DIABLO CANYON POWER PLANT

UNIT 1

Pacific Gas and Electric Comapny

Review of 10CFR50 Appendix R,

Section III.G, III.J, and III.O

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TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

In 1977, Pacific Gas and Electric Company (PGandE) performed a fire protection review for the Diablo Canyon Power Plant (DCPP) to meet the criteria of Appendix A to Branch Technical Position Auxiliary Power Conversion Systems Branch (APCSB) 9.5-1. This review is documented in Amendment 51 to PGandE's application for an operating license. Responses to questions from the Nuclear Regulatory Commission (NRC) Staff Review are documented in letters from PGandE dated February 6, 1978, July 7, 1978, August 3, 1978, and November 13, 1978. The Regulatory Staff documented its review and acceptance of the DCPP fire protection program in Supplements 8, 9, and 13 to its Safety Evaluation Report (NUREG-0675).

On October 1, 1981 PGandE submitted a letter providing information relating to compliance of its Fire Protection Plan with Sections III.G, III.J, III.L, and III.O of Appendix R to 10 CFR 50. This submittal was required by Section 2.C.(6).b of Facility Operating License DPR-76. In reviewing the requirements of the noted sections of Appendix R, PGandE recognized that there were differences between the approved Fire Protection Plan and Appendix R. Since these differences had previously been accepted by the NRC Staff, PGandE concluded that the differences were approved exemptions from Appendix R. Subsequently the NRC advised that the deviations from Appendix R and their justifications should have been redocumented in PGandE's October 1, 1981 letter.

1.2 Scope

This report provides a general description of the methods used to analyze the safe shutdown capability and document the deviations and requests for exemptions to 10CFR50 Appendix R, Sections III.G,

III.J, and III.O for the DCPP in the event of a fire and loss of offsite power. PGandE provides information in this report for each deviation from the requirements of Appendix R and provides reasonable justification of equivalent protection by:

- o Proposing a modification
- o Justifying the existing configuration and requesting an exemption, or
- o A combination of the above.

2.0 EXECUTIVE OVERVIEW

2.1 Introduction

This report fulfills the requirements of Section 2.C.(6).b of the Diablo Canyon Power Plant (DCPP) Facility Operating License DPR-76, by providing documentation of deviations and requesting exemptions from Sections III.G, III.J, III.L, and III.O in Appendix R of 10CFR50.

2.2 Summary of Review to 10CFR50 Appendix R, Section III.G

Thirty-two fire areas have been determined to be in compliance with Section III.G of Appendix R, and therefore, were not required to be addressed in this report. Of the remaining areas, two will be brought into compliance following modifications. Exemptions for twenty-nine others are being requested and justification is provided to demonstrate that these fire areas are provided with an equivalent level of protection to that of Appendix R, Section III.G.

Twenty-four exemptions are being requested for these areas (some areas are combined into one exemption request due to the similarity of the deviation). Two additional exemptions are being requested for deviations that are not area specific. These exemption requests relate to fire doors and steel hatches.

A summary, by area, indicating compliance, exemption/requests, and/or proposed modification is provided in Table 2-1. Section 3.0 of this report provides the discussion of safe shutdown capability and the evaluation to Appendix R, Section III.G.

2.3 Summary of Review to 10CFR50 Appendix R, Section III.J

The emergency lighting system for DCPP consists of three independent systems. An emergency ac lighting system, an emergency

dc lighting system and emergency self contained lights with an 8-hour battery supply. This emergency lighting system is not in compliance with Appendix R, Section III.J, which requires self contained lights with 8-hour battery packs for access and egress routes to safe shutdown equipment. However, as discussed in Section 4.0 of this report, the equivalent level of protection is provided. An exemption is justified and requested from the requirements of 10CFR50 Appendix R, Section III.J.

2.4 Summary of Review to 10CFR50 Appendix R, Section III.L

The alternate shutdown capability has been reviewed and accepted in Supplement 9 to the DCPP SER (NUREG-0675).

2.5 Summary of Review to 10CFR50 Appendix R, Section III.O

The reactor coolant pump oil collection system, as described in Section 5.0 of this report, does not meet the 10CFR50 Appendix R, Section III.O capacity requirements. An exemption is justified and requested from the requirements of 10CFR50 Appendix R, Section III.O.

TABLE 2-1

SUMMARY OF FIRE AREA STATUS

Fire Areas	Description	Meets Appendix R Section III.G	Exemption Requested	Modification Proposed
1	Containment Building		X	
2	Auxiliary Boiler	X		
3-B-1	RHR Pump and Hx Room		X	
3-B-2	RHR Pump and Hx Room		X	
3-H-1	Centrifugal Charging Pump Room		X	
3-H-2	Reciprocating Charging Pump Room		X	
3-P-1	Ventilation Room	X		
3-P-5	Ventilation Room	X		
3-P-12	Ventilation Room	X		
3-Q-1	Auxiliary Feedwater Pump Room		X	
3-BB	Containment Penetration Area		X	
4-A	Counting and Chemical Laboratory		X	X
4-A-1	Chemical Lab Area, G Bus Compartment		X	X
4-A-2	Chemical Lab Area, H Bus Compartment		X	X
4-B	Showers, Lockers, and Access Control		X	X
5-A-1	480V Vital Switchgear, F Bus	X		
5-A-2	480V Vital Switchgear, G Bus	X		
5-A-3	480V Vital Switchgear, H Bus	X		
5-A-4	480V Non-Vital Switchgear and Hot Shutdown Panel		X	X
6-A-1	Battery, Inverter and DC Switchgear, F Bus	X		
6-A-2	Battery, Inverter and DC Switchgear, G Bus	X		
6-A-3	Battery, Inverter and DC Switchgear, H Bus	X		

SUMMARY OF FIRE AREA STATUS
(cont'd.)

Fire Areas	Description	Meets Appendix R Section III.G	Exemption Requested	Modification Proposed
6-A-4	Reactor Trip Switchgear	X		
6-A-5	Electrical Area		X	
7-A	Cable Spreading Room	X		X
7-C	Communications Room	X		
8-G	Safe Guards Room Unit 1	X		
8-H	Safe Guards Room Unit 2	X		
10	12kV Switchgear Room	X		
11-D	Corridor Outside Diesel Generator Rooms		X	X
13-D	Excitation Switchgear Room	X		
13-E	Switchgear Ventilation Fan Room		X	
13-F	Electric Shop and Office	X		
14-B	Clean and Dirty Lube Oil	X		
14-C	Non-Vital Electrical Load Center	X		
14-E	CCW Heat Exchangers		X	X
15	Turbine Lube Oil Reservoir	X		
17	Unit 1 and 2 Warehouse	X		
26	Unit 1 and 2 Chemical and Gaseous Storage	X		
27-A	Boxed Waste Zone	X		
27-B	Drum Storage Zone	X		
27-C	Contaminated Oil Storage	X		

SUMMARY OF FIRE AREA STATUS
(cont'd.)

Fire Areas	Description	Meets Appendix R Section III.G	Exemption Requested	Modification Proposed
28	Unit 1 Main Transformer	X		
30-A-1	Auxiliary Saltwater Pump 1-1 Vault		X	
30-A-2	Auxiliary Saltwater Pump 1-2 Vault			
34	Area Outside Building (Elevation 140 feet)	X		
35-A	Diesel Fuel Oil Transfer Pump Vault		X	
35-B	Diesel Fuel Oil Transfer Pump Vault			
AB-1	Auxiliary Building		X(2)	
AB-2	Electrical Area Ventilation Room	X		
AB-3	Electrical Area Ventilation Room	X		
CR-1	Control Room		X	X
FB-1	Fuel Handling Bldg. Corridor and Spent Fuel Pool Hx and Pumps Room	X		
IS-1	Circulating Water Pump Room and Intake Structure Control Room	X		X
TB-1	Emergency Diesel Generator 1-1			
TB-2	Emergency Diesel Generator 1-2		X	X
TB-3	Emergency Diesel Generator 1-3			
TB-4	4.16kV Cable Spreading Room and Switchgear Room, F Bus			
TB-5	4.16kV Cable Spreading Room and Switchgear Room, G Bus		X	X
TB-6	4.16kV Cable Spreading Room and Switchgear Room, H Bus			
TB-7	Turbine Building	X		X
V-1	Ventilation Room	X		
V-2	Ventilation Room	X		

3.0 SAFE SHUTDOWN CAPABILITY AND EVALUATION TO APPENDIX R, SECTION III.G

3.1. Identification of Fire Areas

3.1.1 Scope

This section provides detailed information on the criteria and methodologies used to develop fire area and zone definitions for DCPP. In addition, the methodology utilized to develop equivalent fire severities for each fire area is discussed. The results of these activities are presented as Table 3-1 through 3-4 and Figures 3-1 through 3-29.

3.1.2 Background

On September 30, 1976, the NRC requested PGandE to provide an evaluation of their fire protection plan to Branch Technical Position (BTP) APCSB 9.5-1 for Units 1 and 2 at DCPP. On July 27, 1977, PGandE responded to this request with the Fire Protection Review. This review consisted of the following:

- a fire hazards analysis of those areas important to safety
- a comparison of the existing fire protection program provisions with the guidelines of Appendix A to BTP APCSB 9.5-1
- an evaluation of the deficiencies identified and either justifications based on the fire hazards analysis or proposed changes

In performing the review, PGandE identified areas containing equipment and components important to safety. These areas and adjacent areas with fire hazard potential were subdivided into fire areas and fire zones, based on existing boundary fire barriers and

other logical physical divisions or equipment grouping. "Fire areas" were major buildings or regions isolated from other areas of the plant by 3-hour fire barriers. "Fire zones" were subdivisions of "fire areas" established for purposes of the review and generally enclosed particular systems.

3.1.3 Fire Areas for Appendix R Review

A fire area is defined as that portion of the plant that is separated from other areas by boundary fire barriers (walls, floor, and roofs) with any openings or penetrations protected with seals or closures having a fire resistance rating equal to that of the barrier. The barrier rating is comensurate with the fire hazard within each area. At DCPP the construction of walls, floors and ceilings is typically of heavy, reinforced concrete with an inherent fire rating in excess of 3 hours. In addition to this construction, the definition of the fire area barriers must also address the protection provided for the doorways, ducts, stairways, hatches, and other penetrations in the fire barrier construction.

The general guidelines used for establishing fire areas in this response to Appendix R were the previously defined fire zones and areas from the Fire Protection Review. Locations were identified within the plant which could be defined as fire areas. This resulted in combinations of certain previously defined fire zones into fire areas. Table 3-1 is a compilation of all the Unit 1 fire areas.

Fire doors and dampers at DCPP are typically of either 1-1/2 or 3-hour rated construction when they form part of a barrier separating fire areas. Ratings may not exist for doors or dampers

that form zone boundaries. Specific exemption requests address situations where doors or dampers in fire area barriers are not labeled.

Exterior boundaries of fire areas may contain unrated doors and penetrations. These are not specifically addressed unless there is an exposure hazard that challenges the interior structure and occupancy.

Section 7, page 69 of the NFPA Fire Protection Handbook, 14th edition, only requires fire dampers to be installed in ductwork penetrating barriers with a fire resistance rating of more than 1 hour. In addition, it states sheet metal ducts of the gages commonly used may protect an opening in a fire barrier for up to 1 hour, if properly hung and fire stopped.

All hatches, which form part of a barrier separating fire areas containing redundant safe shutdown equipment are addressed by specific exemption requests as applicable.

Certain penetrations and openings in barriers may exist either as natural ventilation flow paths or to facilitate other aspects of plant and building design (water drainage paths, room pressure relief for hypothesized pipe breaks, etc.). Situations where these cases may affect the fire hazard analysis for the various fire areas are addressed by specific exemption requests.

Other penetrations and openings in barriers, where fire could reasonably propagate to redundant trains of safe shutdown equipment, are sealed to provide a level of fire protection commensurate with the fire hazard in the fire area.

The combustible loading is provided for each fire area requiring an exemption request. The basis for this value is the Fire Protection Review's fire hazards analysis. Each fire area containing safe shutdown equipment was physically inspected to evaluate any combustible material which may have been added subsequent to the 1977 fire hazard analysis. An estimate of the current combustible loading is presented with the corresponding fire severity. The fire severity was calculated using the criteria presented in Table 6-8A of the National Fire Protection Association's (NFPA) Fire Protection Handbook, 14th edition.

3.2 Safe Shutdown Systems Identification

3.2.1 Design Basis Event

For the purpose of this review and submittal on the safe shutdown capability of DCPP, the spectrum of the postulated exposure fires in a given plant area will involve either in situ or transient combustibles located in or adjacent to that area. The effects of such fires are analyzed to determine if they may adversely impact systems, structures or components essential to safe plant shutdown. No other design basis event is assumed to occur concurrent with the postulated fire scenario.

Generally, the fire hazard analysis assumed complete combustion of all combustible loading in a fire area, and instantaneous spills or releases of combustible solids, liquids and gases. This provides for a conservative margin of safety in determining the combustible loading and equivalent fire severity.

