PLAN – EL. 737'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP–18b
FIRE PROTECTION FEATURES
RADWASTE BUILDING
GRADE FLOOR PLAN – EL. 737'–0"

REVISION 17
OCTOBER 2015

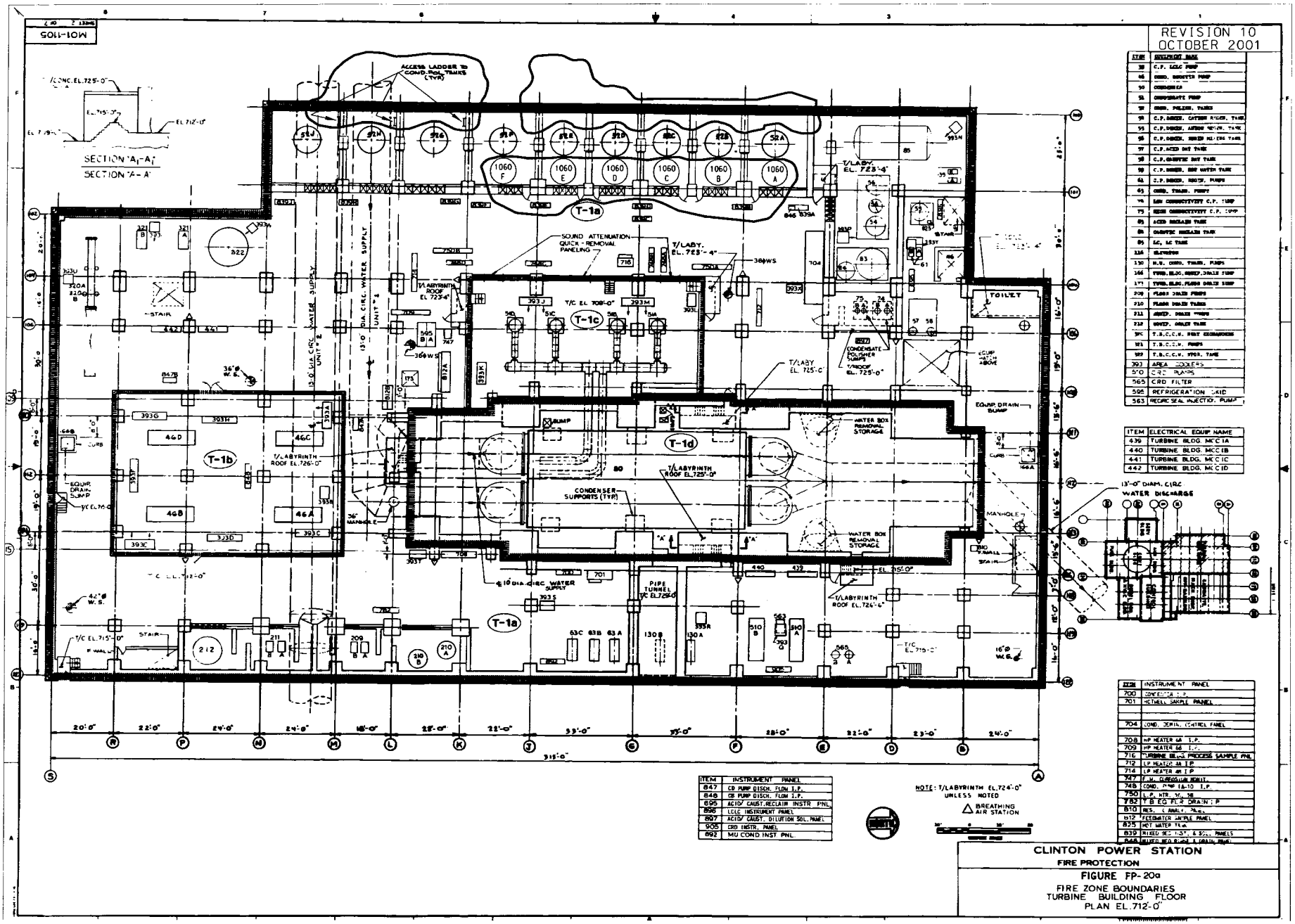
Security - Related Information Figure Withheld Under 10 CFR 2.390

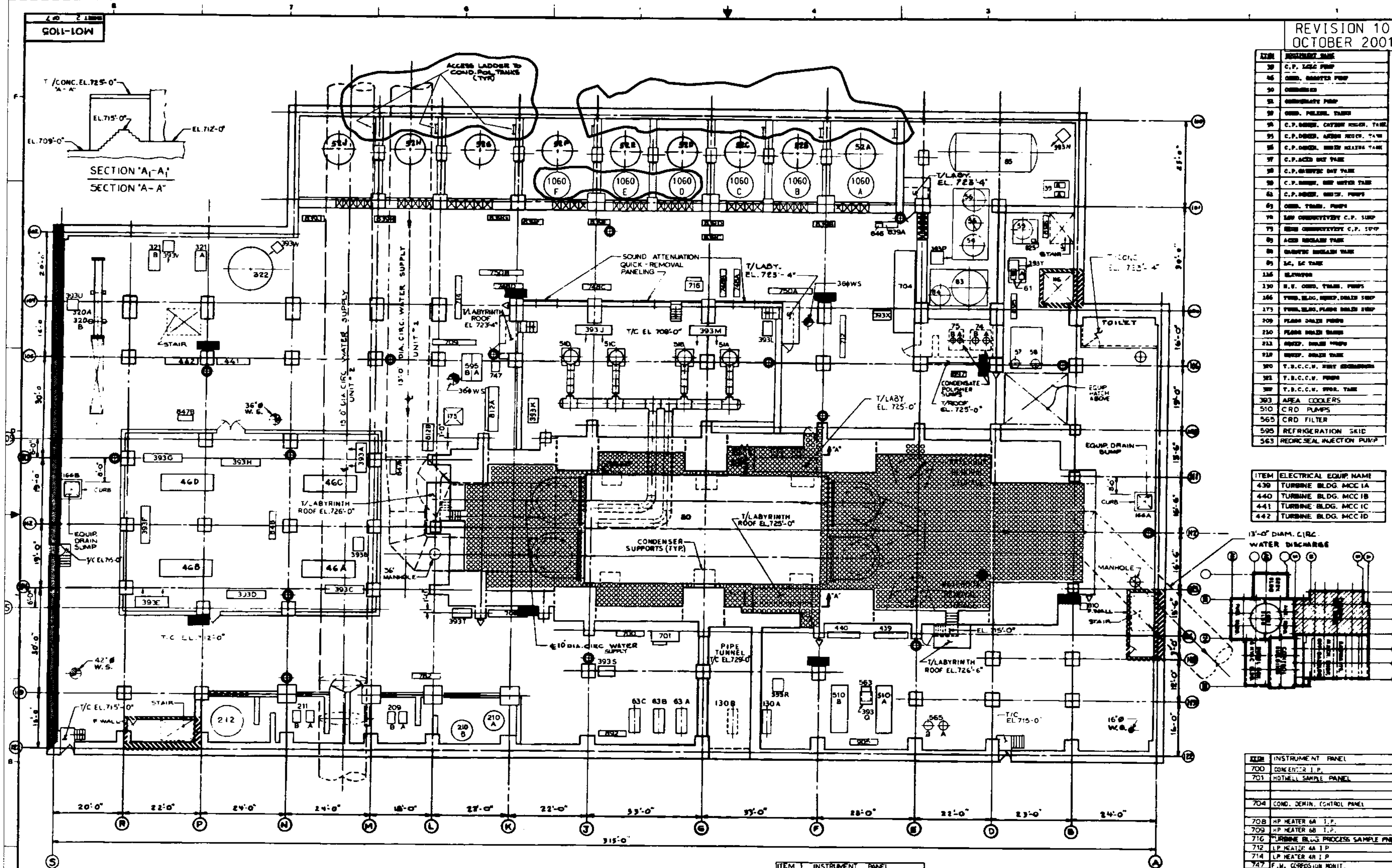
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-19a
FIRE ZONE BOUNDARIES
RADWASTE BUILDING
MEZZANINE FLOOR PLAN EL 762'-0"

REVISION 17
OCTOBER 2015

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP- 19b
FIRE PROTECTION FEATURES
RADWASTE BUILDING
MEZZANINE FLOOR PLAN EL. 762'-0"


REVISION 10
OCTOBER 2001
SECTION 'A1-A1'
SECTION 'A-A'
T-1a
T-1b
T-1c
T-1d
T-1e
T/LABYRINTH ROOF EL.726'-0"
T/LABY. EL. 725'-4"
T/ROOF EL. 725'-0"
SOUND ATTENUATION QUICK-REMOVAL PANELING
CONDENSER SUPPORTS (TYP)
PIPE TUNNEL T/C EL.725'-0"
TOILET
EQUIP. DRAIN SUMP
WATER BOX REMOVAL STORAGE
MANHOLE
13'-0" DIAM. CIRC WATER DISCHARGE
NOTE: T/LABYRINTH EL.724'-0" UNLESS NOTED
BREATHING AIR STATION
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-20a
FIRE ZONE BOUNDARIES
TURBINE BUILDING FLOOR
PLAN EL. 712'-0"



NOTE: T/LABYRINTH EL.724'-0" UNLESS NOTED

△ BREATHING AIR STATION

ITEM	EQUIPMENT NAME
39	C.P. LCLC PUMP
46	COND. BOOSTER PUMP
50	CONDENSER
51	CONDENSATE PUMP
52	COND. POLISH. TANKS
54	C.P.DEMIN. CATION REGEN. TANK
55	C.P.DEMIN. ANION REGEN. TANK
56	C.P.DEMIN. RESIN MIXING TANK
57	C.P.ACID DAY TANK
58	C.P.CAUSTIC DAY TANK
59	C.P.DEMIN. HOT WATER TANK
61	C.P.DEMIN. RECY. PUMPS
63	COND. TRANS. PUMPS
70	LOW CONDUCTIVITY C.P. SUMP
73	HIGH CONDUCTIVITY C.P. SUMP
83	ACID RECLAIM TANK
84	CAUSTIC RECLAIM TANK
85	LC, LC TANK
116	ELEVATOR
130	R.U. COND. TRANS. PUMPS
166	TURB.BLDG.EQUIP.DRAIN SUMP
173	TURB.BLDG.FLOOR DRAIN SUMP
209	FLOOR DRAIN PUMPS
210	FLOOR DRAIN TANKS
212	EQUIP. DRAIN PUMPS
218	EQUIP. DRAIN TANK
380	T.B.C.C.W. HEAT EXCHANGERS
381	T.B.C.C.W. PUMPS
387	T.B.C.C.W. STOR. TANK
393	AREA COOLERS
510	CRD PUMPS
565	CRD FILTER
595	REFRIGERATION SKID
563	RECIRC SEAL INJECTION PUMP

ITEM	ELECTRICAL EQUIP. NAME
439	TURBINE BLDG. MCC 1A
440	TURBINE BLDG. MCC 1B
441	TURBINE BLDG. MCC 1C
442	TURBINE BLDG. MCC 1D

ITEM	INSTRUMENT PANEL
847	CD PUMP DISCH. FLOW I.P.
848	CB PUMP DISCH. FLOW I.P.
895	ACID/ CAUST.RECLAIM INSTR PNL
896	LCLC INSTRUMENT PANEL
897	ACID/ CAUST. DILUTION SOL.PANEL
905	CRD INSTR. PANEL
892	MU COND INST PNL

ITEM	INSTRUMENT PANEL
700	CONDENSER I.P.
701	HOTWELL SAMPLE PANEL
704	COND. DEMIN. CONTROL PANEL
708	HP HEATER 6A I.P.
709	HP HEATER 6B I.P.
716	TURBINE BLDG PROCESS SAMPLE PNL
712	LP HEATER 4A I P
714	LP HEATER 4B I P
747	F.W. CORROSION MONIT.
748	COND. PUMP 1A-1D I.P.
750	L.P. HTR. 5A, 5B
782	T B EQ FLR DRAIN I P
810	RES. & ANALY. PANEL
812	FEEDWATER SAMPLE PANEL
825	HOT WATER TANK
839	MIXED BED I.ST. & SOL. PANEL
846	MIXED BED RINSE & DRAIN PANEL

REVISION 10
OCTOBER 2001

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-20b
FIRE PROTECTION FEATURES
TURBINE BUILDING FLOOR
PLAN EL.712'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-28a
FIRE ZONE BOUNDARIES
TURBINE BUILDING
GRADE FLOOR PLAN EL 737'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-2b
FIRE PROTECTION FEATURES
TURBINE BUILDING
GRADE FLOOR PLAN EL 737'-0"

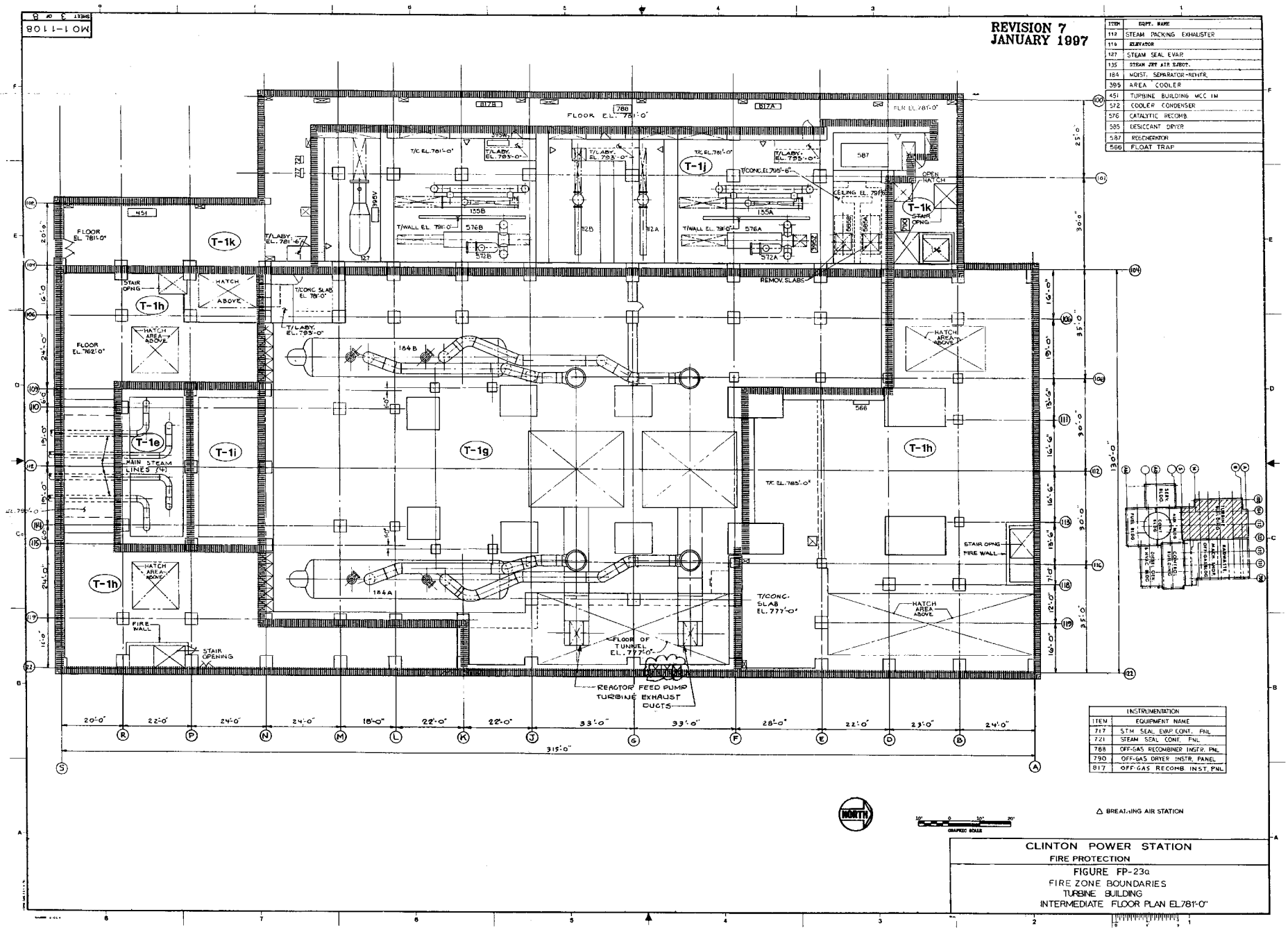
Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP- 22a
FIRE ZONE BOUNDARIES
TURBINE BUILDING
MEZZANINE FLOOR PLAN - EL.762'-0"