In general, recognizing the confined physical location of such fires and the operational flexibility and physical diversity of systems available to achieve safe shutdown, one can assume that the plant's defense in depth fire protection features will limit

fire damage to the extent that unaffected plant systems will be able to attain safe shutdown. An extensive effort would be required to identify the effects of postulated fires in all potential plant locations on all the plant systems which are normally available to support safe shutdown. As a conservative alternative to this approach, a minimum set of plant systems (safe shutdown systems) and components is identified in response to the requirements of Appendix R. The identified systems and components can achieve and maintain safe shutdown regardless of the location of the fire and the loss of offsite power. Demonstration of adequate protection of this minimum set of systems from the effects of postulated fires constitutes an adequate and conservative demonstration of the ability to achieve and maintain safe shutdown for the purposes of fire protection.

The safe shutdown systems selected for DCPP will be capable of achieving and maintaining subcritical conditions in the reactor, maintaining reactor coolant inventory, achieving and maintaining hot conditions, achieving cold shutdown conditions and maintaining cold shutdown conditions thereafter.

3.2.2 Assumptions and Definitions

The following are the initial assumptions used in this review:

- The unit is operating at 100% power upon the occurrence of a fire and concurrent loss of offsite power

- The reactor is tripped either manually or automatically

- The only failures considered are the postulated loss of offsite power and those directly attributable to the fire

- o No piece of equipment required for safe shutdown is assumed to be out-of-service for maintenance

Definitions for the various modes of operation:

HOT STANDBY – Reactor at 0% thermal rated power excluding decay heat, K_{eff} less than 0.99 and RCS average temperature greater than or equal to 350°F

HOT SHUTDOWN – Reactor at 0% rated.thermal power excluding decay heat, K_{eff} less than 0.99 and RCS average temperature less than 350°F but greater than 200°F

COLD SHUTDOWN – Reactor at 0% rated thermal power excluding decay heat, K_{eff} less than 0.99 and RCS average temperature less than or equal to 200°F.

3.2.3 Safety Functions

The following is a list and description of the specific shutdown functions necessary to satisfy Appendix R acceptance criteria.

(1) Reactor Reactivity Control

(2) Reactor Coolant Makeup Control

(3) Reactor Coolant Pressure Control

(4) Reactor Heat Removal

(5) Process Monitoring

(6) Miscellaneous Supporting Functions

3.2.3.1 Reactivity Control

In accordance with the technical specifications, the reactor reactivity control function will provide sufficient SHUTDOWN MARGIN to ensure that (1) the reactor can be made subcritical from all operating conditions, (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

The two means of reactivity control are control rods, which provide the immediate shutdown reactivity, if required to trip the reactor from power, and soluble boron addition, which will maintain adequate SHUTDOWN MARGIN for the transition from HOT STANDBY to COLD SHUTDOWN.

No postulated fire will prevent the initiation of a reactor trip either by means of an automatic or a manual actuation. No postulated fire will prevent the addition of soluble boron necessary to maintain required SHUTDOWN MARGIN throughout the shutdown period.

3.2.3.2 Reactor Coolant Make-up Control

The reactor coolant make-up control function will ensure sufficient make-up inventory is provided for:

- o Reactor coolant system fluid losses due to reactor coolant system leakage as allowed by the technical specifications, and

- o Shrinkage of the reactor coolant system water volume during cool-down from HOT STANDBY to COLD SHUTDOWN conditions.

Adequate performance of this function is demonstrated by maintaining reactor coolant level within the pressurizer.

For the assumed fire scenario, reactor coolant make-up is achieved by operation of the charging portion of the chemical and volume control system. Normal and excess let-down paths of the CVCS can be isolated to reduce the required make-up. The reactor coolant pump seal injection provides a make-up path in addition to the normal and alternate charging paths. The Boron Injection Tank (BIT) injection path may also be used for added operational flexibility.

For the fire scenarios assumed in this analysis, inventory make-up to the RCS will be from either the normal RCS make-up system or from the refueling water storage tank by the normal charging path, the reactor coolant pump seal injection path or BIT injection path. The negative reactivity inserted by the control rods and boron addition from any of the available sources will maintain the reactor core sub-critical by the required SHUTDOWN MARGIN while cooling down the RCS.

3.2.3.3 Reactor Coolant Pressure Control

Reactor coolant pressure control ensures that (1) reactor coolant system integrity is maintained by providing overpressure protection, (2) fuel cladding integrity is protected by restricting power operation to within the nucleate boiling region by maintaining reactor coolant system (RCS) pressure and temperature within Technical Specification limits, and (3) sufficient sub-cooling margin is provided to minimize void formation within the reactor vessel.

Overpressure protection of the RCS is provided for in HOT STANDBY (prior to cooldown and depressurization) by the pressurizer safety valves. Added flexibility is provided by the pressurizer power operated relief valves (PORVs) and pressurizer auxiliary spray valves. After depressurization, when the RCS is aligned with the Residual Heat Removal System (RHR) overpressure protection is provided by RHR suction relief valves or by activating the pressurizer PORV low pressure setpoint capability. RCS pressure – temperature will be maintained within Technical Specification limits by controlling cooldown.

Thus, for the assumed fire scenario, adequate subcooled margin is achieved and maintained by operator action using pressure and temperature information received from the RCS pressure and temperature instrumentation.

3.2.3.4 Reactor Heat Removal

The reactor heat removal function is capable of transferring fission product decay heat from the reactor core at a rate such that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. Following a reactor trip with an assumed loss of offsite power, decay heat is initially removed by natural circulation of the RCS, heat transfer to the main steam system through the steam generators, and operation of the 10% steam relief valves or the main steam system code safety valves. Decay heat removal requires that sufficient feedwater be supplied to the steam generators to make up for the inventory discharged as steam by the safety or relief valves. The auxiliary feedwater system (AFW) will supply sufficient feedwater to make up for inventory losses during initial maintenance of HOT STANDBY and subsequent cooldown. Feedwater

is available from the condensate storage tank, the fire water storage tank and from the raw water reservoir if necessary. Feedwater may be supplied to the steam generators by the motor-driven auxiliary feed pumps or by the steam turbine-driven auxiliary feed pump.

After reduction of reactor coolant system temperature below 350°F, the RHR system is used to establish long term core cooling through the removal of decay heat from the RCS to the environment through the component cooling water (CCW) system, and the auxiliary saltwater (ASW) system.

3.2.3.5 Process Monitoring

The process monitoring function is capable of providing direct readings of those plant process variables necessary for plant operators to perform and/or control the previously identified functions.

Various process monitoring functions must be available to achieve and maintain the reactor coolant make-up, pressure control and decay heat removal functions adequately. For the assumed fire scenario, maintenance of HOT STANDBY requires that pressurizer level and RCS pressure instrumentation be available. RCS temperature is maintained during HOT STANDBY by proper decay heat removal via steam generators and self-actuation of the main steam code safety valves or controlled operation of the steam generator 10% steam relief valves. In the natural circulation mode of operation, the difference between the hot-leg and cold-leg wide range temperatures (T_h-T_c) provides a direct indication of the existence of a natural circulation condition.

Operating personnel, by monitoring RCS pressure and hot-leg temperature (T_h) instrumentation and by manual control of the pressurizer heaters, will maintain RCS pressure to ensure that adequate sub-cooled margin is achieved for the RCS temperature which exists during this period. Maintenance of pressurizer level control is achieved by monitoring pressurizer level instrumentation and manual control of CVCS charging flow.

Maintenance of HOT STANDBY also requires the control of the secondary system to compensate for variations in the primary system performance. Steam generator level and.pressure are available to ensure adequate monitoring of controlled decay heat removal. Steam generator level control is achieved by automatic or manual manipulation of AFW system flow, based on steam generator level indication. Steam generator pressure is monitored for controlled manipulation of secondary system pressure.

The transition from HOT STANDBY to HOT SHUTDOWN will use the instrumentation discussed above to monitor the natural circulation conditions, subcooling margin, heat removal and compliance with the plant pressure/temperature limits as they pertain to the low temperature overpressure protection of the RCS (cold leg temperature in conjunction with RCS pressure).

3.2.3.6 Miscellaneous Support Functions

The systems and equipment used to perform the previous functions may require miscellaneous supporting functions such as process cooling and ac/dc power. These supporting functions will be available and capable of providing the support necessary to ensure acceptable performance of the previously identified safe shutdown functions.

For the purpose of the fire scenarios, the various systems required to provide support to safe shutdown equipment or systems are the emergency power system, ASW system and the CCW system. A brief description of these support systems and the individual safe shutdown equipment is provided in section 3.2.4 below.

3.2.4 Description of Safe Shutdown Systems

The following description and Table 3-2 identifies the minimum set of systems and components required to attain safe shutdown in response to the requirements of Appendix R. Redundancy of equipment is specified for each component. In some cases, supporting or backup equipment which may be available to provide operator flexibility is listed also.

3.2.4.1 Emergency Power Supply

Required emergency power supply for safe shutdown equipment and instrumentation has been tabulated assuming loss of offsite power. The required emergency power equipment includes the emergency diesel generators and their support equipment: the fuel transfer pumps, the batteries, battery chargers, inverters, and the power cabling between this equipment and the vital switchgear. Two of the three emergency power supply buses are adequate for safe shutdown.

3.2.4.2 Auxiliary Feedwater System

One of three AFW pumps and associated level control valves are required for safe shutdown. These components are controllable from the hot shutdown panel if required.

The normal AFW system supply is the condensate storage tank with the fire water storage tank available for use as a backup supply.

3.2.4.3 Residual Heat Removal System

One of two residual heat removal flow paths is required to reach COLD SHUTDOWN. This requires an RHR pump, heat exchanger, and valves in the flow path to be available. If the control room is uninhabitable, the required RHR pump and valves can be operated at the switchgear or locally.

3.2.4.4 Charging and Boration

One of three charging pumps (two centrifugal and one reciprocating) is required for safe shutdown. The two centrifugal pumps and the boric acid transfer pumps and necessary valves are controllable from the hot shutdown panel.

Numerous charging and boration flow paths have been identified, any one of which is adequate for safe shutdown. Two sources of concentrated boron are available (boric acid tanks and boron injection tank). Sufficient boron is available in the boron injection tank to reach HOT SHUTDOWN and sufficient boron is available in either boric acid tank to reach COLD SHUTDOWN. A third source and path for borating the reactor coolant system for cold shutdown conditions is by using the refueling water storage tank and charging borated water through the reactor coolant pump seals.

3.2.4.5 Component Cooling Water System

The CCW system is required to provide cooling for the RHR system and the charging pumps. One of three CCW pumps and one of two CCW heat exchangers is required for safe shutdown. The CCW pumps are controllable from the hot shutdown panel.

3.2.4.6 Auxiliary Saltwater System

The ASW system is the ultimate heat sink for the CCW system. One of two ASW pumps (controllable at the hot shutdown panel) is required for safe shutdown.

3.2.4.7 Main Steam System

Some components of the main steam system are required for safe shutdown to maintain water inventory and to provide steam generator pressure relief and heat removal. The active components in this system consist of the main steam isolation valves, the 10% steam relief valves, the steam generator safety valves, and the steam generator blowdown isolation valves. The steam generator blowdown isolation valves are required to close to maintain water inventory. The main steam isolation valves are required to close only if a steam line break occurs. Steam generator pressure relief and heat removal is accomplished with the 10% steam relief valves or the steam generator safety valves.

3.2.4.8 Instrumentation

Instrumentation required for safe shutdown consist of indication for steam generator level and pressure, RCS pressure and temperature, pressurizer level, and boric acid tank level. Cooldown can be accomplished using a single reactor coolant loop and steam generator; instrumentation would be required for that loop and steam generator. Neutron source range monitors provide an indication of reactor reactivity. Four instrument ac channels provide power for the instrumentation. Channels I and II are powered from either the 125V dc batteries 1-1 and 1-2 or the 480V vital buses F and G respectively. Channels III and IV are powered from either the 125V dc batteries 1-3 and 1-2, respectively, or the 480 V vital H bus. In all cases the batteries are the preferred source. Sufficient instrumentation is available assuming two of three vital buses are available.

3.2.4.9 Ventilation

Each ASW pump room is provided with a separate ventilation system. The ventilation system associated with the corresponding operating ASW pump is required to operate for safe shutdown.

3.3 Method of Evaluation and Review

The review for compliance with Section III.G was accomplished by defining those systems and components required for a normal safe shutdown and then evaluating the circuits that are required to provide power and control for those systems.

Circuits which could adversely affect safe shutdown capability were identified for review. These circuits include those required to operate safe shutdown components and those which could prevent safe shutdown components from performing their safety function. Circuits sharing common power sources with safe shutdown circuits and those which could cause spurious operation and prevent safe shutdown were also evaluated. Table 3-3 identifies potential spurious operating components, and presents the effect of malfunction and the proposed resolution to maintain safe shutdown conditions.

Non-safety related circuits terminating in an enclosure which houses safe shutdown circuitry are electrically isolated via breakers, fuses, or similar protection. Cable insulation is flame retardant to inhibit propagation of the fire into the common enclosure which contains safe shutdown circuitry. Breaker and fuse protection is properly coordinated and selective tripping is provided for all circuits on the emergency power system and engineered safety feature components.