PEVISION 14
JANUAPY 2011

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE EP- 22b
FIRE PROTECTION FEATURES
TURBINE BUILDING
MEZZANINE FLOOR PLAN - EL.762'-0"


REVISION 7
JANUARY 1997
M01-1108
SHEET 3 OF 8
ITEM | EQPT. NAME
112 | STEAM PACKING EXHAUSTER
119 | ELEVATOR
127 | STEAM SEAL EVAP.
135 | STEAM JET AIR EJECT.
184 | MOIST. SEPARATOR-REHTR.
395 | AREA COOLER
451 | TURBINE BUILDING MCC I.M.
572 | COOLER CONDENSER
576 | CATALYTIC RECOMB.
585 | DESICCANT DRYER
587 | REGENERATOR
586 | FLOAT TRAP
FLOOR EL. 781'-0"
FLR EL. 781'-0"
T-1k
T-1h
T-1e
T-1i
T-1g
T-1j
T/LABY. EL. 793'-0"
T/LABY. EL. 795'-0"
T/C EL. 781'-0"
T/CONC. EL. 795'-6"
T/WALL EL. 781'-0"
CEILING EL. 791'-0"
OPEN HATCH
STAIR OPNG
HATCH AREA ABOVE
REMOV. SLABS
FLOOR EL. 762'-0"
T/CONC. SLAB EL. 781'-0"
T/LABY. EL. 785'-0"
T/C EL. 785'-0"
MAIN STEAM LINES (4)
FIRE WALL
STAIR OPENING
STAIR OPNG FIRE WALL
T/CONC. SLAB EL. 777'-0"
FLOOR OF TUNNEL EL. 777'-0"
REACTOR FEED PUMP TURBINE EXHAUST DUCTS
INSTRUMENTATION
ITEM | EQUIPMENT NAME
717 | STM. SEAL EVAP. CONT. PNL.
721 | STEAM SEAL CONT. PNL.
788 | OFF-GAS RECOMBINER INSTR. PNL.
790 | OFF-GAS DRYER INSTR. PANEL
817 | OFF-GAS RECOMB. INST. PNL.
NORTH
GRAPHIC SCALE
△ BREATHING AIR STATION
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-23a
FIRE ZONE BOUNDARIES
TURBINE BUILDING
INTERMEDIATE FLOOR PLAN EL 781'-0"

REVISION 15
JANUARY 2013

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-23b
FIRE PROTECTION FEATURES
TURBINE BUILDING
INTERMEDIATE FLOOR PLAN EL 781'-0"

REVISION 17
OCTOBER 2015

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP- 24a
FIRE ZONE BOUNDARIES
TURBINE BUILDING
MAIN FLOOR PLAN EL.800'-0"

REVISION 17
OCTOBER 2015

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-24b
FIRE PROTECTION FEATURES
TURBINE BUILDING
MAIN FLOOR PLAN EL. 800'-0"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-25a
FIRE ZONE BOUNDARIES
CIRCULATING WATER SCREEN HOUSE
MAIN FLOOR PLAN A-A

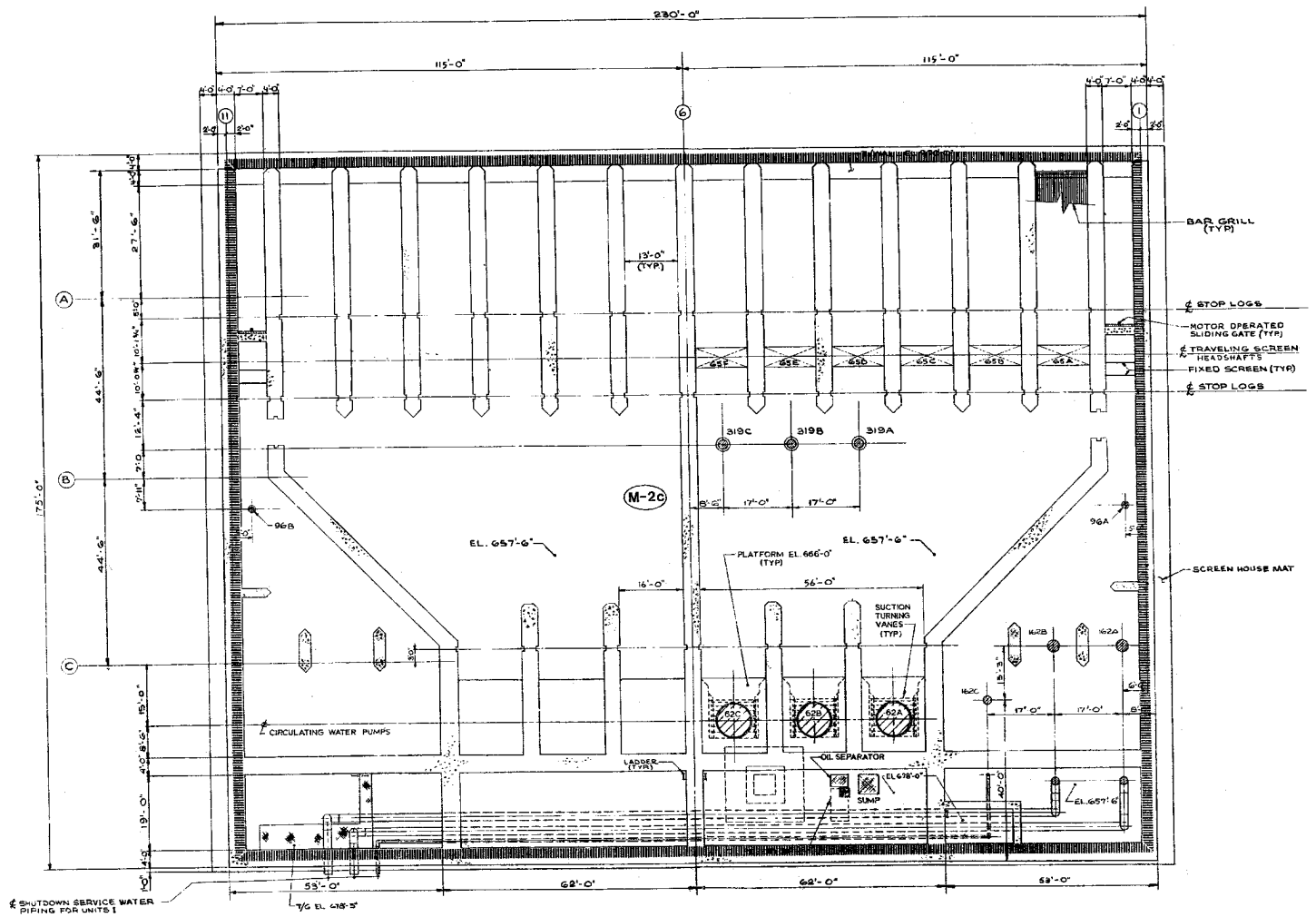
REVISION 14
JANUARY 2011

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-25b
FIRE PROTECTION FEATURES
CIRCULATING WATER SCREEN HOUSE
MAIN FLOOR PLAN A-A

M01-1116

ITEM	EQUIPMENT NAME
62	CIRCULATING WATER PUMPS
96	DIESEL ENGINE DRIVEN FIRE PUMP
162	SHUTDOWN SYC. WATER PUMPS
319	PLANT SYC. WATER PUMPS
65	TRAVELING SCREENS
96	DIESEL DRIVEN FIRE PUMP

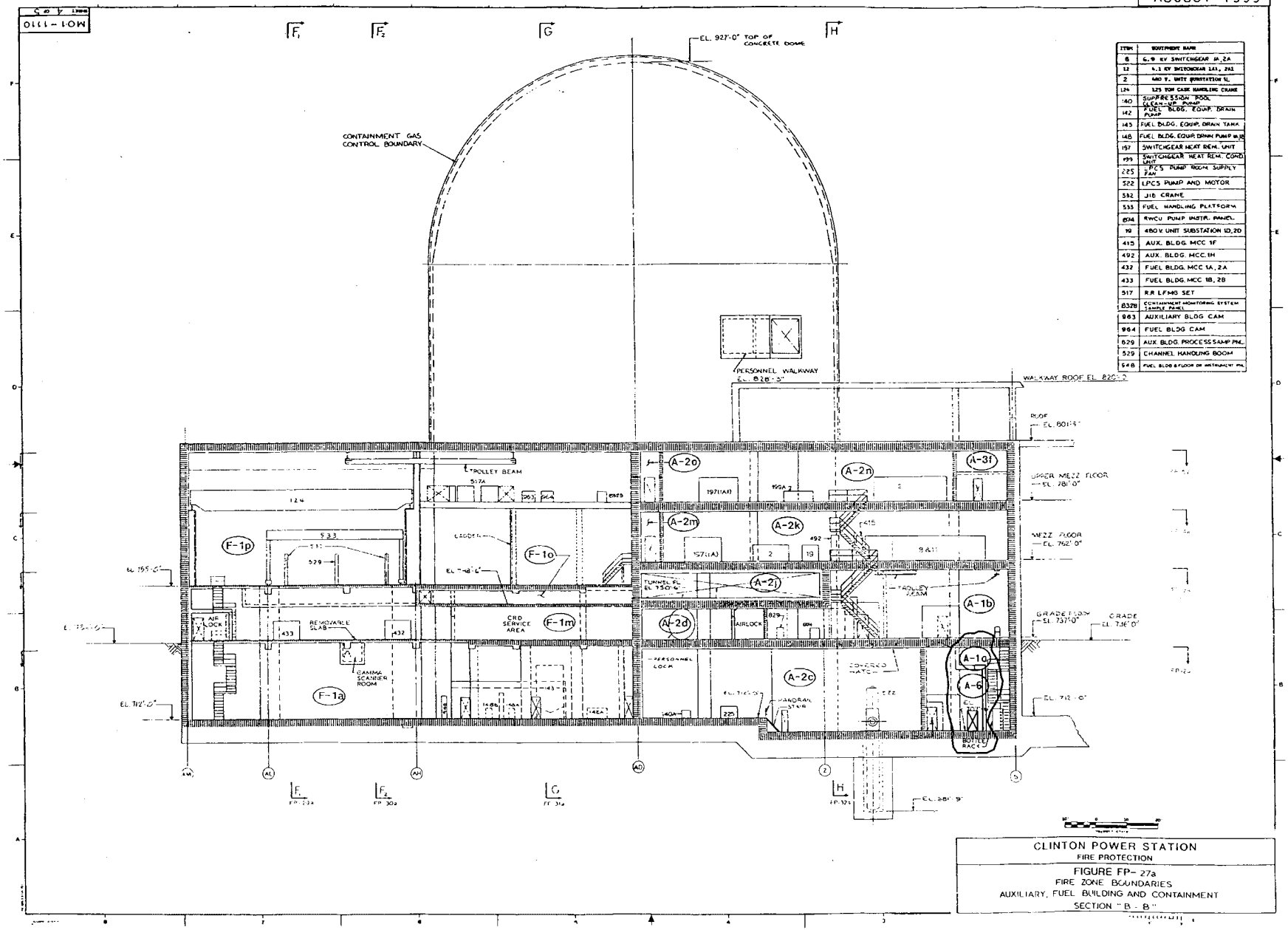


PLAN "B"
BASE MAT EL. 657'-6"