All Class 1E cable is contained in conduit, except in those areas where only one vital bus is located within a fire area. In these cases some cable tray may exist. Thus, inherent protection is provided from fires propagating to other circuits necessary for safe shutdown. In some cases, power cables are routed in conduit which are embedded in concrete.

Fires propagating by cable trays were considered unlikely since all horizontal cable trays are fire stopped at a maximum of every 12 feet and all vertical cable trays fire stopped at a maximum of every 5 feet.

In the evaluation of certain fire areas, credit was taken for manual operation of specific equipment in order to achieve HOT SHUTDOWN. The extent of this credit is in compliance with the NRC memorandum from Roger J. Mattson, Director, Division of Systems Integration to Roger H. Vollmer, Director, Division of Engineering dated July 2, 1982, which states:

> "Operability of the hot shutdown systems, including the ability to overcome a fire or fire suppressant induced maloperation of hot shutdown equipment and the plant's power distribution system, must exist without repairs. Manual operation of valves, switches, and circuit breakers is allowed to operate equipment and isolate systems and is not considered a repair. However, the removal of fuses for isolation is not permitted. All manual operations must be achievable prior to the fire or fire suppressant induced maloperations reaching an unrecoverable plant condition."

The circuits for equipment required for maintaining COLD SHUTDOWN were not included in the evaluation, as sufficient time would be available to allow credit for manual operation of this equipment, and achieve COLD SHUTDOWN within 72 hours.

Heat tracing for the boric acid lines was not evaluated, since loss of this heat tracing would be alarmed in the control room. Sufficient time would then be available for the operators to decide to borate before the boron solidified in the piping.

Ventilation systems for areas containing safe shutdown equipment may be affected as a result of fire. PGandE has analyzed the effects that loss of ventilation in the auxiliary building and the fuel handling building would have on the safe shutdown equipment it served (CCW, CVCS and AFW areas). The results indicated that safe shutdown equipment would not be adversely affected due to loss of ventilation. In other plant areas containing safe shutdown equipment that could be affected by loss of ventilation, the rooms are monitored as necessary with installed local temperature instruments. Temperature limits are identified in Technical Specification 3/4.7.11 for crucial equipment required for safe shutdown. PGandE will maintain temperatures within these limits or take appropriate action as provided for in the Technical Specifications.

The Station Blackout Accident Analysis (NUREG/CR-3226) indicates that natural circulation could be established in critical plant areas simply by opening doors. In the unlikely event that a particular area (e.g., battery room) would need ventilation, four portable 5,200 cfm ventilation fans (three electrical and one gasoline powered) are available to cool the compartments. Other electrically powered ventilation fans used for maintenance purposes may also be available for use during a loss of ventilation condition as required.

The ventilation for the ASW pump cubicles has been included in the safe shutdown analysis as required equipment.

Once the circuits for safe shutdown components were identified, the raceway and fire areas were highlighted on electrical raceway layout drawings so that separation of electrical and mechanical equipment could readily be identified. Embedded conduits were assumed not to be affected by a fire in any area. Each raceway was coded with its corresponding electrical vital bus, the system it served and the fire zone/area it was routed through. These data were then input to the computer and sorted to provide a means of organizing the information for evaluation and for checking the accuracy of the highlighted raceway layout drawings.

An analysis of each fire zone/area was then undertaken and the effects of a fire, due to in situ and transient combustibles on the safe shutdown raceway routed through or terminating in that fire zone/area was assessed. Logic trees for the safe shutdown systems were used to ensure that success paths for one complete train are available.

The fire zones were evaluated for their ability to confine a postulated fire to that zone. If a fire in one fire zone could communicate with other fire zones through open walls, penetrations, ductwork without fire dampers, etc., then circuits in the adjoining zones were also evaluated to ensure that a means was always available to safely bring and maintain the plant to HOT/COLD SHUTDOWN condition.

3.4 Areas For Which Exemptions Are Requested or Modifications Proposed

3.4.1 Introduction

The results presented in the following section describe the justification for the exemption requests and are generally in two categories:

- Fire barriers separating redundant safe shutdown circuits or compartments.

  The fire barrier exemption requests are generally due to barrier penetrations with no rating or ratings less than 3-hours. Analysis, in most cases, demonstrates that fires will be contained in the area affected and that a high level of inherent fire protection exists to provide equivalence to the rated fire barrier. In some instances, it was found reasonable and prudent to propose modifications which would provide protection to one safe shutdown train.

  Those fire areas containing safe shutdown equipment adjacent to areas containing redundant trains have been analyzed. Where penetrations exist through barriers, consideration has been given to installed active and passive fire protection features, examples of which are tortuous paths between redundant trains, spatial separation of the equipment and circuits, location and type of penetration deficiencies and the continuity of combustibles between redundant trains. The exemptions requested for fire barriers as a result of this analysis, provide justification the barrier will provide protection to one train of redundant safe shutdown equipment, in the unlikely event a postulated fire occurs.

- Redundant safe shutdown circuits separated by less than 20 feet.

  Requests for exemption from the 20 foot separation requirement of Appendix R are typically due to cable separation on the order of 8 to 12 feet outside containment and 8 to 17 feet inside containment. A fire hazards analysis has been performed which utilizes the inherent fire protection features of the area. This approach gives consideration to:

- Lack of intervening combustibles
- Use of vented tray covers
- Fire stops provided for cable trays
- Safe shutdown cables are routed in conduit except in those areas where only one vital bus is located within a fire area.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Doors and frames in fire area boundaries are required to have a fire rating commensurate with the hazard in the area and/or the rating of the barrier itself. Several types of door assemblies exist in fire area boundaries at DCPP, some of which meet the strict requirements of Appendix R, others of which meet the intent of the regulation. A description of each variation which does not meet the strict requirements of Appendix R follows.

An exemption is requested from replacing those portions of each door assembly that do not meet the letter of the rule. The technical bases which justify the exemption request are detailed below.

BASIS TO SUPPORT EXEMPTION REQUEST

1. Approximately fifty percent of the labeled 3 and 1-1/2 hour rated doors are placed in unlabeled frames. The frames are of metal construction with the same dimensions and physical characteristics of the labeled frames. Manufacturer shop drawings indicated that the unlabeled frames were constructed to the same specifications as the labeled frames.

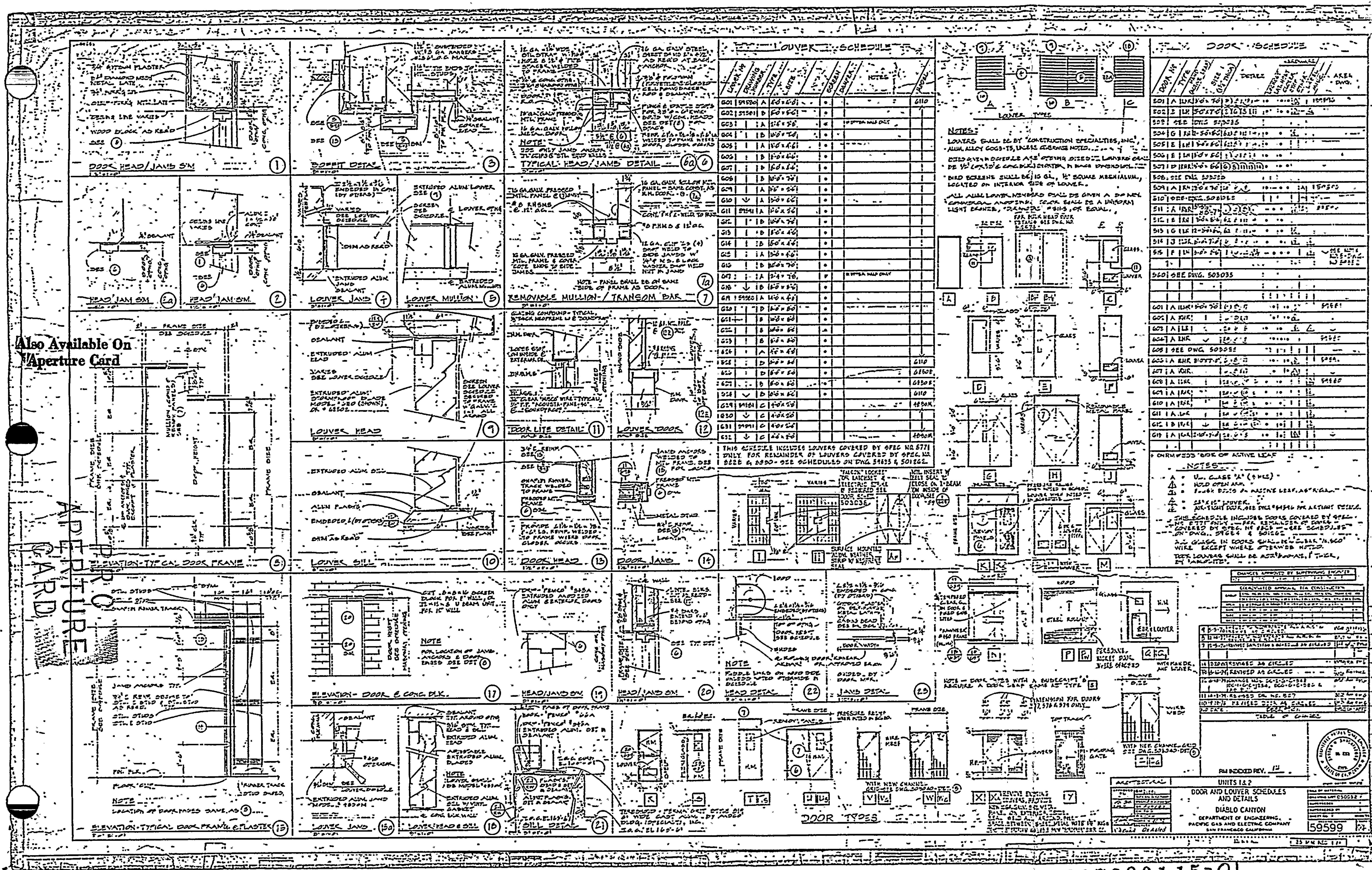
2. Doors of metal construction with the same characteristics of the 3 and 1-1/2 hour labeled doors, placed in both labeled and unlabeled frames, form part of the barrier between several fire areas. These doors are referred to as equivalent doors and indicated on Figures 3-1 through 3-12

as A_{eq} or B_{eq}. While these doors do not have labels affixed, the door manufacturer's shop drawings indicate that the construction method for labeled doors was followed. The DCPP door and louver schedules and details (Dwgs. 59634 and 59599 attached) may be used to compare the features of the labeled and equivalent doors.

3. Removable metal panels in addition to doors are provided for separation in large fire area barrier openings needed for equipment access. These panels are of metal construction with the same characteristics as their associated doors. While these panels do not have labels affixed, the door manufacturer's shop drawings indicate that the construction method for similarly rated labeled doors was followed. The configuration of these panels vary with the door way requirements but include vertical and horizontal applications as well as transoms above the door.

4 Replacing all unlabeled fire doors, frames or removable panels with labeled components of the same basic construction would not enhance to a significant degree the protection afforded by the current configuration.

Also Available On Aperture Card



8307280115-01

Also Available On Aperture Card

ARCHITECTURAL

UNITS 1 & 2

DOOR SCHEDULE

DIABLO CANYON

DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

SCALE: None

59634

TABLE OF CHANGES

8307280115-02

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

One-inch thick steel access hatches separate fire areas 4-B on elevation 85 feet, 5-A-4 on elevation 104 feet 7 inches, 6-A-5 on elevation 115 feet and 7-A on elevation 125 feet. The steel hatches do not meet the separation requirements of Appendix R, Section III.G.2.

ARGUMENT TO SUPPORT REQUEST

1. As previously documented in an internal NRC memorandum dated March 29, 1978 (Subject: Summary of February 14 and 15, 1978 meeting with PGandE on the DCPP Fire Protection Program) for Robert L. Tedesco, Assistant Director for Plant Systems from Peter C. Ahearn of the Auxiliary Systems Branch through Victor Benaroya, Chief of the Auxiliary Systems Branch and Donald C. Fisher, Section Leader of the Auxiliary Systems Branch, and as summarized in Enclosure 2 dated February 15, 1978 to the above referenced memorandum, the 1-inch steel hatches which separate fire areas 4-B on elevation 85 feet, 5-A-4 on elevation 104 feet 7 inches, 6-A-5 on elevation 115, feet and 7-A on elevation 125 feet provide a level of protection equivalent to the hazards in these areas. These areas are also designated as "No Storage" areas.

2. Replacing the 1-inch steel hatches with rated hatches would not enhance to a significant degree the level of protection provided by the current configuration.

FIRE AREA: 1

TITLE: UNIT 1 CONTAINMENT

FIGURES: 3-5, 6, 7, 8, 9

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 1 consists of all elevations of the Unit 1 containment building. The outer wall of this fire area is the containment wall which is steel lined reinforced concrete and provides a 3-hour fire barrier between fire area 1 and adjacent fire areas. All containment penetrations are sealed to assure integrity of the pressure boundary. Containment electrical penetrations consist of 5-foot long schedule 80 pipe sleeves. At the end of the sleeve, the electrical conductors pass through a steel header plate and are encased in a fire retardant epoxy. The space between the header plates is pressurized with nitrogen. The containment personnel, emergency and equipment hatches are heavy gage steel and provide separation from fire area 34 (outside). Access to this fire area is strictly controlled for security and radiological considerations.