NORTH

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-26a
FIRE ZONE BOUNDARIES
CIRCULATING SCREEN HOUSE
BASE MAT PLAN

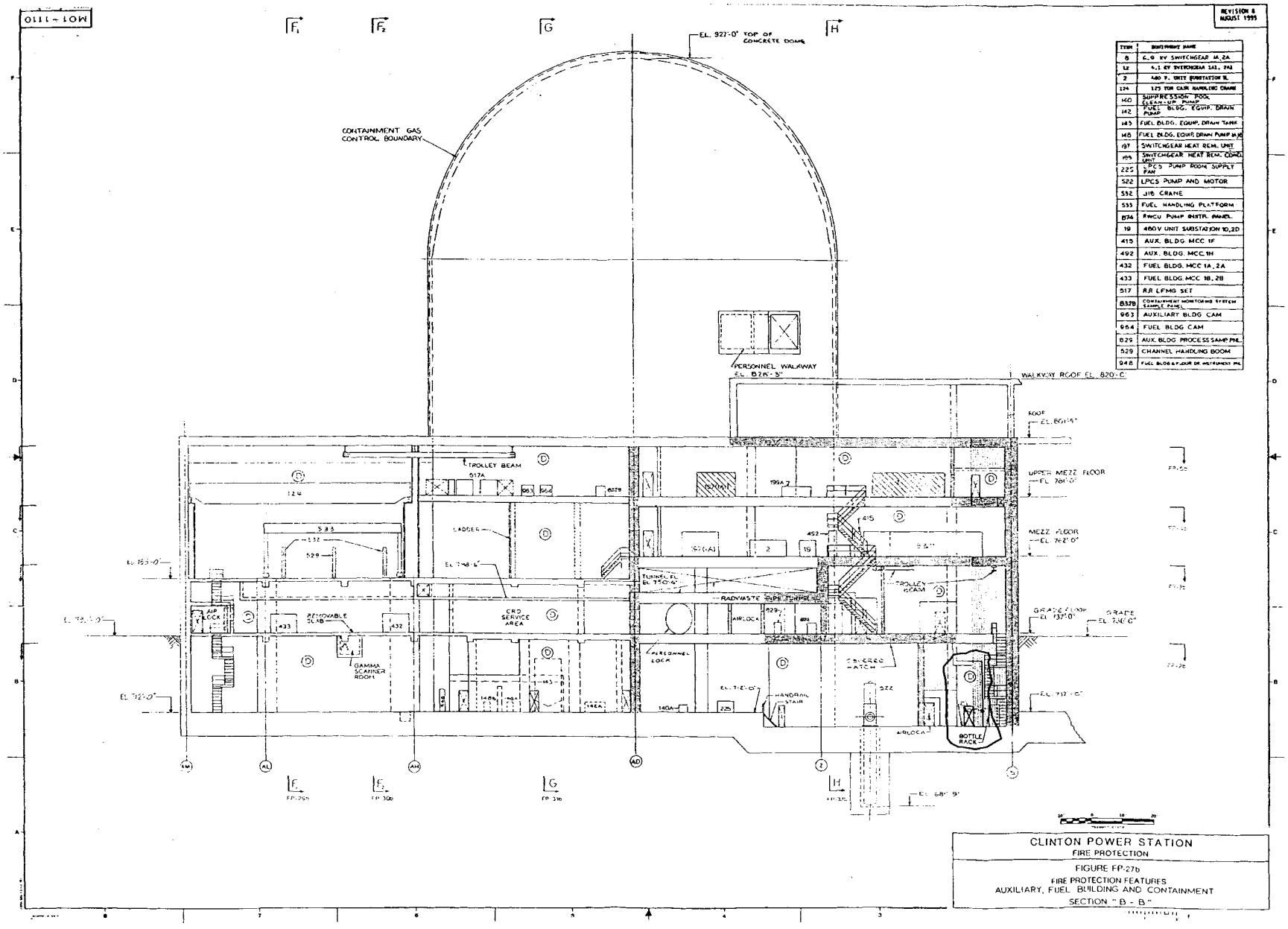
REVISION 8
AUGUST 1999



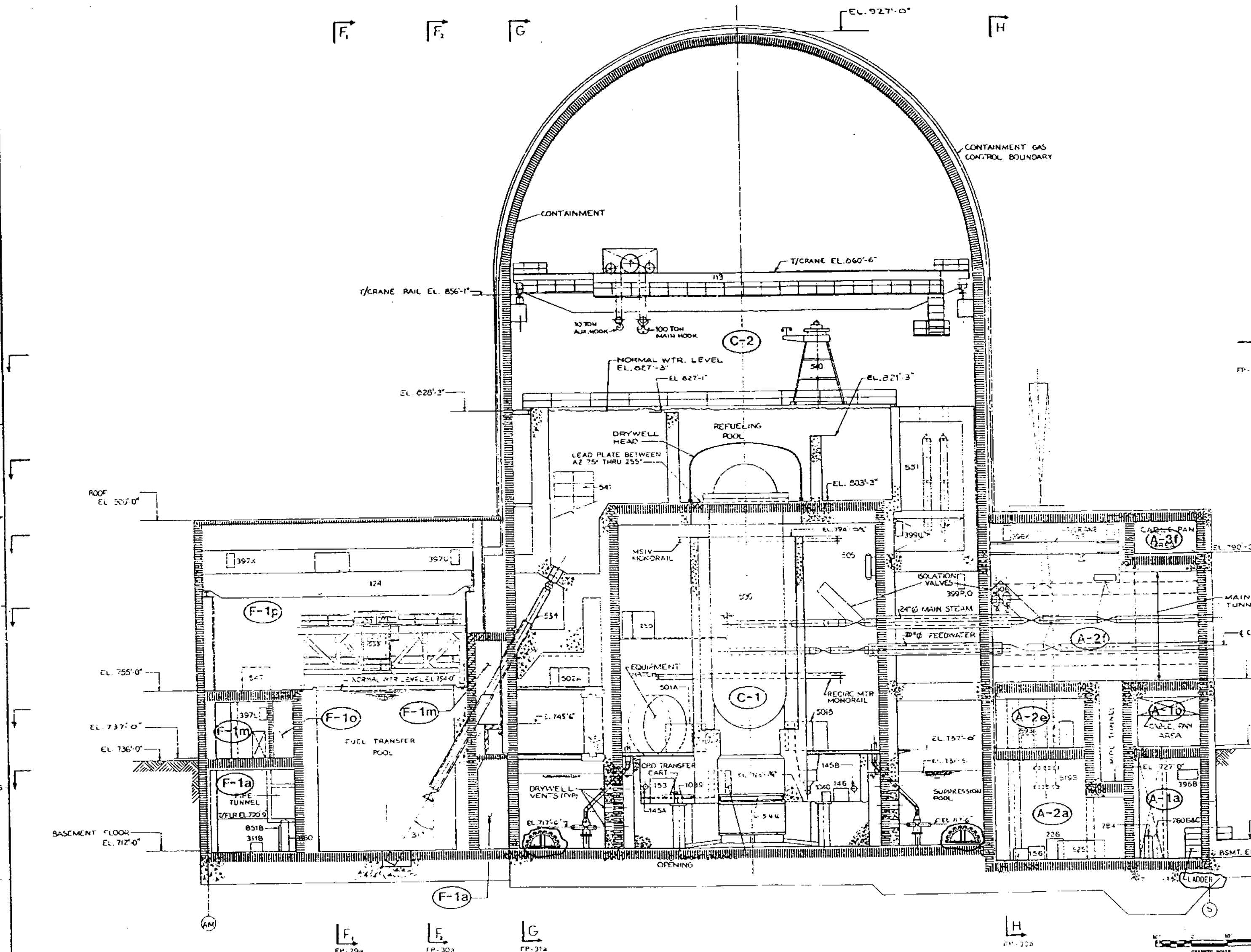
ITEM	EQUIPMENT NAME
6	6.9 KV SWITCHGEAR 1A, 2A
12	4.1 KV SWITCHGEAR 1A1, 2A1
2	480 V. UNIT SUBSTATION 1L
124	125 TON CASK HANDLING CRANE
140	SUPPRESSION POOL CLEAN-UP PUMP
142	FUEL BLDG. EQUIP. DRAIN PUMP
143	FUEL BLDG. EQUIP. DRAIN TANK
148	FUEL BLDG. EQUIP. DRAIN PUMP MOTOR
157	SWITCHGEAR HEAT REM. UNIT
159	SWITCHGEAR HEAT REM. COND. UNIT
225	LPCS PUMP ROOM SUPPLY FAN
522	LPCS PUMP AND MOTOR
532	JIB CRANE
533	FUEL HANDLING PLATFORM
8514	RWCU PUMP INSTR. PANEL
19	480 V. UNIT SUBSTATION 1D, 2D
415	AUX. BLDG. MCC 1F
492	AUX. BLDG. MCC 1H
432	FUEL BLDG. MCC 1A, 2A
433	FUEL BLDG. MCC 1B, 2B
517	RR LFMG SET
8378	CONTAINMENT MONITORING SYSTEM SAMPLE PANEL
963	AUXILIARY BLDG. CAM
964	FUEL BLDG. CAM
829	AUX. BLDG. PROCESS SAMP. PNL.
529	CHANNEL HANDLING BOOM
548	FUEL BLDG & FLOOR DR INSTRUMENT PNL

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP- 27a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "B - B"


REVISION 8
AUGUST 1995
EL. 927'-0" TOP OF CONCRETE DOME
CONTAINMENT GAS CONTROL BOUNDARY
PERSONNEL WALKWAY EL. 824'-3"
WALKWAY ROOF EL. 820'-0"
ROOF EL. 801'-9"
UPPER MEZZ FLOOR EL. 781'-0"
MEZZ FLOOR EL. 762'-0"
GRADE FLOOR EL. 737'-0"
GRADE EL. 736'-0"
EL. 755'-0"
EL. 712'-0"
EL. 712'-0"
EL. 688'-9"
TROLLEY BEAM
LADDER
AIR LOCK
REMOVABLE SLAB
CRD SERVICE AREA
GAMMA SCANNER ROOM
TUNNEL EL. 750'-6"
RADWASTE PIPE TUNNEL
AIRLOCK
PERSONNEL LOCK
EQUIPMENT HATCH
HANDRAIL STAIR
AIRLOCK
BOTTLE RACK
TROLLEY BEAM
ITEM | EQUIPMENT NAME
8 | 6.9 KV SWITCHGEAR 1A, 2A
12 | 4.1 KV SWITCHGEAR 1A1, 2A1
2 | 480 V. UNIT SUBSTATION 1E
124 | 125 TON CASK HANDLING CRANE
140 | SUPPRESSION POOL CLEAN-UP PUMP
142 | FUEL BLDG. EQUIP. DRAIN PUMP
143 | FUEL BLDG. EQUIP. DRAIN TANK
148 | FUEL BLDG. EQUIP. DRAIN PUMP MOTOR
197 | SWITCHGEAR HEAT REM. UNIT
199 | SWITCHGEAR HEAT REM. COND. UNIT
225 | LPCS PUMP ROOM SUPPLY FAN
522 | LPCS PUMP AND MOTOR
532 | J1B CRANE
533 | FUEL HANDLING PLATFORM
574 | RWCU PUMP INSTR. PANEL
19 | 480V UNIT SUBSTATION 1D,2D
415 | AUX. BLDG. MCC 1F
492 | AUX. BLDG. MCC 1H
432 | FUEL BLDG. MCC 1A, 2A
433 | FUEL BLDG. MCC 1B, 2B
517 | RR LFMG SET
832B | CONTAINMENT MONITORING SYSTEM SAMPLE PANEL
963 | AUXILIARY BLDG. CAM
964 | FUEL BLDG. CAM
829 | AUX. BLDG. PROCESS SAMP. PNL.
529 | CHANNEL HANDLING BOOM
948 | FUEL BLDG. FLOOR OR INSTRUMENT PNL.
CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-27b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "B - B"

REVISION 8
AUGUST 1999



NUCLEAR SAFETY RELATED ITEMS ARE SHOWN ON THIS DRAWING (FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

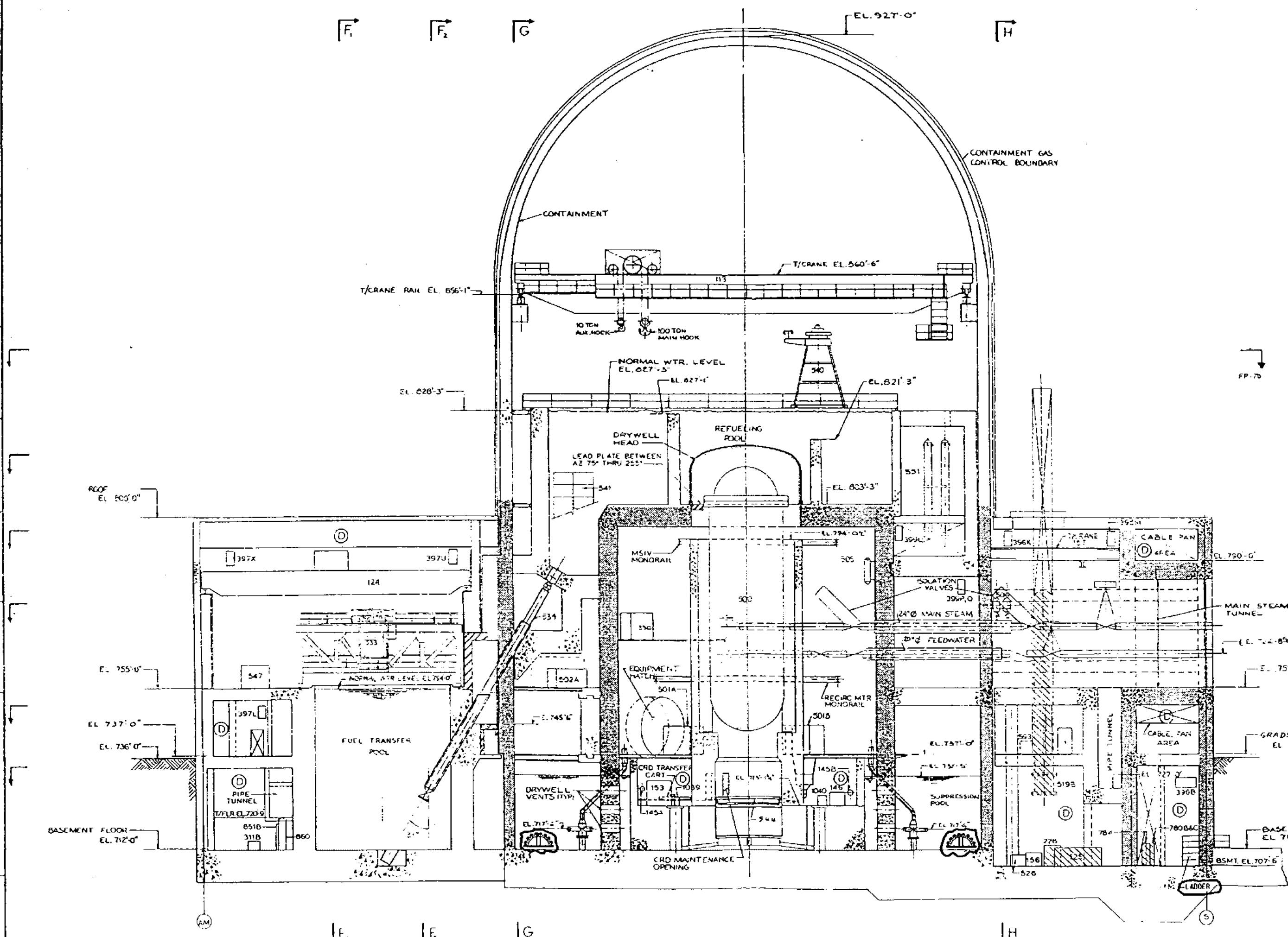
ITEM	EQUIPMENT NAME
113	CONTAINMENT POLAR CRANE
124	125 TON CASK HANDLING CRANE
156	RCIC WATER LEG PUMP
230	DRYWELL COOLER
500	REACTOR VESSEL
501	RECIRC. SYSTEM MOTOR
502	HYDRAULIC POWER UNIT
505	ACCUMULATOR TANK
519	RHR HEAT EXCHANGERS
525	RCIC PUMP & TURBINE
533	FUEL HANDLING PLATFORM
534	FUEL TRANSFER TUBE
540	REFUELING PLATFORM
544	CRD HANDLING PLATFORM
780	RHR PUMP & HT. EXCH. RM. VENT PNL.
506	ACCUMULATOR TANKS
145	DRYWELL EQUIP. DRAIN COOLER
146	DRYWELL EQUIP. DRAIN SUMP/PUMP
153	DRYWELL FLR. DRAIN SUMP
228	RCIC PUMP ROOM FAN COIL UNIT
311	DRYWELL CHILLED WATER PUMPS
396 397 399	AREA COOLERS
526	RCIC AIR COMP.
541	FUEL STORAGE RACK
547	FUEL BLDG. OPER. PNL.
551	NON-REGENERATIVE HEAT EXCH.
593	MSIV ROOM COOLER
784	RCIC PUMP ROOM VENT PNL.
851	DRYWELL COOLING PANEL
960	FUEL POOL SW. EFF. #1
1039	DRYWELL FLR. DRAIN SUMP SAMPLE PUMP
1040	DRYWELL EQUIP. DRAIN SUMP SAMPLE PUMP

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-28a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "D-D"

MO1-1111 SHEET 4 OF 5

REVISION 8
AUGUST 1999



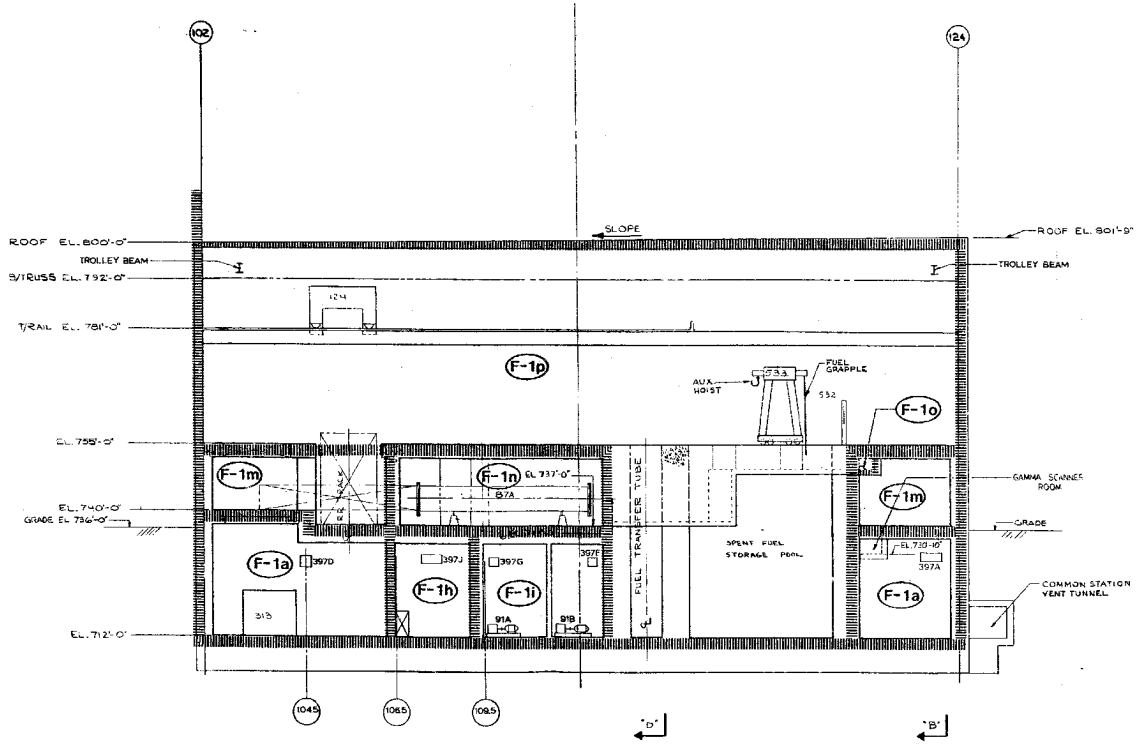
ITEM	EQUIPMENT NAME
113	CONTAINMENT POLAR CRANE
124	125 TON CASK HANDLING CRANE
156	RCIC WATER LEG PUMP
230	DRYWELL COOLER
500	REACTOR VESSEL
501	RECIRC. SYSTEM MOTOR
502	HYDRAULIC POWER UNIT
505	ACCUMULATOR TANK
519	RHR HEAT EXCHANGERS
525	RCIC PUMP & TURBINE
533	FUEL HANDLING PLATFORM
534	FUEL TRANSFER TUBE
540	REFUELING PLATFORM
544	CRD HANDLING PLATFORM
780	RHR PUMP & HT EXCH. RM. VENT PNL.
506	ACCUMULATOR TANKS
145	DRYWELL EQUIP. DRAIN COOLER
146	DRYWELL EQUIP. DRAIN SUMP/PUMP
153	DRYWELL FLR. DRAIN SUMP
228	RCIC PUMP ROOM FAN COIL UNIT
311	DRYWELL CHILLED WATER PUMPS
396 397 399	AREA COOLERS
526	RCIC AIR COMP.
541	FUEL STORAGE RACK
547	FUEL BLDG. OPER. PNL.
551	NON-REGENERATIVE HEAT EXCH.
593	MSIV ROOM COOLER
784	RCIC PUMP ROOM VENT PNL.
851	DRYWELL COOLING PANEL
860	FUEL POOL SW. EFF. #1
1039	DRYWELL FLR. DRAIN SUMP SAMPLE PUMP
1040	DRYWELL EQUIP. DRAIN SUMP SAMPLE PUMP

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-28b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "D-D"

M01-1112

ITEM	EQUIPMENT NAME
87	FUEL POOL HT EXCH.
91	FP COOLING PUMPS
124	125 TON CASK HAND. CRANE
313	DRYWELL CHILLERS
532	JIB CRANE
533	REFUELING PLATFORM
397	AREA COOLERS



NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

DOCUMENT TRANSFERRED TO 21.P.C. 10-31-85

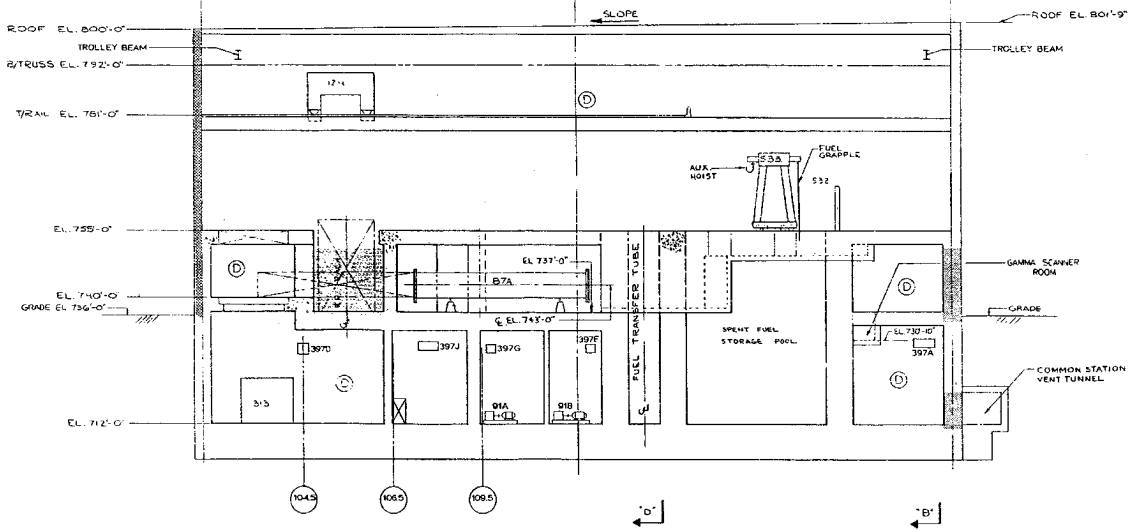
CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-29a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "F$_1$-F$_1$"

M01-1112

Revsion 6
Aug 1994

ITEM	EQUIPMENT NAME
87	FUEL POOL HT EXCH.
91	FP COOLING PUMPS
125	125 TON CASK HAND. CRANE
313	DRYWELL CHILLERS
532	JIB CRANE
533	REFUELING PLATFORM
397	AREA COOLERS



NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
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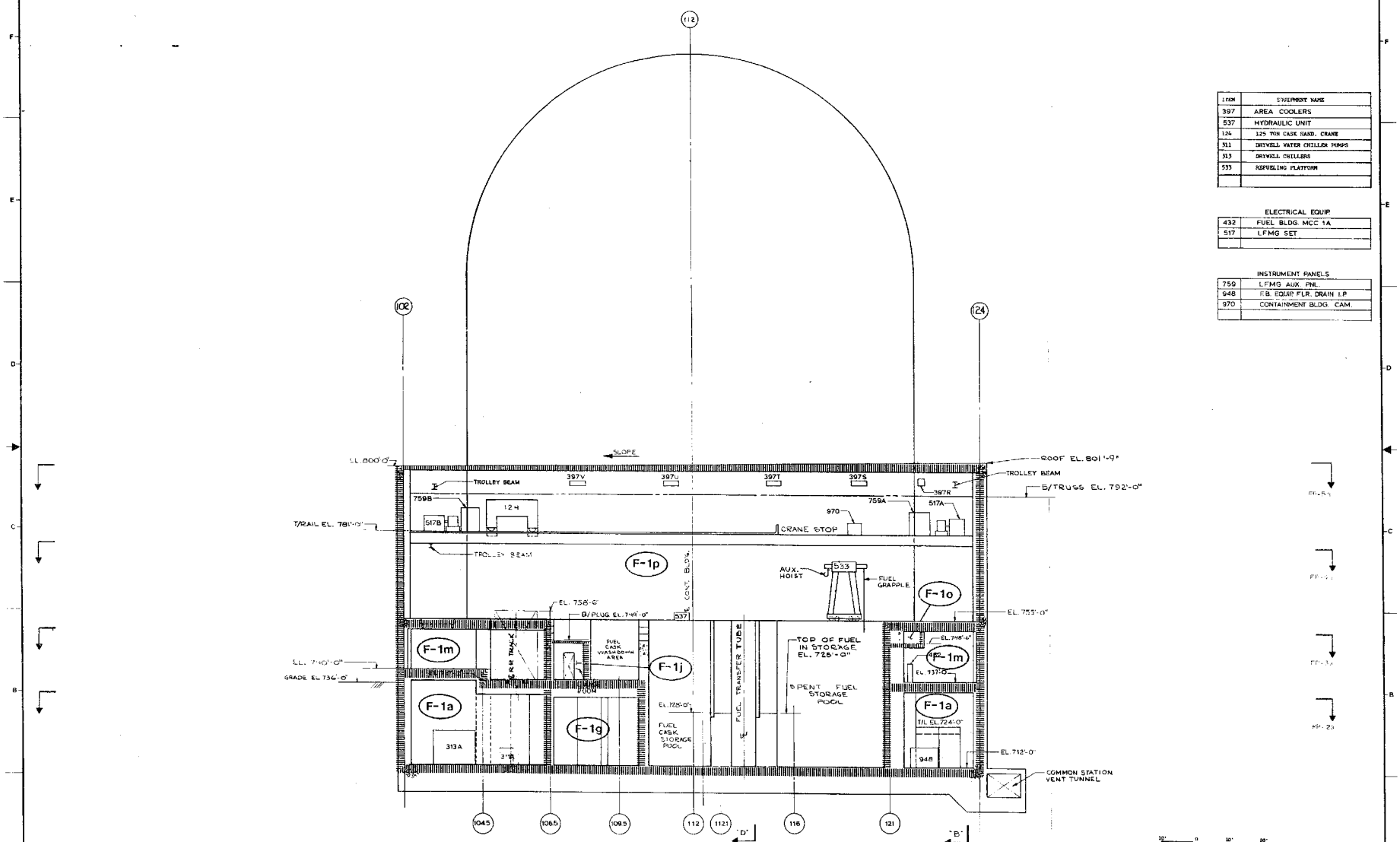
DOCUMENT TRANSFERRED TO a1.P.C. 10-31-85

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-29b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "F1-F1"

M01-1112

SHEET 2 OF 7



ITEM	EQUIPMENT NAME
397	AREA COOLERS
537	HYDRAULIC UNIT
124	125 TON CASK HAND. CRANE
511	DRYWELL WATER CHILLER PUMPS
513	DRYWELL CHILLERS
533	REFUELING PLATFORM

ELECTRICAL EQUIP.

432	FUEL BLDG. MCC 1A
517	LFMG SET

INSTRUMENT PANELS

759	LFMG AUX. PNL.
948	F.B. EQUIP FLR. DRAIN I.P.
970	CONTAINMENT BLDG. CAM.

CLINTON POWER STATION

FIRE PROTECTION

FIGURE FP-30a

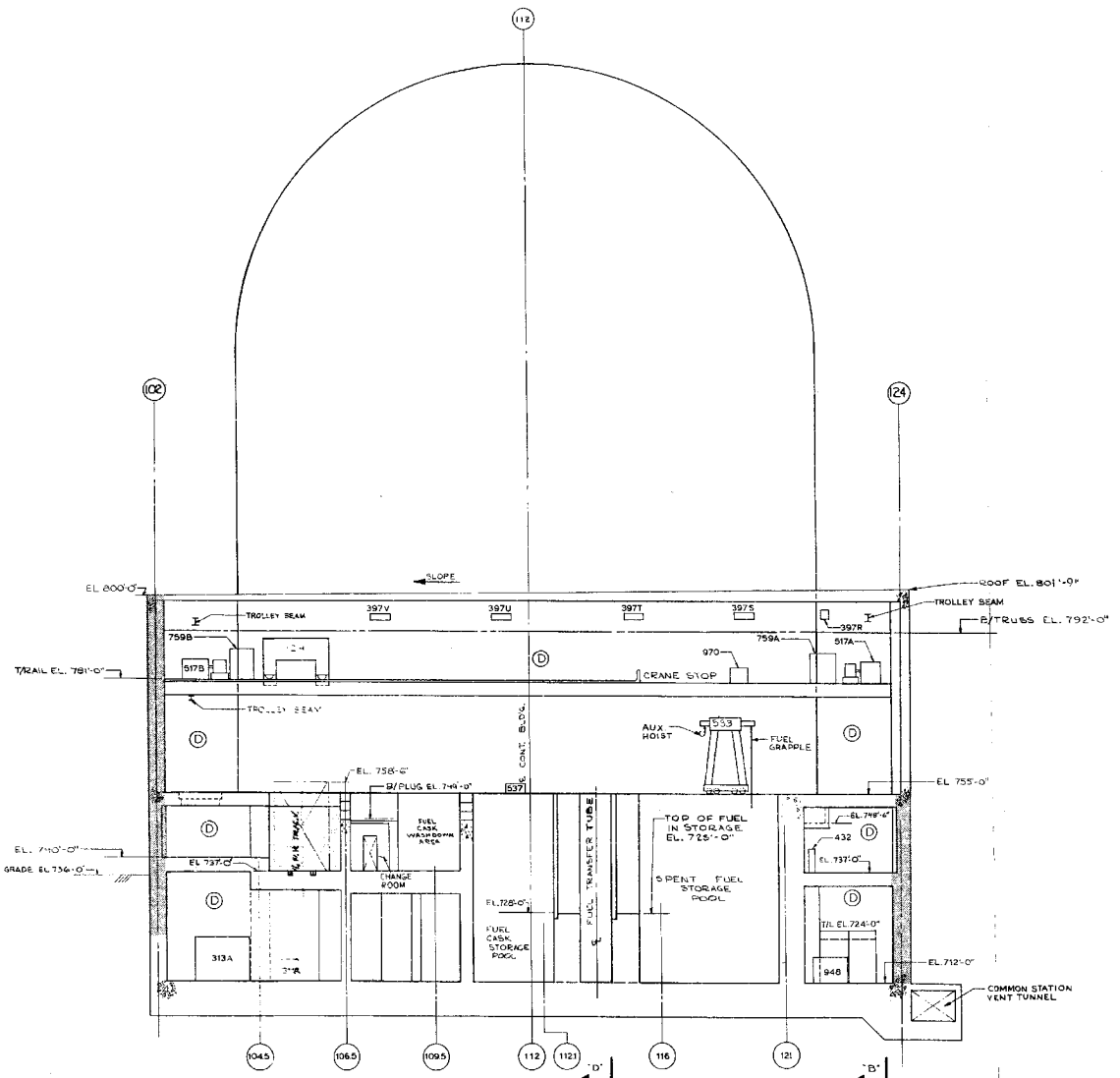
FIRE ZONE BOUNDARIES

AUXILIARY, FUEL BUILDING AND CONTAINMENT

SECTION "F-F"

SHEET 2 OF 7

M01-1112



ITEM	EQUIPMENT NAME
397	AREA COOLERS
537	HYDRAULIC UNIT
124	125 TON CASK HAND. CRANE
511	DRYWELL WATER CHILLER PUMPS
513	DRYWELL CHILLERS
533	REFUELING PLATFORM