Fire area 1 is divided into three fire zones: 1-A (the containment penetration area), 1-B (reactor coolant pump area), and 1-C (control rod drive area).

Fire zone 1-A is an annular region within the containment between the floor of the containment at elevation 91 feet and the operating deck at elevation 140 feet. The outer wall of this zone is the containment wall. The inner wall and ceiling of this zone are unrated reinforced concrete shield walls. Open steel floor gratings and open stairways provide for personnel access to various elevations within this zone. Fire zone 1-B is a cylinder in the central part of the containment. It is separated from fire zone 1-A by the unrated

reinforced concrete shield wall which also serves as the support structure for the polar crane. This zone is separated from fire zone 1-C above by the elevation 140 feet reinforced concrete operating deck. The concrete barriers defining fire zone 1-B are not fire barriers, but do provide a radiant energy shield between this fire zone and fire zones 1-A and 1-C. Fire zone 1-C includes the reactor pit and area above the reactor to elevation 140 feet and above. The outer wall of this zone is the steel lined reinforced concrete containment wall. The floor of fire zone 1-C is constructed of reinforced concrete with openings for stairways and open floor gratings for equipment access.

COMBUSTIBLES

The in situ combustible loading in fire area 1 is approximately 26,200 BTU/ft^2 or an equivalent severity of 19.6 minutes. This loading is considered to be evenly distributed over the approximate floor area of 17,600 ft^2. In situ combustible loading consists primarily of oil in reactor coolant pumps, cable in cable trays, grease in valve operators, oil and grease in the crane and fan cooler motors, oil and grease in cranes, and charcoal, HEPA and roughing filters in the iodine removal system.

Transient combustible loading is estimated to present a minimal additional 124 BTU/ft^2 or equivalent severity of less than 0.1 minute. The transient loading represents small amounts of solvents, oil, grease and radiological Class A combustibles necessary for maintenance during plant operation. Transient combustibles will not be stored in fire area 1 during plant operations.

MAJOR EQUIPMENT

A. Fire Zone 1-A

The major equipment in this fire zone includes the accumulator tanks, the pressurizer relief tank, and the iodine removal units. Equipment and electrical circuitry required for safe shutdown located in this zone consist of a residual heat removal pump suction valve, valves in the charging and boration flow path, associated circuitry for these valves, and reactor coolant system and steam generator instrumentation and circuitry.

B. Fire Zone 1-B

The major equipment in this fire zone includes the reactor coolant system (RCS) including the pressurizer, four reactor coolant pumps and four steam generators. Equipment required for safe shutdown located in this zone consists of a residual heat removal pump suction valve, steam generator blowdown isolation valves, and RCS temperature elements.

C. Fire Zone 1-C

Equipment in this zone consists of the reactor vessel refueling cavity below the operating floor, the control rod drives, the five containment fan coolers, the overhead polar crane, and the manipulator crane.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

1-A: Smoke detection throughout this zone provides early warning of a fire in the vicinity of the cable trays or safe shutdown circuitry in steel conduits.

1-B: Smoke detection for each reactor coolant pump provides timely detection of incipient fires.

1-C: Flame detection is provided for this zone on the operating deck.

All detectors alarm in the continuously manned control room.

SUPPRESSION

1-A: Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this zone.

1-B: Wet pipe automatic sprinkler protection is provided in this zone in the vicinity of each reactor coolant pump. The waterflow alarm annunciates in the continously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for use in this zone.

1-C: Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this zone.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 1 does not meet the requirements of Appendix R, Section III.G.2 in that redundant safe shutdown instrumentation cabling with less than 20 feet of separation in fire zone 1-A is not protected by a radiant energy shield.

The separation provided for the reactor coolant temperature instrumentation between TE-413A & B, TE-423A & B (KX418) and TE-433A & B, TE-443A & B (KX411) is 8 feet without intervening combustibles as measured at the containment penetrations BTX31E and BTX24E respectively.

Redundant circuits for the pressurizer liquid level instrumentation are separated by over 20 feet vertically throughout fire zone 1-A except where all circuits come together at mechanical panels PM89, 22 and 20 at elevation 91 feet. At this point there is essentially no separation since the mechanical panels are located side by side.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2 of Appendix R which requires a noncombustible radiant energy shield when the separation of redundant safe shutdown circuits is less than 20 feet. The technical bases which justify the exemption request are detailed below.

1. The combustible loading within fire area 1 is 26,200 BTU/ft^2 for an equivalent fire severity of under 20 minutes. Almost 9300 BTU/ft^2 of this combustible loading is lube oil contained within the reactor

coolant pumps within fire zone 1-B. Each reactor coolant pump is provided with an oil collection system (for further details, see Section 5.0). The reactor coolant pumps are protected by wet pipe automatic sprinkler system. In the unlikely event such a fire were to occur in the vicinity of one of these pumps, the fire would be controlled by the automatic sprinkler system and the products of combustion would be dispersed by the ventilation flow through openings in the shield wall. When the automatic sprinkler system operates, the fire would be controlled and the resultant hot gases cooled. If the automatic sprinkler system failed to operate, the hot gases would still be dispersed through the openings in the shield walls reducing the exposure to heat sensitive equipment.

2. Approximately 12,900 BTU/ft^2 of fire area 1's combustible loading is insulation associated with non-class 1E cables, which are the only cables not within rigid steel conduit. The non-class 1E cables are located in metal cable trays which have vented metal covers on top and bottom. The horizontal portions of the cables in the trays are fire stopped every 12 feet, and the vertical portions are fire stopped every 5 feet, effectively removing the cables in cable trays as an intervening combustible material.

3. Class 1E cable in the containment annulus, fire zone 1-A, is within rigid steel conduit located high in the annulus but below elevation 140 feet. This location is of benefit due to open floor grating on all levels except the elevation 91 feet. The open floor grating would not confine the hot gases of a fire at any elevation in fire zone 1-A below 140 feet. Hot gases would flow upward past the class 1E cabling in rigid steel conduit and into the volume of fire zone 1-C above elevation 140 feet.

4. The volume of the containment building housing fire area 1 is extremely large, in excess of 2,500,000 ft^3. The distance from the operating deck at elevation 140 feet to the top of the dome is about 150 feet. For a stratified layer of hot gases to bank down and impact on safe shutdown cables in conduit below elevation 140 feet, the fire would have to involve a quantity of combustible materials several orders of magnitude higher than what is currently estimated for this fire area.

5. During operation, the containment structure will be a high radiation area with limited access. Materials brought into the fire area will be strictly controlled by radiation protection and security.

6. With all safe shutdown cabling in conduit, no electrically induced fire in one conduit should impact on any adjacent conduits.

7. Automatic smoke detection is provided in fire zone 1-A and above each reactor coolant pump in fire zone 1-B. Flame detection is provided in fire zone 1-C. The detection system annunciates in the continuously manned control room.

8. Upgrading the radiant energy heat shield capability currently afforded by the rigid steel conduits in which safety related cabling is installed would not enhance to a significant degree the protection provided by the existing configuration.

FIRE AREA: 3-B-1

TITLE: RHR PUMP 1-1 and HEAT EXCHANGER ROOM

FIGURES: 3-5, 3-6, 3-7 and 3-8

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-B-1, the residual heat removal (RHR) pump 1-1 and heat exchanger room, is located at the northern end of the auxiliary building. The floor level is at elevation 58 feet and the area extends upward to elevation 113 feet in the heat exchanger shaft. The walls, floor, and ceiling are 3-hour rated fire barriers with the following exceptions.

1. Overflow opening in the wall 5 feet above elevation 54 feet communicates with zone 3-C (fire area AB-1).

2. At elevation 64 feet a 1-1/2 hour rated door and duct penetrations without fire dampers in the west wall of fire area 3-B-2, and a 1-1/2 hour rated door and duct penetrations without fire dampers in the east wall of fire area 3-B-1 communicate through fire zone 3-B-3 (fire area AB-1).

3. An open doorway with a security gate, and open penetrations at elevation 75 feet communicate with fire area 3-H-1.

4. At elevation 64 feet duct penetrations without fire dampers in the east wall of fire area 3-B-2 and a duct penetration without a fire damper in the west wall of fire area 3-B-1 communicate with fire zone 3-C (fire area AB-1).

5. A duct penetration without a fire damper at elevation 104 feet communicates with fire zone 3-X (fire area AB-1).

COMBUSTIBLES

The in situ combustible loading in fire area 3-B-2 is approximately 862 BTU/ft^2 with an equivalent severity of 0.61 minutes. In situ combustible loading consists primarily of oil and grease evenly distributed throughout the entire 675 square foot area.

Transient combustible loading is estimated to present an additional 7820 BTU/ft^2 with an equivalent severity of 5.9 minutes. This loading will include grease, oil, solvent, and radiological Class A combustibles evenly distributed throughout the entire 675 square foot area.

MAJOR EQUIPMENT

Fire area 3-B-1 contains RHR pump 1-1, RHR heat exchanger 1-1. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and fire hose station is available for this area.

FIRE AREA: 3-B-1

TITLE: RHR PUMP 1-1 AND HEAT EXCHANGER ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-B-1 does not meet the requirements of Appendix R, Section III.G.2(a) in that the 3-hour rated fire barriers do not contain appropriately labeled doors, fire dampers and penetration seals. On elevation 64 feet, three-hour rated fire barriers and fire zone 3-B-3 (approximately 10 feet wide) separate fire areas 3-B-1 (RHR pump 1-1) and 3-B-2 (RHR pump 1-2); however, duct penetrations without fire dampers connect fire areas 3-B-1 and 3-B-2 through fire zone 3-B-3. Ducts penetrating the west wall of fire area 3-B-1 and the east wall of fire area 3-B-2 connect to a common building ventilation system in zone 3-C. These two duct penetrations into fire zone 3-C are separated by a minimum of 50 feet. In addition, doors in the east barrier of 3-B-1 and west barrier of 3-B-2 are 1-1/2 hour rated doors. On elevation 75 feet, fire area 3-B-1 communicates with fire area 3-H-1 via a normally locked security gate and open penetrations. However, fire area 3-B-2 on this elevation is separated from fire area 3-H-1 by a 3-hour rated barrier. On elevation 104 feet, ducts without fire dampers penetrate the walls of fire areas 3-B-1 and 3-B-2 and connect to a common building ventilation system in zone 3-X; however, a minimum of 35 feet separates the two duct penetrations.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R, which requires 3-hour rated fire barriers to be protected by appropriately rated doors, fire dampers and penetration seals. The technical bases which justify the exemption request are detailed below.

1. The in situ loading in fire area 3-B-1 is approximately 862 BTU/ft^2 with an equivalent severity of 0.6 minutes. A postulated instantaneous oil spill would create a thin oil film on the concrete slab as it flows to the sump area. The heat absorption capability of the concrete floor heat sink would greatly reduce the rate of vaporization of the thin film of oil, minimizing the probability of ignition from any source.

2. The transient combustible loading in fire area 3-B-2 (approximately 7820 BTU/ft^2 with an equivalent severity of 5.9 minutes) and the combustible loading in fire zone 3-B-3 (approximately 10,164 BTU/ft^2 with an equivalent severity of 7.6 minutes) would not have sufficient fire duration assuming worst case scenario of instantaneous total heat release of combustibles.

3. At elevation 64 feet, a minimum of 10 feet of separation exists between the duct penetrations without fire dampers in fire areas 3-B-1 and in 3-B-2 through fire zone 3-B-3.

4. At elevation 64 feet, a minimum of 10 feet of separation exists between the 1-1/2 hour rated door in the wall between fire area 3-B-1 and fire zone 3-B-3 and the 1-1/2 hour rated door in the wall between fire area 3-B-2 and fire zone 3-B-3.

5. The separation distance between the redundant RHR pumps in the two fire areas is at least 20 feet with no in situ intervening combustibles.

6. At elevation 64 feet, a minimum of 50 feet of separation exists between the duct penetration without a fire damper in the west barrier of fire area 3-B-1 and the duct penetration without a fire damper in the east barrier of fire area 3-B-2 through fire zone 3-C.

7. At elevation 75 feet, there is no direct or indirect communication between fire areas 3-B-2 and 3-B-1.

8. Based on the ability to bypass the power and control circuits in fire area 3-H-1 which are required for operation of the three charging pumps in fire area 3-H-1 (see the exemption request for fire area 3-H-1), a fire in fire area 3-B-1 on elevation 75 feet elevation will not have a detrimental impact on the safe shutdown capability of the charging pumps.

9. A minimum of 35 feet of separation exists between the duct penetrations without fire dampers in fire area 3-B-1 and fire area 3-B-2 through the common ventilation system in zone 3-X on elevation 104 feet.

10. Hose stations and portable extinguishers are available in fire zone 3-C to fight fires in fire area 3-B-1.

11. The addition of 3-hour rated fire dampers, replacing existing 1-1/2 rated doors and security gates, and upgrading penetrations to a 3-hour fire rating would not enhance to a significant degree the protection of safe shutdown functions provided by the current configuration.