ELECTRICAL EQUIP

432	FUEL BLDG. MCC 1A
517	LFMG SET

INSTRUMENT PANELS

759	LFMG AUX. PNL.
948	F.B. EQUIP FLR. DRAIN I.P.
970	CONTAINMENT BLDG. CAM.

CLINTON POWER STATION

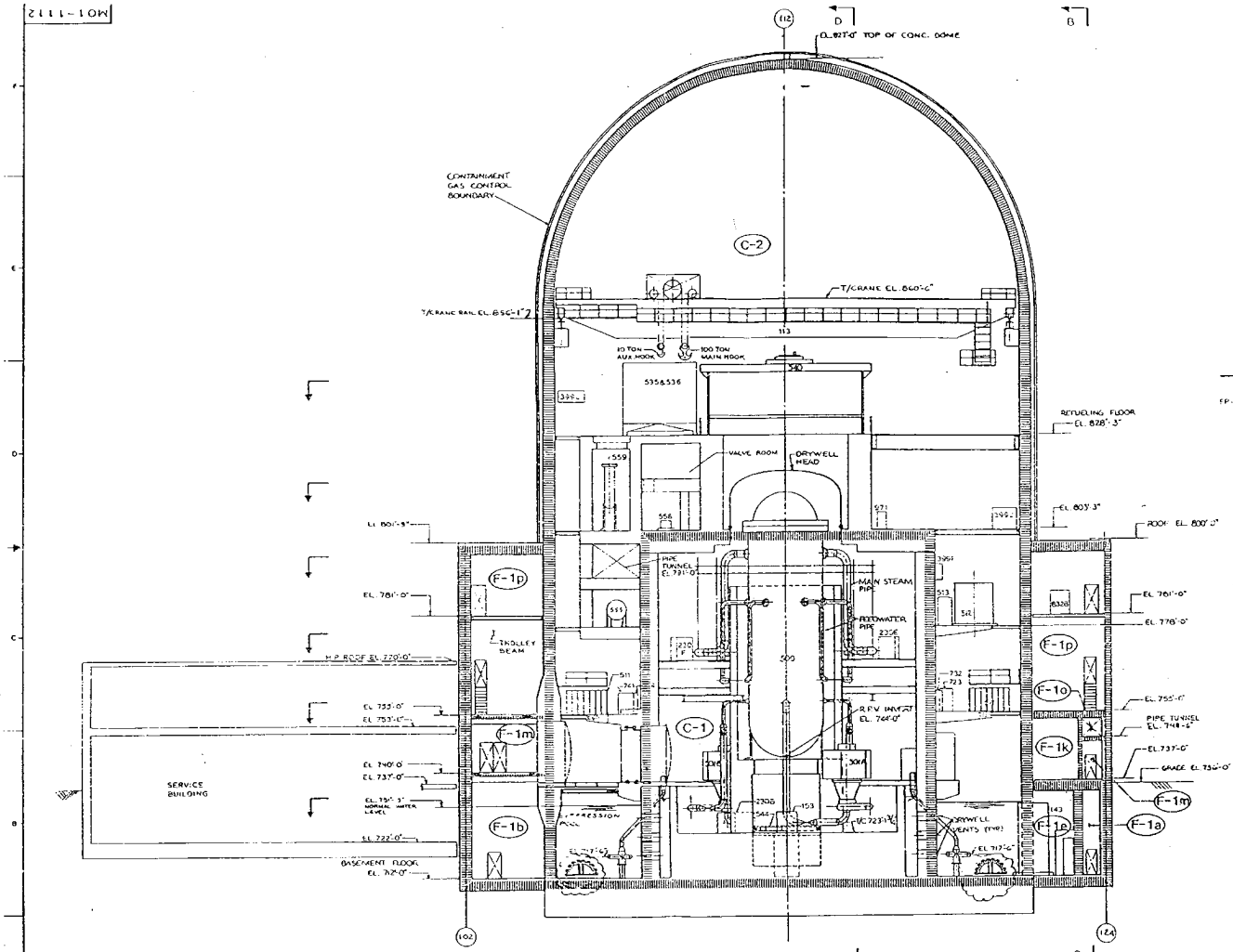
FIRE PROTECTION

FIGURE FP-30b

FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION 'F$_1$-F$_1$'

DOCUMENT TRANSFERRED TO 21.P.C. 10-31-85

REVISION 8
AUGUST 1999



Item	Nomenclature
113	CONTAINMENT POLAR CRANE
230	DRYWELL COOLERS
500	REACTOR VESSEL
501	RECIRC. SYSTEM PUMPS
511	RCIC NOZZLES
512	STANDBY LIQ. CONTROL TANK
560	REFUEL PLATFORM
566	CRD HANDLING PLATFORM
555	FILTER/DEMIN. RWC. TANK
513	SLC TEST TANK
556	RWCU HOLDING PUMP
559	FILTER/DEMIN. VESSELS
143	FUEL BLDG. EQUIP DRAIN TANK
535	RPV HEAD SUPPORT
536	HEAD STRONGBACK CAROUSEL
153	DRYWELL FLR. DRAIN SUMP PUMP
399	AREA COOLERS
723	RECIRC. PUMP A INSTR. PANEL
724	RECIRC. PUMP B INSTR. PANEL
732	JET PUMP INSTR. PANEL A
741	REACTOR VESSEL LEVEL & PRESS. INSTR. PANEL
832	CONT. ATMOS. H_2-O_2 MONITORING SYS. PNL. A&B
971	CONTAINMENT BLDG. CAM # 3

NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.

CLINTON POWER STATION
FIRE PROTECTION

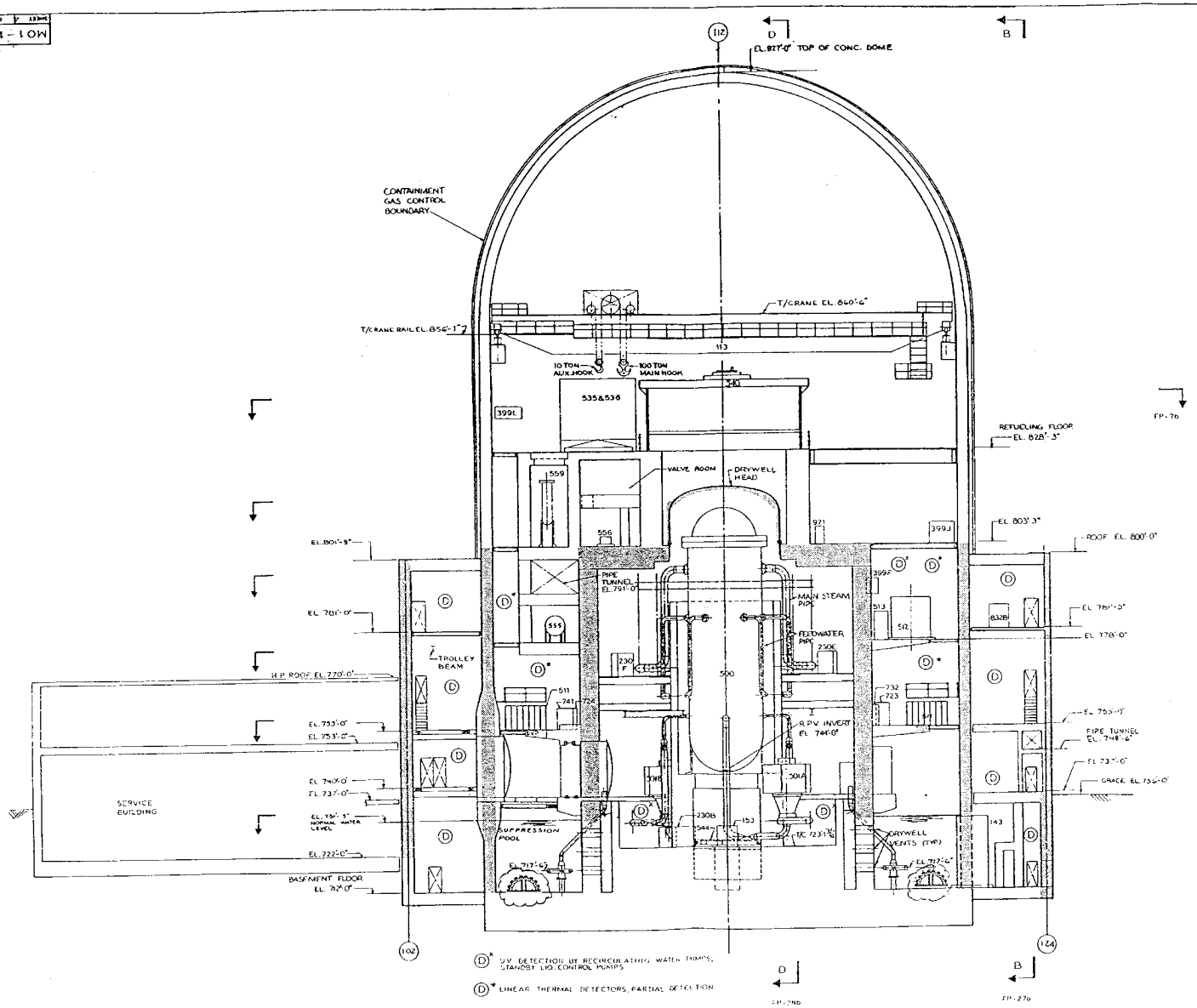
FIGURE FP-31a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "G-G"

DOCUMENT TRANSFERRED TO I.P.C. 10-31-05

M01-1112

REVISION 8
AUGUST 1999

ITEM	EQPT. NAME
113	CONTAINMENT POLAR CRANE
230	DRYWELL COOLERS
500	REACTOR VESSEL
501	RECIRC. SYSTEM PORTS
511	HCU MODULES
512	STANDBY LIQ. CONTROL TANK
540	REFUEL PLATFORM
548	CRD HANDLING PLATFORM
555	FILTER/DEMIN. RWC. TANK
513	SLC TEST TANK
556	RWCU HOLDING PUMP
559	FILTER/DEMIN. VESSELS
143	FUEL BLDG. EQUIP DRAIN TANK
535	RPV HEAD SUPPORT
536	HEAD STRONGBACK CAROUSEL
153	DRYWELL FLR. DRAIN SUMP PUMP
399	AREA COOLERS
723	RECIRC. PUMP A INSTR. PANEL
724	RECIRC. PUMP B INSTR. PANEL
732	JET PUMP INSTR. PANEL A
741	REACTOR VESSEL LEVEL & PRESS. INSTR. PANEL
832	CONT. ATMOS. H_2 O_2 MONITORING SYS. PNL. # 2
971	CONTAINMENT BLDG. CAM # 3

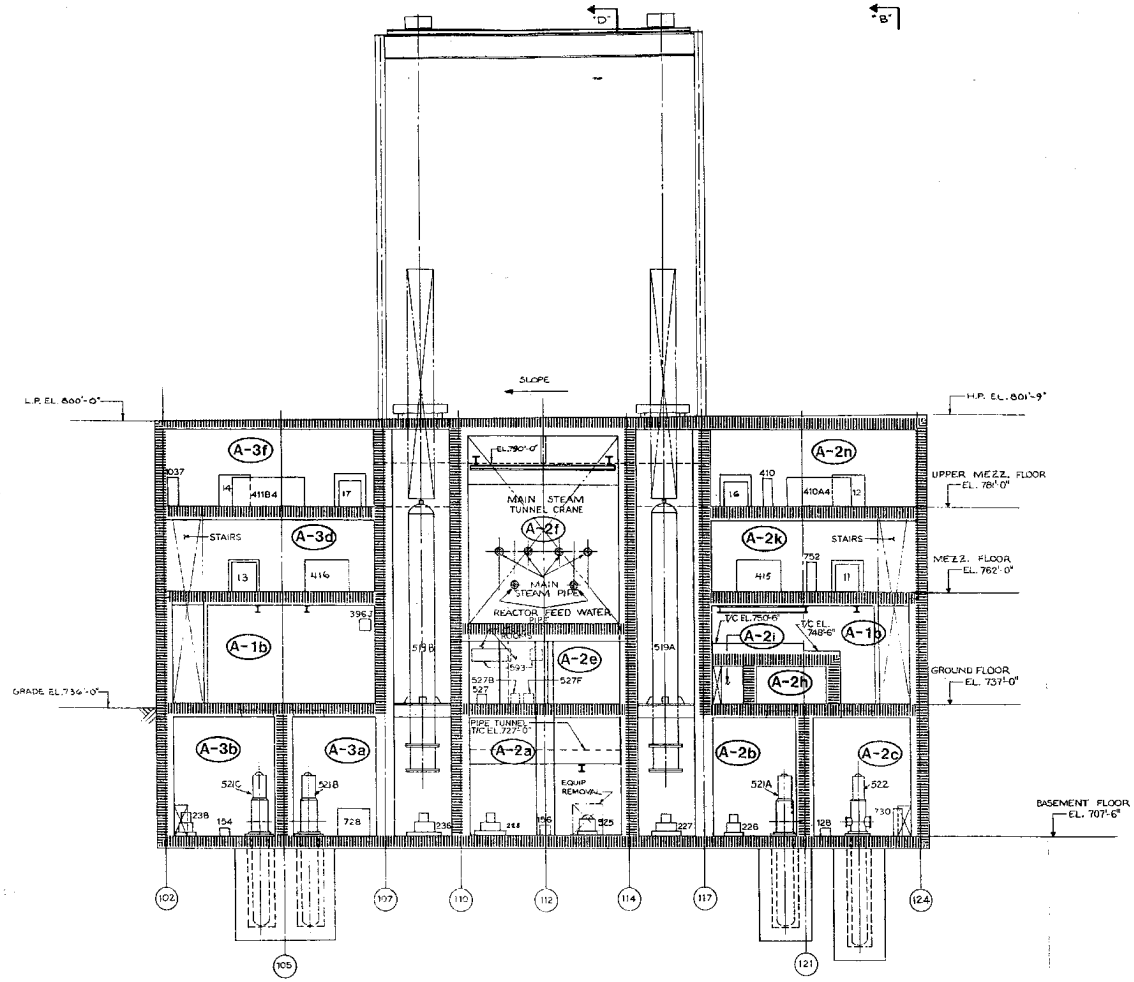


NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-31b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION 'G-G'

DOCUMENT TRANSFERRED TO I.P.C. 10-31-95

M01-1113



ITEM	EQUIPMENT NAME
11	4.1 KV SWGR. 1A
12	4.1 KV SWGR. 1A1
13	4.1 KV SWGR.
14	4.1 KV SWGR.
16	480V. UNIT SUBSTATION
17	480 V. UNIT SUBSTATION
415	AB MCCF
416	AB MCCG
228	RCIC PUMP ROOM (FAN COIL UNIT)
128	LPCS WATER LEG PUMP
154	RHR WATER LEG PUMP
156	RCIC WATER LEG PUMP
519	RHR HEAT EXCHANGERS
521	RHR PUMPS
522	LPCS PUMP
525	RCIC PUMP AND TURBINE
226	ECCS RHR PUMP ROOM 1A COOLING COIL A&B
227	ECCS RHR HEAT EXCH. RM. 1A COOLING COIL A&B
236	ECCS RHR HEAT EXCH. RM. 1B COOLING COIL A&B
238	ECCS RHR PUMP RM 1C COOLING COIL A&B
396	AREA COOLER
527	MSIV BLOWER
593	MSIV RM. COOLER

ITEM	INSTRUMENTATION
728	DIV. RHR. B.I.P.
730	LPCS SYSTEM I.P.
1037	CHLORINE DET. FAST-ALARM

ITEM	ELECTRICAL
410	AUX. BLDG. MCC 1A1,2,3,4
411	AUX BLDG MCC 1B1,2,3,4
752	SRM / TRM DRIVE CONTROL RELAY PANEL

NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

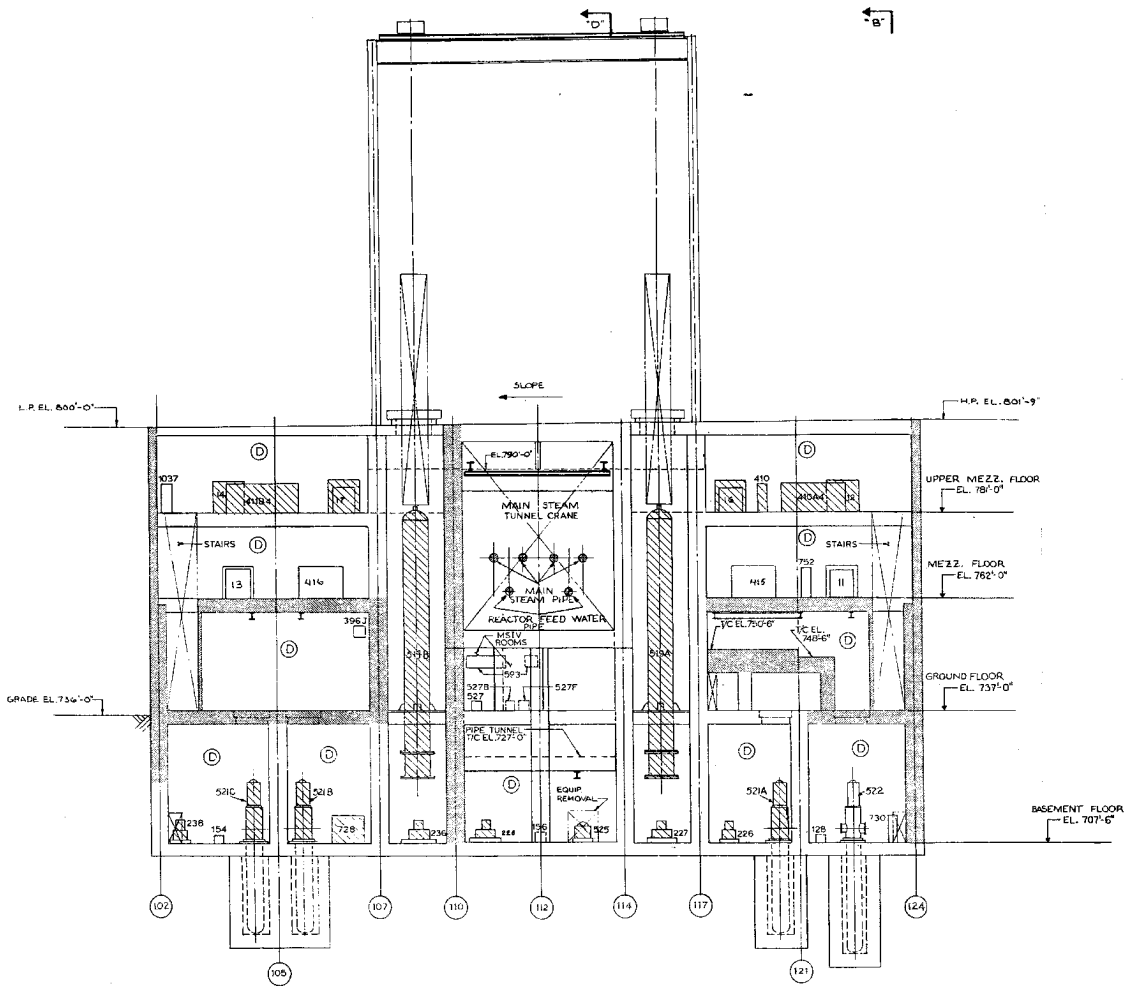
GRAPHIC SCALE

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-32a
FIRE ZONE BOUNDARIES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "H-H"

M01-1113

SHEET 2 OF 7



ITEM	EQUIPMENT NAME
11	4.1 KV SWGR. 1A
12	4.1 KV SWGR. 1A1
13	4.1 KV SWGR.
14	4.1 KV SWGR.
16	480V. UNIT SUBSTATION
17	480 V. UNIT SUBSTATION 1D,2D
415	AB MCCF
416	AB MCCG
228	RCIC PUMP ROOM (FAN COIL UNIT)
128	LPCS WATER LEG PUMP
154	RHR WATER LEG PUMP
156	RCIC WATER LEG PUMP
519	RHR HEAT EXCHANGERS
521	RHR PUMPS
522	LPCS PUMP
525	RCIC PUMP AND TURBINE
226	ECCS RHR PUMP ROOM 1A COOLING COIL A&B
227	ECCS RHR HEAT EXCH. RM. 1A COOLING COIL A&B
236	ECCS RHR HEAT EXCH. RM. 1B COOLING COIL A&B
238	ECCS RHR PUMP RM. 1C COOLING COIL A&B
396	AREA COOLER
527	MSIV BLOWER
593	MSIV RM. COOLER

ITEM	INSTRUMENTATION
728	DIV. RHR. B.I.P.
730	LPCS SYSTEM I.P.
1037	CHLORINE DET. FAST-ALARM

ITEM	ELECTRICAL
410	AUX. BLDG. MCC 1A1,2,3,4
411	AUX. BLDG MCC 1B1,2,3,4
752	SRM / TRM DRIVE CONTROL RELAY PANEL

FP-5b
FP-4b
FP-3b
FP-2b
"D" FP-28b
"B" FP-27b

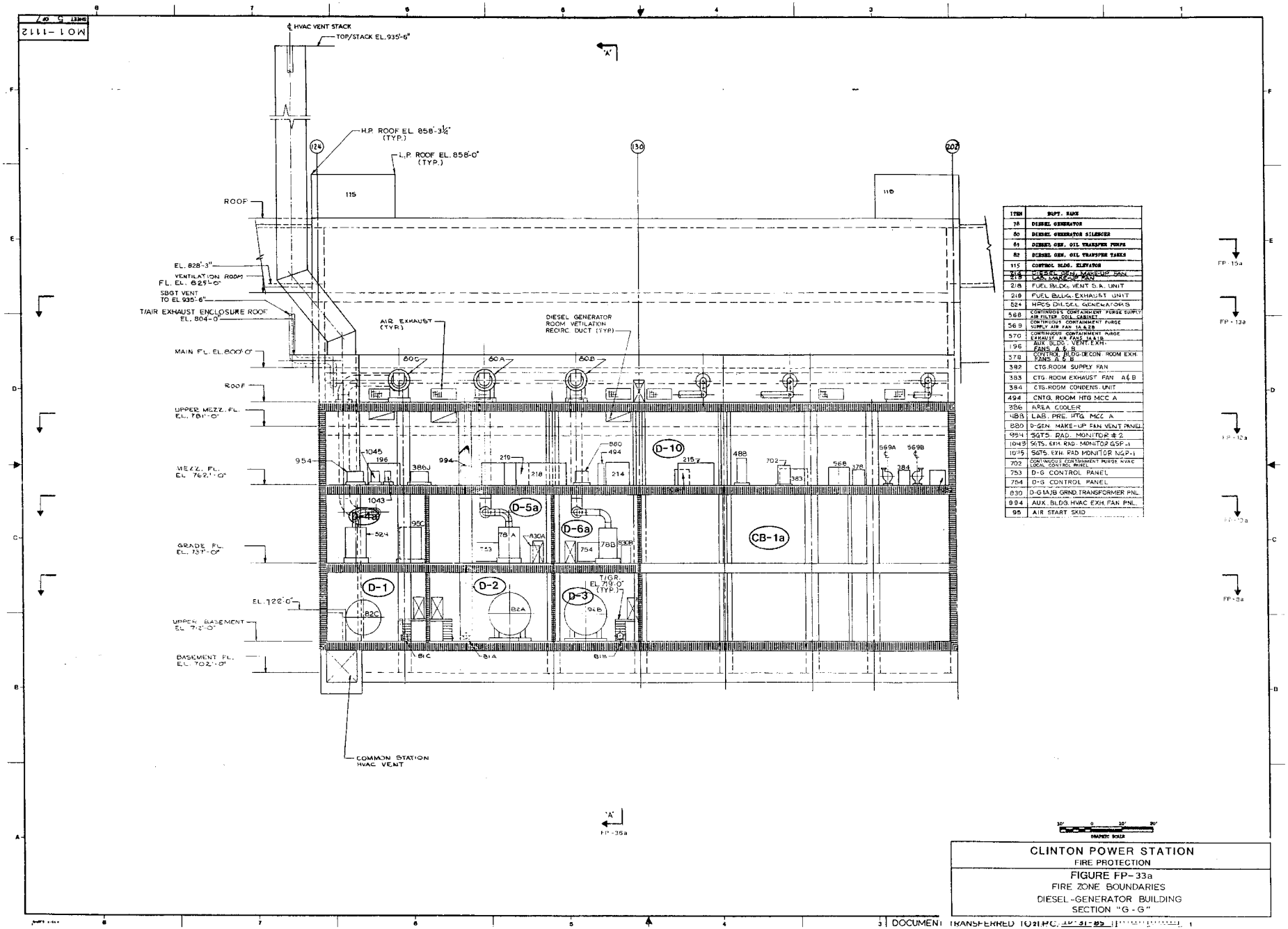
NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

GRAPHIC SCALE

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-32b
FIRE PROTECTION FEATURES
AUXILIARY, FUEL BUILDING AND CONTAINMENT
SECTION "H-H"

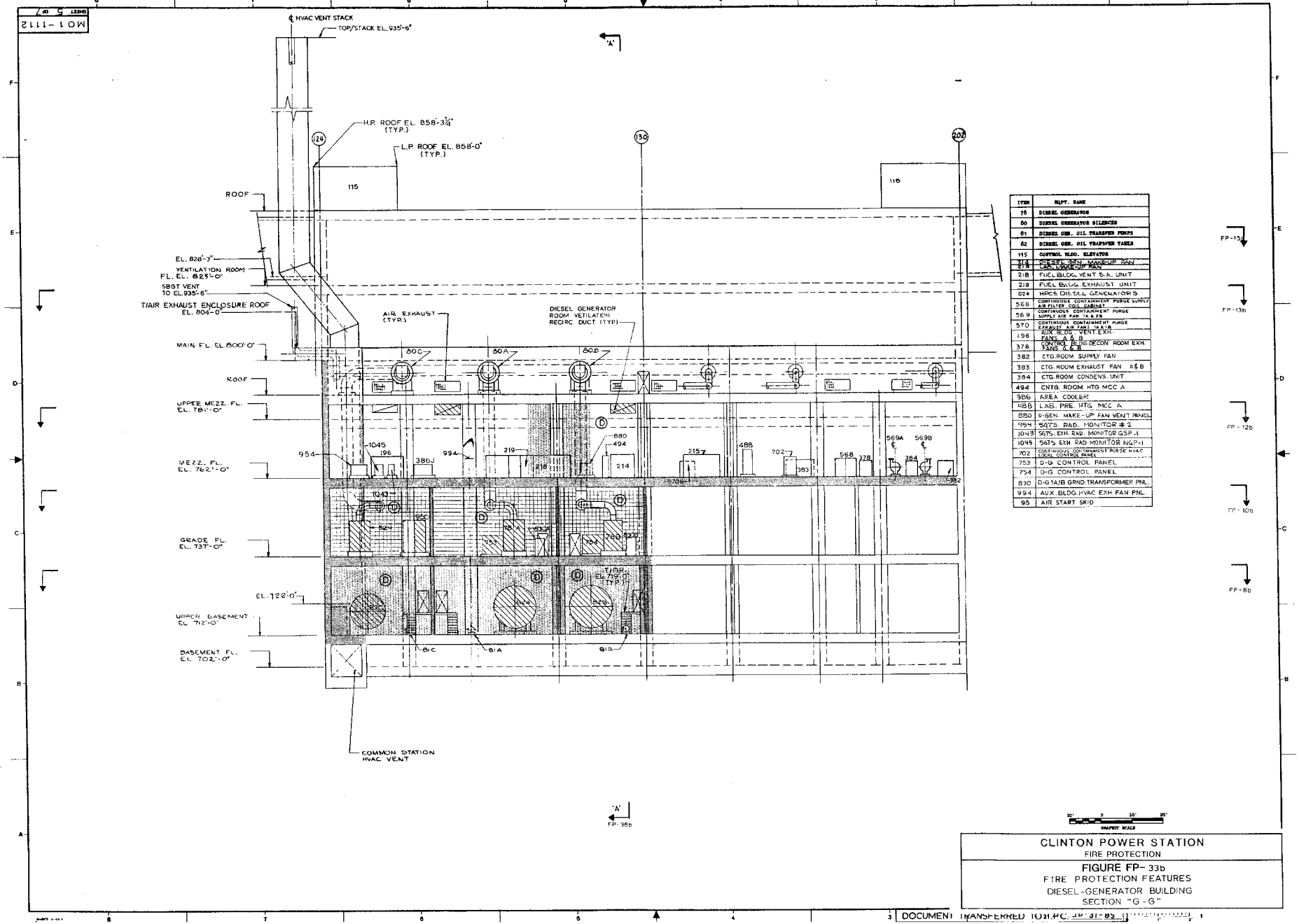
DOCUMENT TRANSFERRED TO I.P.C. 10-31-85



ITEM	EQPT. NAME
78	DIESEL GENERATOR
80	DIESEL GENERATOR SILENCER
81	DIESEL GEN. OIL TRANSFER PUMPS
82	DIESEL GEN. OIL TRANSFER TANKS
115	CONTROL BLDG. ELEVATOR
116	DIESEL GEN. MAKE-UP FAN
215	CAB. MAKE-UP FAN
218	FUEL BLDG. VENT S.A. UNIT
219	FUEL BLDG. EXHAUST UNIT
524	HPCS DIESEL GENERATOR S
568	CONTINUOUS CONTAINMENT PURGE SUPPLY AIR FILTER COIL CABINET
569	CONTINUOUS CONTAINMENT PURGE SUPPLY AIR FAN 1A & 2B
570	CONTINUOUS CONTAINMENT PURGE EXHAUST AIR FANS 1A & 1B
196	AUX. BLDG. VENT. EXH. FANS A & B
378	CONTROL BLDG. DECON. ROOM EXH. FANS A & B
382	CTG. ROOM SUPPLY FAN
383	CTG. ROOM EXHAUST FAN A & B
384	CTG. ROOM CONDENS. UNIT
494	CNTG. ROOM HTG. MCC A
386	AREA COOLER
488	LAB. PRE. HTG. MCC A
880	D-GEN. MAKE-UP FAN VENT. PANEL
954	SGTS. RAD. MONITOR # 2
1043	SGTS. EXH. RAD. MONITOR GSP-1
1015	SGTS. EXH. RAD MONITOR NGP-1
702	CONTINUOUS CONTAINMENT PURGE HVAC LOCAL CONTROL PANEL
753	D-G CONTROL PANEL
754	D-G CONTROL PANEL
830	D-G 1A/B GRND. TRANSFORMER PNL.
994	AUX. BLDG. HVAC EXH. FAN PNL.
95	AIR START SKID

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-33a
FIRE ZONE BOUNDARIES
DIESEL-GENERATOR BUILDING
SECTION "G-G"