FIRE AREA: 3-B-2

TITLE: RHR PUMP 1-2 and HEAT EXCHANGER ROOM

FIGURES: 3-5, 3-6, 3-7 and 3-8

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-B-2, the residual heat removal (RHR) pump 1-2 and heat exchanger room, is located at the northern end of the auxiliary building. The floor level is at elevation 58 feet and the area extends upward to elevation 113 feet in the heat-exchanger shaft. The walls, floor, and ceiling are 3-hour rated fire barriers with the following exceptions.

1. Overflow opening in the wall 5 feet above elevation 54 feet communicates with zone 3-C (fire area AB-1).

2. At elevation 64 feet, a 1-1/2 hour rated door and duct penetrations without fire dampers in the west wall of fire area 3-B-2, and a 1-1/2 hour rated door and duct penetrations without fire dampers in the east wall of fire area 3-B-1 communicate through fire zone 3-B-3 (fire area AB-1).

3. A duct penetration without a fire damper communicates with fire zone 3-M (fire area AB-1) at elevation 85 feet.

4. At elevation 64 feet, duct penetrations without fire dampers in the east wall of fire area 3-B-2 and a duct penetration without a fire damper in the west wall of fire area 3-B-2 communicate with fire zone 3-C.

5. A duct penetration without a fire damper at elevation 104 feet communicates with fire zone 3-X (fire area AB-1).

COMBUSTIBLES

The in situ combustible loading in fire area 3-B-2 is approximately 862 BTU/ft^2 with an equivalent severity of 0.6 minutes. In situ combustible loading consists primarily of oil and grease evenly distributed throughout the entire 675 square foot area.

Transient combustible loading is estimated to present an additional 7820 BTU/ft^2 with an equivalent severity of 5.9 minutes. This loading will include grease, oil, solvent, and radiological Class A combustibles evenly distributed throughout the entire 675 square foot area.

MAJOR EQUIPMENT

Fire area 3-B-2 contains RHR pump 1-2 and RHR heat exchanger 1-2. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Manual suppression capability is available for this area in the form of portable fire extinguishers and fire hose station.

FIRE AREA: 3-B-2

TITLE: RHR PUMP 1-2 AND HEAT EXCHANGER ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-B-2 does not meet the requirements of Appendix R, Section III.G.2(a) in that the 3-hour rated fire barriers do not contain appropriately labeled doors, fire dampers and penetration seals. On elevation 64 feet, three-hour rated fire barriers and fire zone 3-B-3 (approximately 10 feet wide) separate fire areas 3-B-1 (RHR pump 1-1) and 3-B-2 (RHR pump 1-2); however, duct penetrations without fire dampers connect fire areas 3-B-1 and 3-B-2 through fire zone 3-B-3. Ducts penetrating the west wall of fire area 3-B-1 and the east wall of fire area 3-B-2 connect to a common building ventilation system in zone 3-C. These two duct penetrations into fire zone 3-C are separated by a minimum of 50 feet. In addition, doors in the east barrier of 3-B-1 and west barrier of 3-B-2 are 1-1/2 hour rated doors. On elevation 85 feet, fire area 3-B-2 communicates with fire zone 3-M via a duct penetration without a fire damper. On elevation 104 feet, ducts without fire dampers penetrate the walls of fire areas 3-B-1 and 3-B-2 and connect to a common building ventilation system in zone 3-X; however, a minimum of 35 feet separates the two duct penetrations.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R, which requires 3-hour rated fire barriers to be protected by appropriately rated doors, fire dampers and penetration seals. The technical bases which justify the exemption request are detailed below.

1. The in situ combustible loading in fire area 3-B-2 is approximately 862 BTU/ft^2 with an equivalent severity of 0.6 minutes. A postulated instantaneous oil spill would create a thin oil film on the concrete slab as it flows to the sump area. The heat absorption capability of the concrete floor heat sink would greatly reduce the rate of vaporization of the thin film of oil, minimizing the probability of ignition from any source.

2. The transient combustible loading in fire area 3-B-2 (approximately 7820 BTU/ft^2 with an equivalent severity of 5.9 minutes) and the combustible loading in fire zone 3-B-3 (approximately 10,164 BTU/ft^2 with an equivalent severity of 7.6 minutes) would not have sufficient fire duration assuming worst case scenario of instantaneous total heat release of combustibles.

3. At elevation 64 feet, a minimum of 10 feet of separation exists between the duct penetrations without fire dampers in fire areas 3-B-1 and in 3-B-2 through fire zone 3-B-3.

4. At elevation 64 feet, a minimum of 10 feet of separation exists between the 1-1/2 hour rated door in the wall between fire area 3-B-1 and fire zone 3-B-3 and the 1-1/2 hour rated door in the wall between fire area 3-B-2 and fire zone 3-B-3.

5. The separation distance between the redundant RHR pumps in the two fire areas is at least 20 feet with no in situ intervening combustibles.

6. At elevation 64 feet, a minimum of 50 feet of separation exists between the duct penetration without a fire damper in the west barrier of fire area 3-B-1 and the duct penetration without a fire damper in the east barrier of fire area 3-B-2 through fire zone 3-C.

7. At elevation 75 feet, there is no direct or indirect communication between fire areas 3-B-2 and 3-B-1.

8. A minimum of 35 feet of separation exists between the duct penetrations without fire dampers in fire area 3-B-1 and fire area 3-B-2 through the common ventilation system in zone 3-X on elevation 104 feet.

9. Fire hose stations and portable fire extinguishers are available in fire zone 3-C to fight fires in fire area 3-B-2.

10. The addition of 3-hour rated fire dampers, replacing existing 1-1/2 rated doors and security gates, and upgrading penetrations to a 3-hour fire rating would not enhance to a significant degree the protection of safe shutdown functions provided by the current configuration.

FIRE AREA: 3-H-1

TITLE: CENTRIFUGAL CHARGING PUMPS 1-1 and 1-2 ROOM

FIGURE: 3-6

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-H-1 houses centrifugal charging pumps 1-1 and 1-2 and is located on the north side, elevation 75 feet, of the auxiliary building. The floor, ceiling, and walls are 3-hour rated barriers, with the following exceptions.

1. An open doorway with security gate in the west wall, and open penetrations in the north wall communicate to fire area 3-B-1.

2. A duct penetration without a fire damper in the north wall communicates with fire zone 3-B-3 (fire area AB-1).

3. Two sets of 1-1/2 hour rated double doors, with monorail cutouts, and two duct penetrations without fire dampers in the south wall communicate with fire zone 3-C (fire area AB-1).

4. A duct penetration without a fire damper in the southwest corner of the floor communicates with fire zone 3-C (fire area AB-1) on elevation 64 feet.

COMBUSTIBLES

The in situ combustible loading in fire area 3-H-1 is approximately 6980 BTU/ft^2 with an equivalent severity of 5.2 minutes. This loading is evenly distributed over the entire area or 1000 square feet. In situ combustible loading consists primarily of oil and grease.

Transient combustible loading is estimated to present an additional 12,900 BTU/ft^2 or an equivalent severity of 9.7 minutes. This loading will include oil, grease, and Class A combustibles used for radiological controls.

MAJOR EQUIPMENT

Fire area 3-H-1 contains centrifugal charging pumps 1-1 and 1-2, and their auxiliary lube oil pumps. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Automatic wet pipe sprinkler protection is provided in the area of centrifugal charging pumps 1-1 and 1-2 and the water flow alarm annunciates in the continuously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 3-H-1

TITLE: CENTRIFUGAL CHARGING PUMP ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-H-1 does not meet the requirements of Appendix R, Section III.G.2(a) in that the 3-hour rated fire barriers do not contain appropriately rated doors, fire dampers and penetration seals. On elevation 75 feet the barrier between fire area 3-H-1 and 3-B-1 contains an open doorway with a security gate, and open penetrations. Duct penetrations without fire dampers and two sets of 1-1/2 hour rated doors are located in the wall between fire area 3-H-1 and fire zone 3-C. The southwest duct penetration in the wall between fire area 3-H-1 and fire zone 3-C connects to a common building ventilation system with the duct penetration in the south wall between fire area 3-H-2 and fire zone 3-C. These two duct penetrations are separated by a minimum of 50 feet. In addition, duct penetrations without fire dampers communicate from fire area 3-H-1 to fire zones 3-B-3 on elevation 75 feet and fire zone 3-C on elevation 64 feet.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R which requires 3-hour rated fire barriers to be protected by appropriately rated doors, fire dampers, and penetration seals. The technical bases which justify the exemption request are detailed below.

1. Centrifugal charging pumps 1-1 and 1-2, and their power and control circuitry are located in this fire area. In addition, the control circuitry for reciprocating charging pump 1-3, which is located in fire area 3-H-2, is located in this area.

However, the starting circuit for pump 1-3 can be bypassed by means of an installed switch at the switchgear located in fire zone 13-B and 13-C.

2. Fire area 3-H-2, containing the redundant charging pump, is located within 3-hour rated fire barriers with an open doorway, with a security gate, and a duct penetration without a fire damper to fire zone 3-F (fire area AB-1). A minimum of 40 linear feet of separation exists between the duct penetration in the wall between 3-H-1 and 3-C and the open door, with a security gate in the wall between 3-H-2 and 3-F. Therefore, a fire or its products of combustion must travel a tortuous path to communicate between 3-H-1 and 3-H-2.

3. The total combustible loading in fire area 3-H-1 is 19,900 BTU/ft^2, with an equivalent fire severity of 14.9 minutes (in situ - 6980 BTU/ft^2 with an equivalent severity of 5.2 minutes, and transient - 12,923 BTU/ft^2 with an equivalent severity of 9.7 minutes). Propagation of fire out of the area and into the reciprocating charging pump compartment through ventilation ductwork and 1-1/2 hour rated doors would be unlikely.

4. The combustible loading in fire area 3-B-1 is low, 8682 BTU/ft^2, with an equivalent severity of 6.5 minutes. Propagation of a fire from 3-B-1 through the open doorway with the security gate or piping penetrations to 3-H-1 is unlikely; however, should this occur, the redundant safe shutdown capability of the charging pumps in 3-H-1 and 3-H-2 will not be adversely affected due to reasons stated above.

5. The combustible loading in fire zones 3-F and 3-C are 10,660 BTU/ft^2 and 2850 BTU/ft^2 respectively. Due to the combustible loadings in these two zones and in fire areas 3-H-1 and 3-H-2, propagation of a fire from either zone 3-F or 3-C into both fire areas 3-H-1 and 3-H-2 would be unlikely.

6. Automatic suppression and automatic smoke detection systems are provided in fire area 3-H-1, and alarm in the continuously manned control room.

7. Automatic suppression and automatic smoke detection systems are provided in fire area 3-H-2, and alarm in the continuously manned control room.

8. Hose stations and portable extinguishers are located in adjacent zones for manual fire fighting in fire area 3-H-1.

9. The addition of 3-hour rated dampers and seals, the replacement of 1-1/2 hour rated doors with 3-hour rated doors, and providing a 3-hour rated door would not enhance to a significant degree the protection of safe shutdown functions provided by the existing configuration.

FIRE AREA: 3-H-2

TITLE: RECIPROCATING CHARGING PUMP 1-3 ROOM

FIGURE: 3-6

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-H-2 houses the reciprocating charging pump 1-3, and is located in the north side of the auxiliary building at elevation 75 feet. The floor, ceiling, and walls are 3-hour rated barriers, with the following exceptions.

1. A duct penetration without a fire damper in the north wall and an open doorway with a security gate in the east wall communicate with fire zone 3-F (fire area AB-1).

2. A duct penetration without a fire damper in the south wall communicates with fire zone 3-C (fire area AB-1).

3. A duct penetration without a fire damper in both the floor and ceiling communicates with fire zones 3-C (elevation 64 feet) and 3-M (elevation 85 feet).

COMBUSTIBLES

The in situ combustible loading in fire area 3-H-2 is approximately 28,100 BTU/ft^2 with an equivalent severity of 21 minutes. This loading is evenly distributed over the entire area of 235 square feet. In situ combustible loading consists primarily of oil and grease.

Transient combustible loading is estimated to present an additional 37,800 BTU/ft^2 with an equivalent severity of 28.3 minutes. This loading will include oil, grease, and Class A combustible used for radiological controls.

MAJOR EQUIPMENT

Fire area 3-H-2 contains reciprocating charging pump 1-3. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided in the area of reciprocating charging pump 1-3 and the water flow alarm annunciates in the continuously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 3-H-2

TITLE: RECIPROCATING CHARGING PUMP ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-H-2 does not meet the requirements of Appendix R, Section III.G.2(a) in that the 3-hour rated fire barriers do not contain appropriately rated doors, fire dampers and piping penetrations. On elevation 75 feet an open doorway with a security gate and a duct penetration without a fire damper separates fire area 3-H-2 from zone 3-F. In addition, a duct without a fire damper penetrates the ceiling and floor of 3-H-2 up into fire zone 3-M on elevation 85 feet and down into zone 3-C on elevation 64 feet and into fire zone 3-C on elevation 75 feet. The duct penetration without a fire damper located in the south wall of fire area 3-H-2 is separated by a minimum of 50 feet from the duct penetration without a fire damper in the southwest corner of fire area 3-H-1. These ducts communicate in fire zone 3-C via a common building ventilation system.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R which requires 3-hour rated fire barriers to be protected by appropriately rated doors, fire dampers and penetration seals. The technical bases which justify the exemption request are detailed below.

1. Reciprocating charging pump 1-3 is located in this fire area. Redundant centrifugal charging pumps and their power and control circuitry, along with the control circuitry for pump 1-3, are

located in fire area 3-H-1. The starting circuit for pump 1-3 can be bypassed by means of an installed switch at the switchgear located in zone 13-B (fire area TB-5).

2. Fire area 3-H-2 is located within 3-hour rated walls with an open doorway with a security gate and a duct penetration without a fire damper to zone 3-F. A minimum of 40 linear feet of separation exists between the open doorway, with a security gate, in the wall between 3-H-2 and 3-F and the duct penetration in the wall between 3-H-1 and 3-C. Therefore a fire or its products of combustion must travel a tortuous path to communicate between 3-H-1 and 3-H-2.

3. The combustible loading in fire area 3-H-2 is 65,900 BTU/ft^2, with an equivalent fire severity of 49 minutes. The combustible loading of zones 3-F and 3-C are 10,660 BTU/ft^2 and 2850 BTU/ft^2 respectively. Due to the combustible loadings in zones 3-F and 3-C and in fire areas 3-H-1 and 3-H-2, propagation of a fire from either zone 3-F or 3-C into both fire areas 3-H-1 and 3-H-2 would be unlikely.

4. The total combustible loading in fire zone 3-M is 9140 BTU/ft^2, with an equivalent fire severity of 7 minutes. Due to the combustible loading in zone 3-M, it is unlikely that fire will breach the duct in fire zone 3-M and propagate down into fire area 3-H-2.

5. Automatic suppression and automatic smoke detection systems are provided in fire area 3-H-2, and alarm in the continuously manned control room.

6. Automatic suppression and automatic smoke detection systems are provided in fire area 3-H-1, and alarm in the continuously manned control room.

7. Fire hose stations and portable fire extinguishers are located in adjacent zones for manual fire fighting in fire area 3-H-2.

8. Adding 3-hour rated fire dampers and providing a 3-hour rated door in the open doorway with a security gate opening to zone 3-F would not enhance to a significant degree the protection of safe shutdown functions provided by the existing configuration.

FIRE AREA: 3-Q-1

TITLE: TURBINE DRIVEN AUXILIARY FEEDWATER PUMP

FIGURE: 3-8 and 3-21

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-Q-1 is located at the south end of the Unit 1 fuel handling building at elevation 100 feet. This area is enclosed by a 3-hour rated barrier with the following exceptions.

1. A 1-1/2 hour rated door in the south wall separates this area from fire zone 3-X (fire area AB-1).

2. One and one-half hour rated doors separate this area from fire zone 31.

3. An unrated concrete sliding shield wall separates this area from fire zone 3-O.

4. A 1-1/2 hour rated wall mounted fire damper and a duct penetration without a fire damper separate this area from fire zone 3-Q-2.

5. An opening to a ventilation duct which is routed outside the fuel handling building to elevation 140 feet of the fuel handling building (see Figure 3-21).

6. A duct penetration without a fire damper in the ceiling of this area communicates with fire zone 3R above.

COMBUSTIBLES

The in situ combustible loading in fire area 3-Q-1 is approximately 10,700 BTU/ft^2 with an equivalent severity of 8.0 minutes. This loading is evenly distributed over the entire area of 700 square feet. In situ combustible loading consists primarily of cable, oil and grease.

Transient combustible loading is estimated to prevent an additional 5080 BTU/ft^2 or an equivalent severity of 3.8 minutes. This loading will include oil, grease, solvents and Class A combustibles used for radiological controls.

MAJOR EQUIPMENT

The major equipment in this area includes the turbine driven auxiliary feedwater (AFW) pump 1-1, make-up water transfer pumps, piping, valves, electrical cabling and trays. Both AFW pump 1-1 and make-up water transfer pumps are safety related, but only AFW pump 1-1 is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided throughout this area and the water flow alarm annunciates in the continuously manned control room.

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-Q-1 does not meet the requirements of Appendix R, Section III.G.2. A duct without a fire damper communicates with fire zone 3-R and with fire zone 3-Q-2, which contains the redundant motor driven AFW pumps 1-2.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2 of Appendix R which would require fire dampers to be installed in the ventilation ducts for fire area 3-Q-1. The technical bases which justify the exemption request are detailed below.

1. During normal operation, supply air is ducted through fire zone 3-R (near the east wall elevation 115 feet) into fire area 3-Q-1, and a supply air register discharges directly over the turbine driven AFW pump. The supply air ducting is then routed into fire zone 3-Q-2, and a supply air register discharges air over each motor driven AFW pump.

   The primary exhaust air flow path from fire area 3-Q-1 is through a 1-1/2 hour rated wall mounted fire damper to fire zone 3-Q-2 and through a grated ceiling vent opening to fire zone 3-R at elevation 115 feet. A secondary exhaust air flow path is through a manway opening in the ceiling over the makeup water pumps to a ventilation duct in the ceiling of the concrete enclosure above

the pumps. This exhaust duct is routed outside the east wall of the Unit 1 fuel handling building and discharges into fire zone 3-R just above elevation 140 feet (Refer to Figure 3-21).

In the unlikely event a fire occurs in fire area 3-Q-1, the hot exhaust air flowing through the 1-1/2 hour rated wall mounted fire damper would result in its closure. The products of combustion would then be vented through the secondary exhaust air flow path to elevation 140 feet of fire zone 3-R.

The exhaust air flow path for fire zone 3-Q-2 would continue to be through the grated ceiling vent opening to fire zone 3-R elevation 115 feet.

2. The secondary exhaust duct for fire area 3-Q-1 is routed outside the east wall of the Unit 1 fuel handling building to fire zone 3-R, elevation 140 feet. Natural air circulation will result in the flow of products of combustion from 3-Q-1 through this duct to fire zone 3-R. The effects of a fire adjacent to this exterior duct would not have an adverse impact on the operability of the equipment in 3-Q-1 as the products of combustion would not flow down this duct if it were breached.

3. The air circulation in fire zone 3-R is such that it would preclude the communication of exhaust air from 3-Q-1 to 3-Q-2.

4. A 1-1/2 hour rated wall fire damper is provided with fusible links rated at 165^{o}F. A postulated fire in area 3-Q-1 would cause this damper to close prior to a significant heat buildup in zone 3-Q-2, precluding an adverse impact on the operability of redundant motor driven AFW pumps 1-2 and 1-3.

5. A 3-hour rated barrier, with a 1-1/2 hour wall mounted fire damper, two 3-hour rated doors, and a duct penetration without a fire damper, separate fire area 3-Q-1 from fire zone 3-Q-2.

6: An automatic smoke detection system is installed in fire area 3-Q-1 and fire zone 3-Q-2, and alarms in the continuously manned control room.

7. A wet pipe automatic sprinkler system is installed in fire area 3-Q-1 and fire zone 3-Q-2, and the water flow alarm annunciates in the continuously manned control room.

8. The combustible loading for fire area 3-Q-1 results in an equivalent fire severity of 11.8 minutes. In the unlikely event such a fire were to occur, it would not have sufficient energy to breach the ductwork to propagate to fire zone 3-Q-2, and have an adverse impact on the operability of redundant AFW pumps 1-2 and 1-3.

9. Installing a 1-1/2 hour rated fire damper in the duct penetration in the wall separating area 3-Q-1 from zone 3-Q-2 and in the duct opening in the ceiling of concrete enclosure above the makeup water pumps would not significantly enhance the degree of protection provided by the current configuration.

FIRE AREA: 3-BB

TITLE: PENETRATION AREA

FIGURES: 3-7, 3-8, 3-9, 3-22, 3-23, 3-24, 3-25, and 3-26

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 3-BB consists of three levels which comprise the area between the containment structure and the auxiliary building extending from elevation 85 feet to elevation 115 feet. This fire area is bounded on the north by the containment building wall, which is separated by an 8-inch seismic and vent gap at each floor level. It is separated from the auxiliary building to the south and the fuel handling building to the east by concrete 3-hour rated fire walls with 1-1/2 hour rated doors. This fire area is separated from the turbine building to the west by a 3-hour rated fire barrier. The floor and ceiling of this area are 3-hour rated fire barriers. The floors separating the three levels are concrete slabs with numerous unsealed penetrations.

The following exceptions exist to the 3-hour fire rated barriers in the fire area.

1. One and one-half hour rated fire doors provide separation of this area from fire zone 3-L and S-3 (both in fire area AB-1) at elevation 85 feet, from fire zone 3-X and fire zone 3-Q-2 (both in fire area AB-1) at elevation 104 feet, and from fire zones 3-AA and 3-R (fire area AB-1) at elevation 115 feet.

2. The northwest wall at all three elevations is provided with ventilation louvers without fire dampers that communicate with fire area 28 (outside).

3. Unsealed pipe penetrations in the south ceiling communicate with fire area 34 (outside roof area) at elevation 140'.

4. Ducts without fire dampers communicate with fire areas 4-A-1 and 4-A-2 on elevation 85 feet.

COMBUSTIBLES

The in situ combustible loading in fire area 3-BB, by elevation, is tabulated below and consists primarily of cable, grease, rubber and hydrogen.

Elevation	Combustible BTU/ft^2	Equivalent Fire Severity, min.
85 feet	negligible	negligible
100 feet	9900	7.4
115 feet	9900	7.4

Transient combustible loading for elevations 85, 100, and 115 feet is estimated to present an additional 1318 BTU/ft^2 per floor or an equivalent severity of 1 minute. This loading will include cable, grease, and Class A combustibles used for radiological controls.

MAJOR EQUIPMENT

Fire area 3-BB contains electrical raceways and piping that run to and from the adjoining fire zones/areas. This includes safe shutdown piping and valves for auxiliary feedwater system, residual heat removal system, charging and boration system, component cooling water system, and main steam system.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided for this area at elevations 100 and 115 feet in the vicinity of the cable trays located near the ceiling at the west side of each elevation. The calculated detector coverage for elevation 100 feet is 75% and for elevation 115 feet is 60%. Smoke detection is also provided in the post LOCA sampling room in the northwest corner of elevation 85 feet.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided throughout elevation 100 and 115 feet of this area. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 3-BB does not meet the requirements of Appendix R, Section III.G.2 in that only partial area detection and suppression is provided, and that redundant components of safe shutdown instrumentation cabling do not have 20 feet of separation. At elevation 85 feet, smoke detection only is provided, and it is used for early notification of a fire in the post LOCA sampling room. On elevations 100 and 115 feet, complete automatic suppression is provided with ionization smoke detectors located in the vicinity of the in situ combustibles (cable trays) on both elevations.

At elevation 85 feet:

- o Reactor coolant pressure instrumentation circuits for PT405 (KK205) and PT403 (KK204) have no separation. However, PT406 is available at elevation 100 feet at the hot shutdown panel.

At elevation 100 feet:

- o Redundant trains of reactor coolant temperature instrumentation for TE-413A and TE413B, TE-423A and TE-423B (KK308) and TE-433A and TE433-B, TE-443A and TE-443B (KK359, KK362, KK381 and KK789) are separated by a minimum of 9 feet (see Figure 3-25). Intervening combustibles consists of cable trays, with fire stops, running between the subject conduits. Smoke detectors and automatic suppression is available in the vicinity of these conduits.

- Three embedded pullboxes are located in the ceiling. One pullbox has steam generator 1-3 and 1-4 pressure instrumentation circuits (KT357), another has pressurizer level (KT358) and reactor coolant pressure (KT359) instrumentation circuits and the third has steam generator 1-3 and 1-4 level instrumentation circuits (KT362). The separation between each pullbox is shown in Figure 3-25.

At elevation 115 feet:

- Redundant trains of reactor coolant temperature instrumentation for TE-413A & B, TE-423A & B (KK309) and TE-433A & B, TE-443A & B (KK359) are separated by 11'-6" with no intervening combustibles.

- Redundant trains of steam generator 1-3 and 1-4 pressure transmitter instrumentation located in panels PM-106 (KT696) and PM-114 (KT365, KT648) are separated by 12 feet with no intervening combustibles.

- Redundant trains of reactor coolant pressure instrumentation circuits have essentially no separation (KK204, KK205, KT148, KT359, KT363).

Components of other safe shutdown systems not specfically referenced above meet the requirements of Appendix R, Section III.G.2.

BASIS FOR EXEMPTION REQUEST

1. Fire area 3-BB is separated from all other areas and zones by barriers capable of achieving at least a 3-hour fire rating. Except for some 1-1/2 hour rated doors and two duct penetrations without fire dampers to fire areas 4-A-1 and 4-A-2 (see the exemption request for fire areas 4-A-1 and 4-A-2 for

justification of these two ducts), all penetrations to fire areas and zones within the building are 3-hour fire rated. The three elevations of the penetration area, which are large open areas on each elevation, are combined into one fire area due primarily to an 8-inch seismic gap at the junction of the containment building and also unsealed penetrations at the floor of elevations 100 and 115 feet. An existing floor vent opening at elevation 85 feet connecting fire areas 3-BB with zone 3-J-3 will be replaced with rated material to ensure the integrity of the fire area boundary.