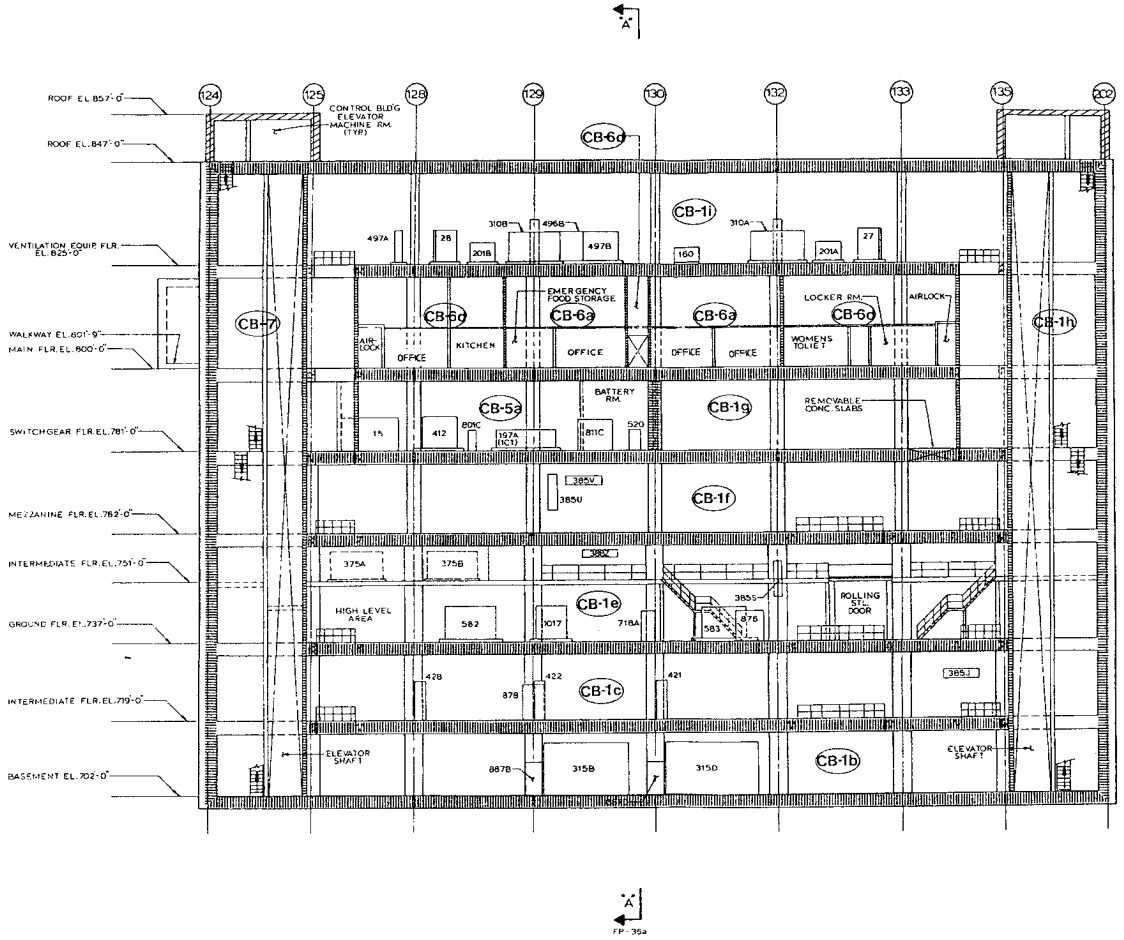


TYPE	EQPT. NAME
75	DIESEL GENERATOR
80	DIESEL GENERATOR SILENCER
81	DIESEL GEN. OIL TRANSFER PUMPS
82	DIESEL GEN. OIL TRANSFER TANKS
115	CONTROL BLDG. ELEVATOR
214	DIESEL GEN. MAKE-UP FAN
215	LAB. MAKE-UP FAN
218	FUEL BLDG. VENT S.A. UNIT
219	FUEL BLDG. EXHAUST UNIT
824	HPCS DIESEL GENERATOR S
568	CONTINUOUS CONTAINMENT PURGE SUPPLY AIR FILTER COIL CABINET
569	CONTINUOUS CONTAINMENT PURGE SUPPLY AIR FAN 1A & 2B
570	CONTINUOUS CONTAINMENT PURGE EXHAUST AIR FANS 1A & 1B
196	AUX. BLDG. VENT EXH. FANS A & B
378	CONTROL BLDG. DECON. ROOM EXH. FANS A & B
382	CTG. ROOM SUPPLY FAN
383	CTG. ROOM EXHAUST FAN A & B
384	CTG. ROOM CONDENS. UNIT
494	CNTG. ROOM HTG. MCC A
386	AREA COOLER
488	LAB. PRE. HTG. MCC A
880	D-GEN. MAKE-UP FAN VENT PANEL
954	SGTS. RAD. MONITOR # 2
1043	SGTS. EXH. RAD. MONITOR GSP-1
1045	SGTS EXH. RAD. MONITOR NGP-1
702	CONTINUOUS CONTAINMENT PURGE HVAC LOCAL CONTROL PANEL
753	D-G CONTROL PANEL
754	D-G CONTROL PANEL
830	D-G 1A,1B GRND. TRANSFORMER PNL.
994	AUX. BLDG. HVAC EXH. FAN PNL.
95	AIR START SKID

GRAPHIC SCALE

CLINTON POWER STATION
FIRE PROTECTION
FIGURE FP-33b
FIRE PROTECTION FEATURES
DIESEL-GENERATOR BUILDING
SECTION "G-G"

REVISION 10
OCTOBER 2001



ITEM	EQUIPMENT NAME
15	4.16 KV SWITCHGEAR 1C1
27	480V UNIT SUBSTATION A
28	480V UNIT SUBSTATION B
160	CONT. RM. HUMID. BOILER
197	SWITCHGEAR HEAT REMOVAL UNIT
201	CONTROL RM. AIR FILTER PACKAGE
310	CONTROL RM. SYS. CHILLERS
315	PLANT CHILLED WATER CHILLER
375	LAB. EXHAUST AIR FILTER PKG'S
412	MOTOR CONTROL CENTER 1C1
421	CONTROL BLDG. MCC A
422	CONTROL BLDG. MCC B
428	CONTROL BLDG. MCC H
496	CNMT. HTD. MCC 1A & 1B
497	AUX. BLDG. HTD. MCC A & B
520	DIV. 3 BATT. CHARGER
582	DIV. I DAMPER MCC A
583	DIV. II DAMPER MCC B
718	HYD. RECOMB. INSTR. PNL.
801	INVERTER
811	SWITCHGEAR RM 1C VENT. PANEL
876	LAB. HVAC SUP. PANEL
878	RAD. WASTE HVAC EXHAUST PANEL
887	PLANT CHILLED WATER CONT. PANEL
1017	LAB. HUMIDIFICATION STM. BLR. MCC
385 385J	AREA COOLERS

NORTH

NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS)

10' 0 10 20

CLINTON POWER STATION
FIRE PROTECTION

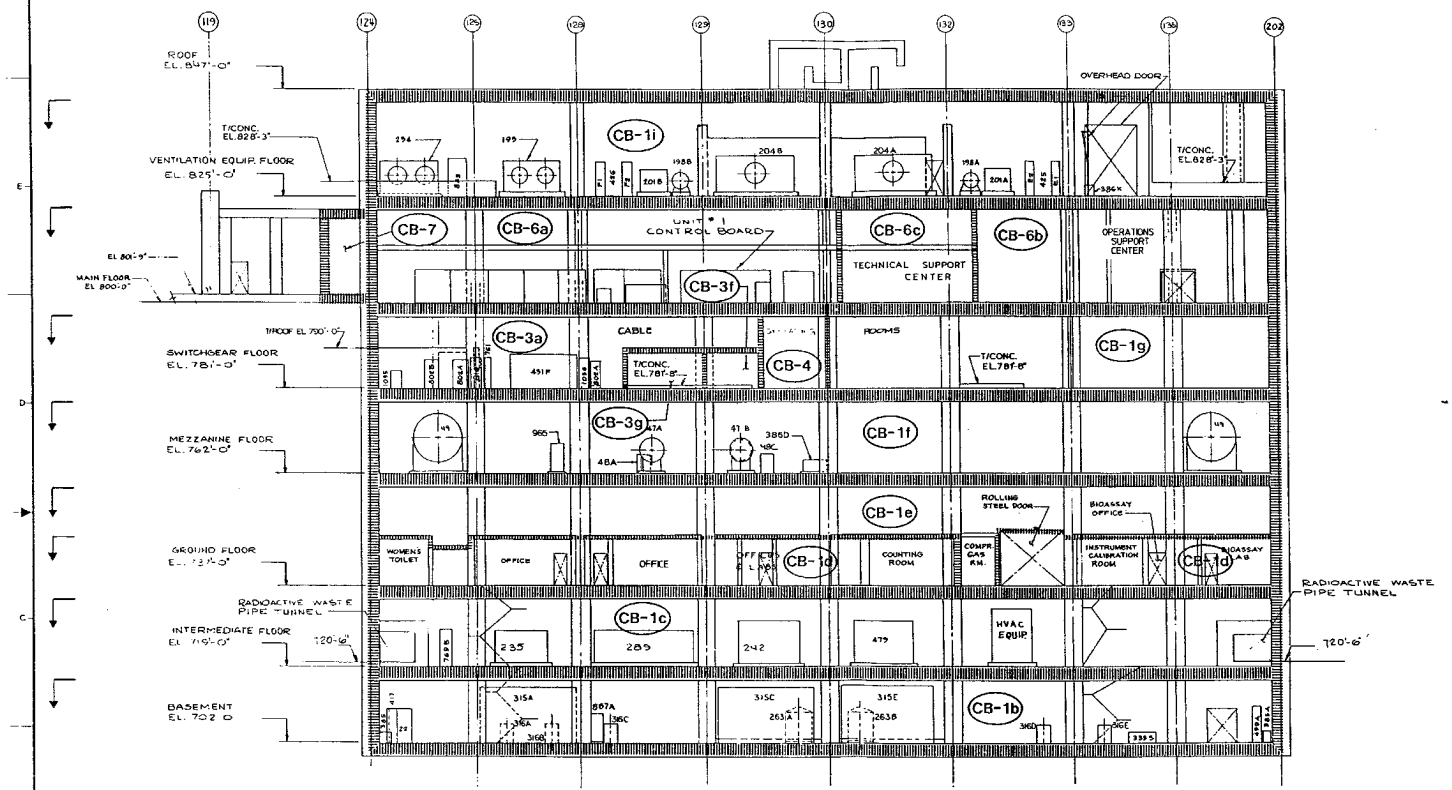
FIGURE FP-34a
FIRE ZONE BOUNDARIES
CONTROL BUILDING
SECTION "G1 - G1"

Security - Related Information Figure Withheld Under 10 CFR 2.390

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-34b
FIRE PROTECTION FEATURES
CONTROL BUILDING
SECTION "G_1-G_1"

Revsion 6
Aug 1994



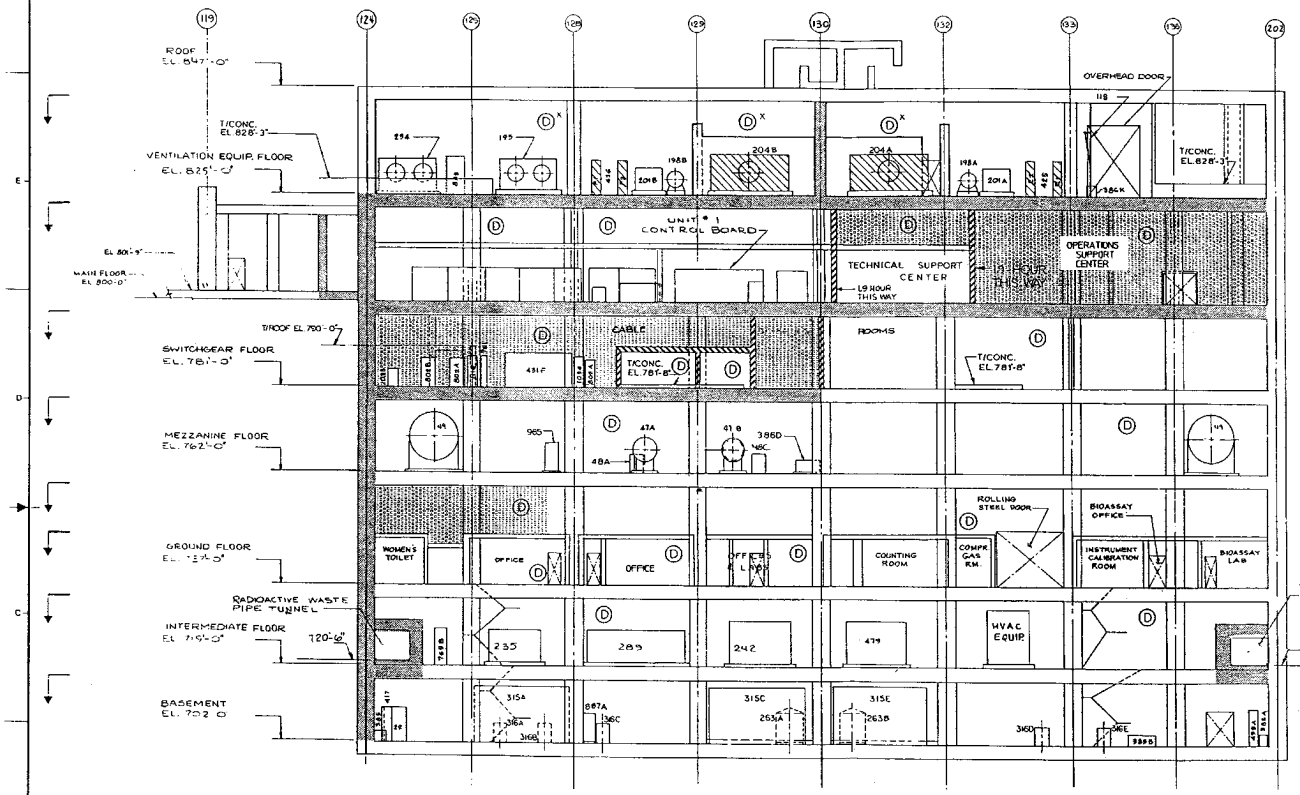
ITEM	EQUIPMENT NAME
47	C.C. WATER TANK
48	C.C. WATER PUMP
49	COMPONENT COOL WTR. TANK
118	JIB CRANE
195	ADJ. BLDG. VENT AIR SUPPLY UNIT
201	CONT. ROOM AIR FILTER PKG.
204	CONT. ROOM AIR HANDLING UNIT
234	CONT. BLDG. VENT AIR SUPPLY UNIT
235	CONTAINMENT BLDG. EXHAUST UNIT
242	TURB. BLDG. VENT EXHAUST UNIT
289	RADWASTE BLDG. EXHAUST UNIT
315	WATER CHILLER
316	WATER CHILLER PUMPS
386	AREA COOLER
425	CONTROL BLDG.MCC E,HTG,MCC A
385	AREA COOLER
833	FIRE PUMP A & B CONTROL PANEL
22	480V.UNIT SUBSTATION
263	HYDROGEN RECOMBINER
431	125V DC MCC, 1D, 1E, 1F
499	DRYWELL PURGE HTG, MCC A,B
761	ERAT PROTECTIVE RELAY PNL
769	CONT. BLDG. HVAC SUPPLY PANEL
802	OPT. ISO. CABINET
818	RAT-1 PROTECTIVE RELAY PANEL
1035	NSPS REG. ISO. TRANSFORMER
X036	STATION REMOTE TERM. CAB.
417	CONTR. BLDG. MCC 1A_2A
426	CONT. BLDG. MCC F1, F2
479	480 V UNIT SUB. 0
887	PLANT CHILLER WATER CONT. PNL
965	CONTROL BLDG. CAM
198	CONT. RM. RETURN AIR FAN

NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-35a
FIRE ZONE BOUNDARIES
CONTROL BUILDING
SECTION "H - H"

Revsion 6
Aug 1994



(D)X-SEE FIGURE FP-15b

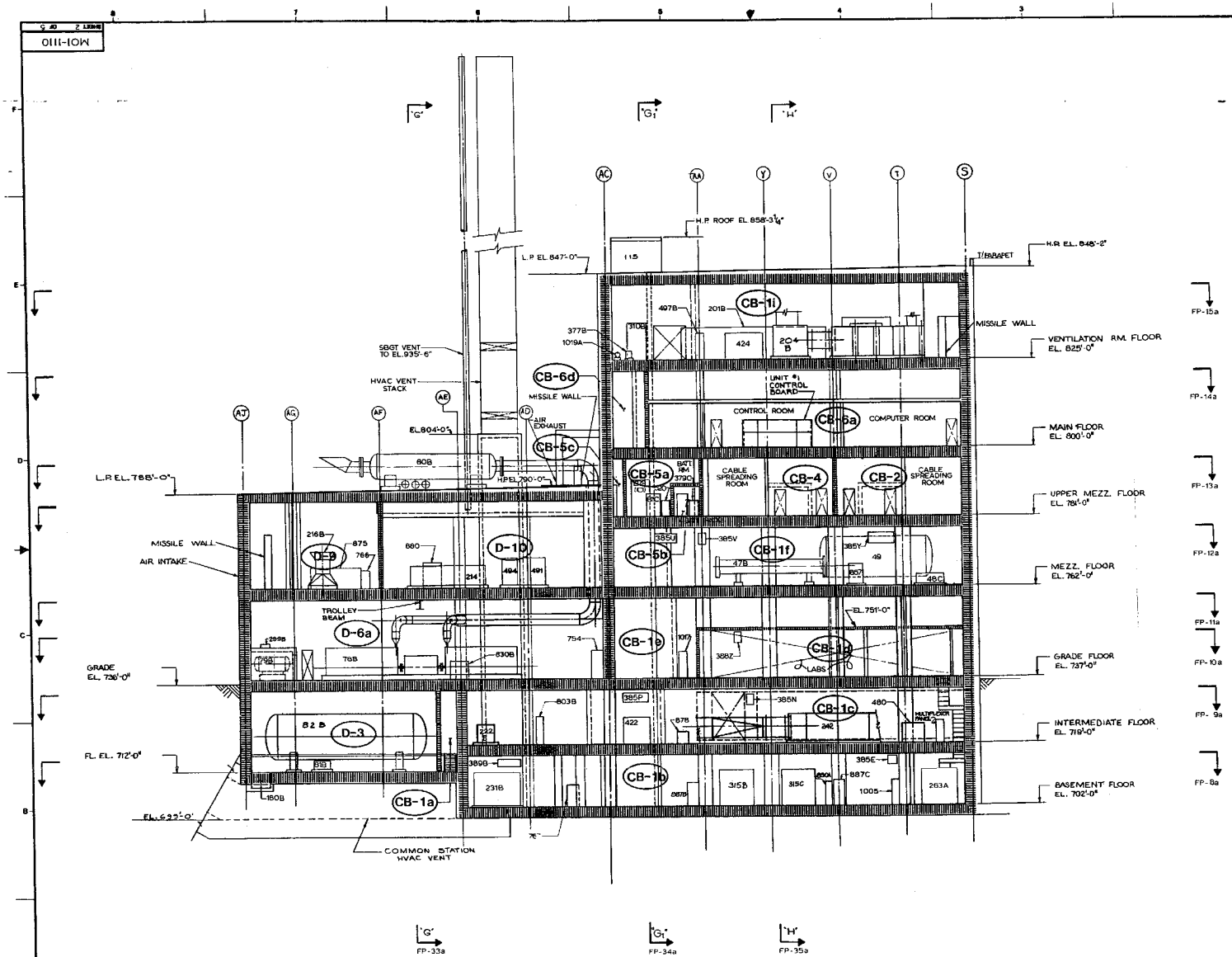
'A' FP-36b

ITEM	EQUIPMENT NAME
47	C.C. WATER TANK
48	C.C. WATER PUMP
49	COMPONENT COOL WTR. TANK
118	JIB CRANE
195	ABK. BLDG. VENT AIR SUPPLY UNIT
201	CONT. ROOM AIR FILTER PKG.
204	CONT. ROOM AIR HANDLING UNIT
234	CONT. BLDG. VENT AIR SUPPLY UNIT
235	CONTAINMENT BLDG. EXHAUST UNIT
262	TURB. BLDG. VENT EXHAUST UNIT
289	RADWASTE BLDG. EXHAUST UNIT
315	WATER CHILLER
316	WATER CHILLER PUMPS
386	AREA COOLER
425	CONTROL BLDG MCC E, HTG, MCC A
365	AREA COOLER
833	FIRE PUMP A & B CONTROL PANEL
22	480V. UNIT SUBSTATION
263	HYDROGEN RECOMBINER
431	125 V DC MCC, 1D, 1E, 1F
499	DRYWELL PURGE HTG. MCC A,B
761	ERAT PROTECTIVE RELAY PNL.
759	CONT. BLDG. HVAC SUPPLY PANEL
802	OPT. ISO. CABINET
816	RAT-1 PROTECTIVE RELAY PANEL
1035	NSPS REG. ISO. TRANSFORMER
1036	STATION REMOTE TERM. CAB
417	CONTR. BLDG. MCC 1A, 2A
426	CONT. BLDG. MCC F1, F2
479	480 V. UNIT SUB. 0
887	PLANT CHILLER WATER CONT. PNL
965	CONTROL BLDG. CAM
198	CONT. RM. RETURN AIR FAN

NUCLEAR SAFETY RELATED
ITEMS ARE SHOWN ON THIS DRAWING
(FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

CLINTON POWER STATION
FIRE PROTECTION

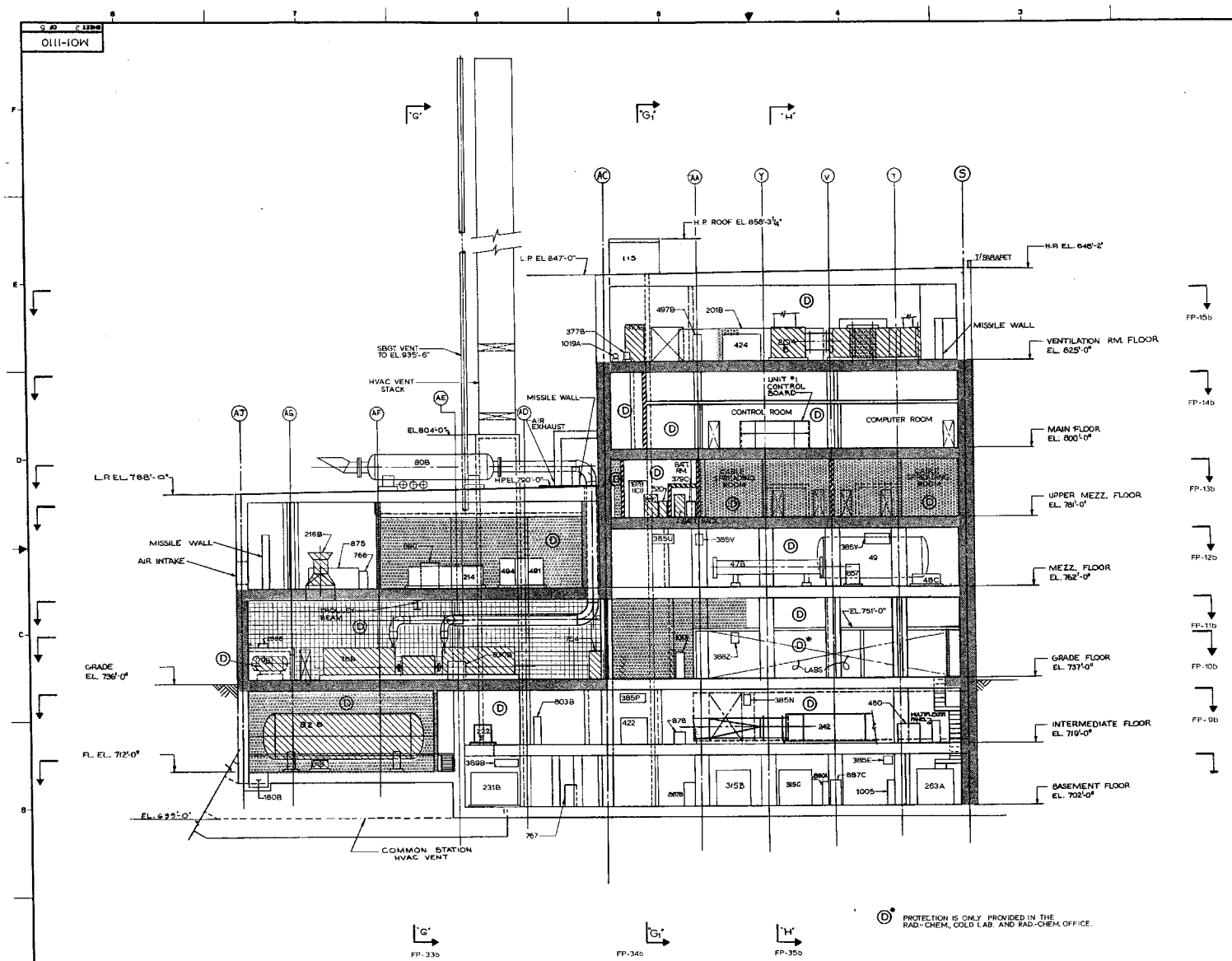
FIGURE FP-35b
FIRE PROTECTION FEATURES
CONTROL BUILDING
SECTION "H - H"



ITEM	EQUIPMENT NAME
47	COMPONENT COOL. WATER HX
48	COMPONENT COOL. WATER PUMP
49	COMPONENT COOL. WATER TANK
78	DIESEL GENERATOR
79	DIESEL GENERATOR DAY TANK
80	DIESEL GENERATOR SILENCER
82	DIESEL GEN. FUEL OIL STOR. TANK
115	CONTROL BUILDING ELEVATOR
201	CONTROL ROOM AIR FILTER PKG.
204	CONTROL ROOM AIR HDLG. UNIT
214	DIESEL GEN. MAKE UP FAN
216	DIESEL GEN. VENT FAN
222	STANDBY GAS TREATMENT SYSTEM
251	DRYWELL PURGE UNIT
262	TURBINE BLDG. VENT EXH. UNIT
263	HYDROGEN RECOMBINERS
310	CONTROL ROOM SYSTEMS CHILLER
315	PLANT CHILLED WATER SYSTEMS CHILLERS
61	DIESEL GEN. OIL TRANS PUMPS
180	DIESEL GEN. BLDG. SUMP
377	CONTROL ROOM COMP. TANK
379	BATT. ROOM EXH. FAN
385 388	AREA COOLERS
424	CONTROL BLDG. MCC D, HTG. MCC B
491	LAB. D-D HTG. MCC
494	CNTG. ROOM HTG. MCC
497	AUX. BLDG. HTD. MCC
754	DIESEL GEN. 1B & 2B CONTROL PANEL
766	DIESEL GEN. RM. 1B & 2B VENT. PANEL
875	AUX. & LAB. BLDG. EXHAUST PANEL
1017	LAB. HUMIDIFICATION STM. BLOWER MCC
1019	CONTROL RM. CHILLER HPCV. CONTROL PANEL
887	PLANT CHILLED WTR CONTROL PNL.
830	PLANT CHILLED WTR. INSTR. PNL.
857	CCW RADIATION MONITOR
299	OIL ROOM EXHAUST FAN
767	DRYWELL PURGE VENT PNL.
1005	HYDROGEN RECOMBINER HVAC PNL.
480	480 V. UNIT SUB. PNL.
878	RADWASTE HVAC EXHAUST PNL.
197	SWITCHGEAR HEAT REMOVAL UNIT
422	CONTROL BLDG. MCC
389	AREA COOLER
520	DIV. 3 BATT. CHG.
803	SGTS. CONTROL PANEL A & B
811	SWITCHGEAR ROOM 1A, 1B, 1C VENT. PNL.
830	D.G. XFRM PANELS
880	DIESEL GEN. FAN MAKE UP VENT PNL.

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-36a
FIRE ZONE BOUNDARIES
CONTROL & DIESEL-GENERATOR BUILDING
SECTION "A - A"



ITEM	EQUIPMENT NAME
47	COMPONENT COOL. WATER HX
48	COMPONENT COOL. WATER PUMP
49	COMPONENT COOL. WATER TANK
78	DIESEL GENERATOR
79	DIESEL GENERATOR DAY TANK
80	DIESEL GENERATOR SILENCER
82	DIESEL GEN. FUEL OIL STOR. TANK
115	CONTROL BUILDING ELEVATOR
201	CONTROL ROOM AIR FILTER PKG.
204	CONTROL ROOM AIR HDLG. UNIT
214	DIESEL GEN. MAKE UP FAN
216	DIESEL GEN. VENT FAN
222	STANDBY GAS TREATMENT SYSTEM
231	DRYWELL PURGE UNIT
242	TURBINE BLDG. VENT EXH. UNIT
263	HYDROGEN RECOMBINERS
310	CONTROL ROOM SYSTEMS CHILLER
315	PLANT CHILLED WATER SYSTEMS CHILLERS
81	DIESEL GEN. OIL TRANS PUMPS
180	DIESEL GEN. BLDG. SUMP
377	CONTROL ROOM COMP. TANK
379	BATT. ROOM EXH. FAN
385 388	AREA COOLERS
424	CONTROL BLDG. MCC D, HTG. MCC B
491	LAB. D-D HTG. MCC
494	CNTG. ROOM HTG. MCC
497	AUX. BLDG. HTD. MCC
754	DIESEL GEN. 1B & 2B CONTROL PANEL
766	DIESEL GEN. RM. 1B & 2B VENT. PANEL
875	AUX. & LAB. BLDG. EXHAUST PANEL
1017	LAB. HUMIDIFICATION STM. BLOWER MCC
1019	CONTROL RM. CHILLER HPCV CONTROL PANEL
867	PLANT CHILLED WTR. CONTROL PNL.
880	PLANT CHILLED WTR. INSTR. PNL.
857	CCW RADIATION MONITOR
299	OIL ROOM EXHAUST FAN
767	DRYWELL PURGE VENT PNL.
1005	HYDROGEN RECOMBINER HVAC PNL.
480	480 V. UNIT SUB. PNL.
878	RADWASTE HVAC EXHAUST PNL.
197	SWITCHGEAR HEAT REMOVAL UNIT
422	CONTROL BLDG. MCC
389	AREA COOLER
520	DIV. 3 BATT. CHG.
803	SGTS. CONTROL PANEL A & B
811	SWITCHGEAR ROOM 1A, 1B, 1C VENT PNL.
830	D.G. XFRM PANELS
880	DIESEL GEN. FAN MAKE UP VENT PNL.

(D)* PROTECTION IS ONLY PROVIDED IN THE RAD-CHEM., COLD LAB. AND RAD-CHEM. OFFICE.

CLINTON POWER STATION
FIRE PROTECTION

FIGURE FP-36
FIRE PROTECTION FEATURES
CONTROL & DIESEL-GENERATOR BUILDING
SECTION "A - A"