2. The fixed combustible loading on elevations 100 and 115 feet is 7.4 minutes consisting mainly of either grease inside valves or cables in trays located near the ceiling. The only equipment within this elevation consists of cables, conduits and valves, thereby limiting the need for flammable or combustible liquids for maintenance purposes. Combined with the limited access through this elevation to other fire areas and the controlled access due to radiological considerations, the impact of transient combustible materials is minimal.

3. On elevation 85 feet, the F and H buses for the motor operated auxiliary feedwater pumps are located within separate concrete vaults accessible from elevation 85 feet by 3/8-inch checker plate steel covers. Based on the negligible fuel loading on this elevation, the separation of circuits by concrete vaults and the thickness of the steel plate covers provides adequate separation between the auxiliary feedwater pump bus circuits.

4. Horizontal and vertical trays containing exposed cables are firestopped every 12 feet horizontally and every 5 feet vertically, with either marinite board or metal covers used where horizontal trays cross. This, combined with vented metal covers on vertical trays, precludes intervening combustibles from impacting redundant instrumentation cabling.

5. All cabling for redundant safe shutdown system located in fire area 3-BB are enclosed in rigid steel conduits. Cabling not enclosed in conduit is not required for safe shutdown.

6. The three pull boxes that are embedded in the ceiling of elevaticn 100 feet have only the sheet metal access panel exposed to the fire area.

7. Hose stations and portable extinguishers are available in fire area 3-BB on all elevations and in adjoining fire areas and zones for manual fire fighting purposes.

8. Providing full area detection and suppression and a minimum of 20 feet of separation between redundant trains of safe shutdown cabling in conduits in fire area 3-BB would not enhance to a significant degree the level of protection provided by the current configuration.

9. Full area automatic sprinkler coverage of elevation 100 and 115 is provided. Therefore, hot gases that may collect at the ceiling of these elevations would be suppressed by the automatic sprinkler coverage.

FIRE AREA: 4-A

TITLE: CHEM LAB AND OFFICES

FIGURE: 3-7 and 3-20

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 4-A is located in the northwest corner of the auxiliary building at elevation 85 feet. The floor and ceiling of this area are 3-hour rated fire barriers. This area is separated by minimum 2-hour rated barriers from fire area 3-H-1 and fire zones 3-C, 3-J-1, 3-J-2 and 3-J-3 (fire area AB-1) on elevation 75 feet; from fire areas 3-B-1, 4-A-1, 4-A-2, 3-BB, 4-B and fire zones 3-L (fire area AB-1) and 14-A (fire area TB-7) on elevation 85 feet; and from fire areas 5-A-1, 5-A-2, 5-A-3 and 5-A-4 on elevation 104 feet, with exceptions listed below.

A continuous membrane drop ceiling consisting of a vermiculite plaster on metal lath with acoustical ceiling tiles adhered to the underside exists at elevation 93 feet. The fire area walls, the continuous membrane ceiling, and the floor form an envelope to separate the occupancy of this area from safe shutdown circuitry routed in conduit above the drop ceiling (elevation 98 feet). Refer to Figure 3-20 for lower ceiling construction details and envelope area.

The exceptions to the minimum 2-hour rated barriers bounding this area are:

1. One and one-half hour rated doors in the south and west walls communicate with fire area 4-B at elevation 85 feet.

2. Duct penetrations rated at one and one-half hour and duct penetrations without fire dampers in the walls communicate with fire areas 4-A-2, 4-A-1, 4-B and fire zone 3-L (fire area AB-1) at elevation 85 feet. These penetrations are located between the drop ceiling and the fire area ceiling. All ventilation duct register penetrations in the drop ceiling have been provided with 1-1/2 hour rated fire dampers.

3. All access hatches in the drop ceiling except one are 1-1/2 hour rated.

COMBUSTIBLES

Due to the division of this area into the chem lab, store room and offices, the combustible loading is broken down by room.

The in situ combustible loading in the chem lab is approximately 4800 BTU/ft^2 with an equivalent severity of 3.7 minutes. This loading is evenly distributed throughout the chem lab (1410 ft^2). This loading includes flammable liquids and gases, clothing and ordinary Class A combustibles.

The in situ combustible loading in the store room is approximately 49,400 BTU/ft^2 with an equivalent severity of 37 minutes. This loading is primarily flammable liquids mostly stored in an approved flammable liquids storage locker. The remainder of this loading includes flammable gases, clothing and ordinary Class A combustibles and is evenly distributed throughout the store room (176 ft^2).

The in situ combustible loading in the F bus compartment is approximately 5160 BTU/ft^2 with an equivalent severity of 4 minutes. This loading is primarily cabling in trays.

The in situ combustible loading in the remainder of this fire area is approximately 7600 BTU/ft^2 with an equivalent severity of 5.7 minutes. This loading is evenly distributed throughout the remainder of the fire area (1100 square feet).

The in situ combustible loading above the drop ceiling is considered insignificant, as the loading in these areas is cable in conduit and fan belts and filters.

Since the combustible loading located in the store room and laboratory is consumed on a routine basis with a relatively constant level maintained, the in situ combustible loading accounts for transient combustible loading. The remote location of the F bus compartment precludes the introduction of transient combustibles.

MAJOR EQUIPMENT

- Chemical laboratory equipment and stock
- Radioactive sample counting equipment
- Office equipment
- F bus conduit
- Non-vital cable trays

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout the laboratory portion of this area and balance room and alarms in the continuously manned control room.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided beneath the drop ceiling throughout the fire area. The water flow alarm annunciates in the continuously manned control room. No automatic fire suppression is provided in the F bus compartment. Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for use in this area.

FIRE AREA: 4-A

TITLE: COUNTING AND CHEMICAL LABORATORY

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 4-A does not meet the requirements of Appendix R, Section III.G.2(c) in that 1-hour rated fire barriers are not provided around redundant trains of safe shutdown systems located above the 1-hour rated drop ceiling.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(c) of Appendix R which requires one train of redundant safe shutdown equipment to be enclosed in a 1-hour rated fire barrier with automatic suppression and detection provided in the fire area. The technical bases which justify the exemption are summarized below.

1. Fire area 4-A is separated from fire area 4-A-1 (G bus compartment) and fire area 4-A-2 (H bus compartment) by 2-hour rated construction for the entire height of the fire area. The remaining boundary fire barriers are a minimum of 2-hour fire rated, with 1-1/2 hour doors. One and one-half hour fire dampers are provided in all duct register penetrations in the drop ceiling of fire area 4-A. A 2-hour rated partition surrounding the F bus compartment extends only up to the drop ceiling of the fire area.

2. A continuous membrane ceiling constructed of materials which provide an equivalent 1-hour fire rating separates the use spaces of fire area 4-A from the concealed space above the drop ceiling. In order to ensure the continuity of the 1-hour equivalent fire rating of the ceiling, the one unrated hatch will be replaced with an appropriately rated hatch.

3. The combustible loading in the laboratory and storeroom spaces of fire area 4-A is approximately 4800 BTU/ft^2 with an equivalent fire severity of under 3 minutes, and 49,400 BTU/ft^2 with an equivalent fire severity of 37 minutes, respectively.

4. All cables for safe shutdown systems in fire area 4-A are effectively isolated within the concealed space above the drop ceiling.

5. The only combustible materials within the concealed space consist of cables within rigid steel conduit; therefore, there are no exposed combustible materials within the concealed space.

6. Automatic detection will be provided in the concealed space for early detection of any fire.

7. The ventilation ducts which penetrate the ceiling will effectively prevent the spread of a stratified layer of hot combustion gases resulting from a fire in the use spaces of fire area 4-A from directly impacting on the conduits within the concealed space prior to activation of the dampers.

8. A wet pipe automatic sprinkler system covers the entire floor area below the drop ceiling of fire area 4-A, thereby providing suppression capability over the locations where a fire resulting from fixed or transient combustible materials could possibly occur.

9. The automatic smoke detection system covering the laboratory portion of the fire area will be extended to provide full area detection for the use spaces of fire area 4-A. The result is complete area detection both above and below the 1-hour equivalent fire rated ceiling.

10. Portable fire extinguishers located within this fire area, and portable fire extinguishers and fire hose stations in adjacent areas provide manual suppression capability.

11. The protection provided by the existing and proposed configuration would not be enhanced to a significant degree by providing a 1-hour barrier around the redundant trains of safe shutdown systems within the concealed space due to the following safeguards:

    - The automatic detection systems either existing or to be provided both above and below the 1-hour equivalent fire rated drop ceiling

    - The existing automatic suppression system covering the entire floor area of fire area 4-A where a fire resulting from exposed fixed or transient combustibles could occur

    - The presence of the ventilation ducts to prevent hot combustion gases from directly impacting on the conduit within the concealed space prior to damper actuation

    - Replacment of the existing unrated hatch to the concealed space with an appropriately rated hatch.

FIRE AREA: 4-A-1

TITLE: G BUS COMPARTMENT

FIGURE: 3-7 and 3-20

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 4-A-1 is located in the northwest section of the auxiliary building at elevation 85 feet. This fire area is separated from adjacent fire areas by a 3-hour barrier with the following exceptions.

1. A 2-hour rated wall separates this area from fire area 4-A.

2. A 1-1/2 hour rated fire door separates this area from fire area 4-A.

3. A ventilation duct penetration without fire dampers passes through fire area 4-A-1 to fire areas 3-BB to the north and 4-A to the south.

COMBUSTIBLES

Fire area 4-A-1 has an approximate floor area of about 72 square feet. The in situ combustible loading within this fire area consists solely of cable in conduit.

Transient combustible loading is estimated to present no additional BTU/ft^2 since this area will be a designated "No Storage" area. It is not an easily accessible area and is not a major access or egress pathway, providing access only into the G and F bus compartments.

MAJOR EQUIPMENT

Fire area 4-A-1 contains cable in conduit for various G bus safe shutdown components and equipment.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided in this area. See Item 6 under BASIS FOR EXEMPTION for proposed modification

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 4-A-1

TITLE: G BUS COMPARTMENT

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 4-A-1 does not meet the requirements of Appendix R, Section III.G.2. The fire area is completely separated from the redundant F bus compartment located in fire area 4-A and from the remainder of fire area 4-A by 2-hour rated fire barriers. A 3-hour rated door separates fire area 4-A-1 from the F bus compartment, with access from the remainder of 4-A into fire area 4-A-1 provided through a 1-1/2 hour rated door. The H bus compartment (fire area 4-A-2) is separated from fire area 4-A-1 by a 3-hour rated fire barrier with no entrance access points. Fire area 3-BB is separated from fire area 4-A-1 by a 3-hour fire barrier; however, a ventilation duct without fire dampers at the penetrations of fire area 4-A-1 passes through fire area 4-A-1 from fire area 3-BB to fire area 4-A.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(a) which requires 3-hour rated fire barriers with appropriately rated doors and fire dampers. The technical bases which support this exemption request are itemized below.

1. A 3-hour rated fire barrier separates this fire area from fire area 3-BB, with the only unprotected penetration of the barrier being a single duct penetration without a fire damper.

2. A 2-hour rated fire barrier separates fire area 4-A-1 from fire area 4-A, with the only penetrations of this barrier being a 1-1/2 hour rated fire door and a single duct penetration without a fire damper (which is a continuation of the duct from fire area 3-BB). This duct is used to supply air to fire area 4-A.

3. A 3-hour rated fire barrier separates fire area 4-A-1 from the H bus compartment, (fire area 4-A-2), with no unprotected penetrations of the barrier.

4. The single duct passing through fire area 4-A-1 neither supplies nor exhausts air from the area; it simply passes through the area without a ventilation opening.

5. There is only about 0.5 ft^3 of exposed cable insulation in fire area 4-A-2 for an equivalent fire severity of under 6 minutes. The combustible loading for elevation 85 feet of fire area 3-BB is negligible. The combustible loading in fire area 4-A is 3740 BTU/ft^2 for an equivalent fire severity of under 3 minutes. Due to the limited access into fire areas 4-A-1 and 4-A-2, and combined with the lack of equipment requiring maintenance, transient combustible materials should not be located in these areas.

6. Automatic detection will be provided in fire area 4-A-1.

7. Based on the combustible loading in the fire areas which would impact on the barriers surrounding fire area 4-A-1, and on the combustible loading within fire area 4-A-1, the required rating of the fire barriers surrounding fire area 4-A-1 is on the order of 30 minutes. Therefore, fire dampers are not required in ductwork penetrating the barriers of fire area 4-A-1.

8. Based on the information presented above, the required fire resistance ratings of the barriers currently separating fire area 4-A-1 from the adjacent fire areas is a maximum of 30 minutes. Fire area 4-A-1 presently meets the definition of a fire area as contained within Appendix A. Installing fire dampers in the duct to fire area 3-BB and fire area 4-A would not enhance to a significant degree the level of protection provided by the current configuration.

FIRE AREA: 4-A-2

TITLE: H BUS COMPARTMENT

FIGURE: 3-7 and 3-20

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 4-A-2 is located in the northwest section of the auxiliary building at elevation 85 feet. This fire area is separated from adjacent fire areas by a 3-hour rated fire barrier with the following exceptions.

1. A 2-hour rated wall provides separation of this area from fire area 4-A.

2. A ventilation duct penetration without fire dampers communicates with fire areas 3-BB to the north and 4-A to the south.

3. A 1-1/2 hour rated fire door provides separation from fire area 4-A.

COMBUSTIBLES

Fire area 4-A-2 has an approximate floor area of about 110 square feet. The in situ combustible loading within this fire area is approximately 6800 BTU/ft^2 with an equivalent fire severity of 5.1 minutes. In situ combustible loading is comprised of electric cable insulation in cable trays.

Transient combustible loading is estimated to present no additional BTU/ft^2 since this area will be a designated "No Storage" area. It is not an easily accessible area and it is not a major access or egress pathway.

MAJOR EQUIPMENT

Fire area 4-A-2 contains conduit for various H bus safe shutdown components and equipment as well as non-vital cable trays.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided for this area. See Item 6 under BASIS FOR EXEMPTION for proposed modification.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 4-A-2

TITLE: H BUS COMPARTMENT

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 4-A-2 does not meet the requirements of Appendix R, Section III.G.2. The fire area is completely separated from fire area 4-A by 2-hour rated fire barriers with a 1-1/2 hour rated door. It is separated from fire areas 3-B-1 and 4-A-1 (G bus compartment) by 3-hour rated fire barriers with no entrance access points. A ventilation duct without fire dampers at the penetrations of 4-A-2 passes through fire area 4-A-2 from fire area 3-BB to fire area 4-A.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(a) which requires 3-hour rated fire barriers with appropriately rated doors and fire dampers. The technical bases which support this exemption request are itemized below.

1. A 3-hour rated fire barrier separates this fire area from fire areas 3-B-1 and 3-BB, with the only unprotected penetration of the barrier being a single duct penetration from fire area 3-BB without a fire damper.

2. A 2-hour rated fire barrier separates fire area 4-A-2 from fire area 4-A, with the only penetrations of this barrier being a 1-1/2 hour rated fire door and a single duct penetration (which is a continuation of the duct from fire area 3-BB) without a fire damper.

3. A 3-hour rated fire barrier separates fire area 4-A-2 from fire area 4-A-1, with no unprotected penetrations of the barrier.

4. The single duct passing through fire area 4-A-2 does not either supply or exhaust air from the area; it simply passes through the area without a ventilation opening. This duct is used solely to exhaust air from a fume hood in fire area 4-A, and a 1-1/2 hour rated fire damper is installed in the duct between the area 4-A-2 and the fume hood.

5. There is only about 0.5 ft^3 of exposed cable insulation in fire area 4-A-2 for an equivalent fire severity of under 6 minutes. The combustible loading for elevation 85 feet of fire area 3-BB is negligible. The combustible loading in fire area 3-B-1 is 370 BTU/ft^2 for an equivalent fire severity of under 0.5 minutes, and the combustible loading in fire area 4-A is 3740 BTU/ft^2 for an equivalent fire severity of under 3 minutes. Due to the limited access into fire areas 4-A-1 and 4-A-2, and combined with the lack of equipment requiring maintenance, transient combustible materials should not be located in these areas.

6. Automatic detection will be provided in fire area 4-A-2.

7. Based on the combustible loading in the fire areas which would impact on the barriers surrounding fire area 4-A-2, and on the combustible loading within fire area 4-A-2, the required rating of the fire barriers surrounding fire area 4-A-2 is about 30 minutes. Therefore, fire dampers are not required in ductwork penetrating the barriers of fire area 4-A-1.

8. Based on the information presented above, the required fire resistance ratings of the barriers currently separating fire area 4-A-2 from the adjacent fire areas is a maximum of 30 minutes.

Fire area 4-A-1 presently meets the definition of a fire area as contained within Appendix A. Installing fire dampers in the duct where it penetrates the walls of fire area 4-A-2 would not enhance to a significant degree the protection provided by the current configuration.

FIRE AREA: 4-B

TITLE: SHOWERS, LOCKERS AND ACCESS CONTROL

FIGURE: 3-7

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 4-B is the radiological control access area for Units 1 and 2. This area contains personnel showers, lockers, restrooms, offices, and storage areas. It is located in the southwest corner of the auxiliary building at elevation 85 feet.

This area is separated from adjacent fire areas by 3-hour fire rated barriers with the following exceptions.

1. The north wall of this area separating it from the chemical laboratory (fire area 4-A) is a 2-hour barrier with 1-1/2 hour rated fire doors with 1-1/2 hour fire dampers provided in all but four of the duct penetrations.

2. An unrated door communicates with stairway S-2 (fire area AB-1).

3. Equipment hatches with steel plate covers in the northwest and southwest corners of the ceiling of this fire area provide separation of this fire area from fire areas 5-A-4 and 5-B-4 above. (See exemption request for steel hatches page 29)

4. Ceiling penetrations fitted with steel covers communicate with fire areas 5-A-4 and 5-B-4.

5. A 1-1/2 hour rated door provides separation from stairway S-1.

6. Ventilation ducts without fire dampers penetrate the south wall of this area into the Unit 2 containment penetration area (Unit 2 fire area 3-CC).

Six safety-related conduits run above the ceiling of the office/equipment hatch area located at the northwest corner of this zone.

COMBUSTIBLES

Fire area 4-B has a floor area of approximately 6000 square feet. The in situ combustible loading within this fire zone is approximately 4590 BTU/ft^2 with an equivalent fire severity of 3.4 minutes. In situ combustible loading consists primarily of wood counters, electric cable insulation, and anti-contamination clothing and respirators.

Transient combustible loading is estimated to present an additional 4970 BTU/ft^2 with an equivalent severity of 3.7 minutes. Anticipated transient combustibles are Class A combustibles for radiological control activities and oils and solvents being brought into the auxiliary building for maintenance work.

MAJOR EQUIPMENT

Lockers
Lavatories
Offices
Radiological control monitors and equipment.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided in this area.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided throughout the fire area below the suspended ceiling. The water flow alarm annunciates in the continuously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 4-B

TITLE: SHOWERS, LOCKERS, and ACCESS CONTROL

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 4-B does not meet the requirements of Appendix R, Section III.G.2.in that there is an unrated door to stairway S-2 (fire area AB-1) in the northeast corner of the zone, fire dampers are not provided in five ventilation ducts in the north wall (above the drop ceiling) to fire area 4-A, and this area currently has no detection capability. Full area detection would be required by Section III.G.2(c) of Appendix R to complement both the 1-hour enclosure proposed to separate the redundant diesel generator fuel transfer pumps circuits and the complete automatic suppresion system located below the suspended ceiling in the fire area.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(c) of Appendix R, which requires an automatic detection system covering the entire fire area where a 1-hour enclosure and full area automatic suppression system are used to protect redundant trains of safe shutdown systems. The technical bases which justify the exemption request are detailed below.

1. While this fire area does not meet the strict interpretation of a fire area due to the unrated door to stairway S-2 (fire area AB-1) in the east wall, and five duct penetrations from fire area 4-A without dampers by the north wall separating the two areas,

the exposure hazard from the combustible loading is such that the door and duct work would not be seriously challenged by a fire.

The combustible loading in the fire area is 9650 BTU/ft^2 for an equivalent fire severity of 7.1 minutes. The toilet area in which the ventilation duct is located has a negligible combustible loading. The unrated door is at the end of a short corridor leading to stairway S-2 which, being a heavily traveled route into radiation controlled areas of the plant, should not have storage of large quantities of transient combustible materials. In addition, the ducts entering fire area 4-B from fire area 4-A have 1-1/2 hour fire dampers installed in the register in suspended ceiling within fire area 4-A.

2. Redundant circuits for the component cooling water (CCW) system, the auxiliary saltwater (ASW) system, the diesel generators, and the diesel generator fuel transfer pumps are all located above the suspended ceiling of an office area in the northwest corner of the fire area with less than 20 feet of separation between redundant circuits. Normally, one of the FCV 430 or 431 valves is open to provide a flow path for the CCW system. Because these valves will fail as is, the system will remain unaffected by a fire in this area. Manual operation capability of the ASW system valves is available outside of the fire area, and an alternate starting circuit for each diesel is routed outside of fire area 4-B. The only system which could be adversely affected by a fire in this area are the diesel generator fuel transfer pumps. This system will be protected by enclosing the conduit for diesel generator fuel transfer pump 0-2 in a 1-hour enclosure by extending the existing furred-out plaster wall to the concrete soffit above. This will effectively isolate transfer pumps 0-2 and 0-1 in 1-hour rated construction.

3. The small ceiling penetration fitted with steel covers communicating with fire areas 5-A-4 and 5-B-4 will be sealed with fire rated material to provide an appropriate fire rating.

4. A wet pipe automatic sprinkler system provides full area coverage of fire area 4-B.

5. An automatic fire detection system which alarms in the continuously manned control room will be installed within the office area in the northwest corner of fire area 4-B. This will ensure early detection of an incipient fire condition which can directly impact the redundant circuitry.

6. Portable fire extinguishers located within fire areas 4-B and portable fire extinguishers and fire hose stations in adjacent areas.

7. Ventilation duct penetrations into the Unit 2 penetration area have the same characteristics as their Unit 1 counterparts and will be addressed in the Unit 2 submittal.

8. The addition of detection capability in the locker room, shower, and access control portions of fire area 4-B will not enhance the protection provided by the current configuration and the proposed modifications to a significant degree.

FIRE AREA: 5-A-4

TITLE: HOT SHUTDOWN PANEL AND NON VITAL SWITCHGEAR ROOM AREA

FIGURE: 3-8

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 5-A-4 is located in the northwest corner of the auxiliary building at elevation 104 feet. This area is separated by-3 hour rated fire barriers from fire areas 4-A, 4-A-2 and 4-B on elevation 85 feet; from fire areas 3-B-1, 3-BB, AB-1 (Zones 3-X and S-2), 5-A-1, 5-A-2, 5-A-3, 5-B-4, and fire zones S-1, and S-5 on elevation 104 feet; and from fire areas 6-A-1, 6-A-2, 6-A-3, 6-A-4 and 6-A-5 on elevation 115 feet, with the following exceptions.

1. Equipment access openings, with unrated 1-inch thick steel hatchs, are located in the floor and ceiling in the northwest corner of this area communicating with fire areas 4-B below and 6-A-5 above. (See exemption request for steel hatches page 29)

2. A ventilation register without a fire damper in the west wall communicates with stairway S-1.

3. Three-hour rated doors with filled metal panels in the walls communicate with fire areas 5-A-1 and 5-A-3. (See exemption request on fire doors.)

4. A ventilation duct penetrates the walls of fire areas 5-A-1, 5-A-2 and 5-A-3. The ducts and support are proofed to achieve a 1-hour fire rating as it passes through fire areas 5-A-1, 5-A-2,

and 5-A-3 with 1-1/2 hour rated fire dampers in the registers at the ceilings of these three areas.

5. Duct penetrations with fire dampers and a 1-1/2 hour rated door in the wall communicate with stairway S-5.

6. Duct penetrations without fire dampers in the ceiling's northwest corner communicate with fire area 6-A-5.

The area ventilation ducting and supports are fireproofed with a 1-hour rated coating.

COMBUSTIBLES

The in situ combustible loading in fire area 5-A-4 is approximately 25,167 BTU/ft^2 or an equivalent severity of 19 minutes. This loading is evenly distributed over the entire area of 2702 square feet. In situ combustible loading consists primarily of cable in raceways.

Transient combustible loading is estimated to present an additional 2803 Btu/ft^2 or an equivalent severity of 2 minutes. This loading will include cable, paper, rags and solvents.

MAJOR EQUIPMENT

Safe shutdown equipment in this area consists of the hot shutdown panel.

Other equipment in this area consists of 480V nonvital switchgear and its ventilation system.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room..

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and both fire and CO_2 hose stations is available for this area.

FIRE AREA: 5-A-4

TITLE: HOT SHUTDOWN PANEL AND NON-VITAL SWITCHGEAR ROOM AREA

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 5-A-4 does not meet the requirements of Appendix R, Section III.G.3 in that a fixed suppression system is not provided in the fire area. The fire area contains the hot shutdown panels, which provide alternate shutdown capabilities should a fire occur in the control room. In the same respect, the control room provides alternate shutdown capability should a fire occur in fire area 5-A-4, thereby necessitating this exemption request against the requirements of Section III.G.3.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.3 of Appendix R, which requires a fixed suppression system in any fire area which utilizes an alternate or dedicated shutdown system. The technical bases which justify the exemption are detailed below.

1. Fire area 5-A-4 presently meets the separation requirements for a fire area as defined in Appendix A of BTP 9.5-1. All fire barriers are 3-hour rated, except as noted above in physical characteristics.

2. The combustible loading in fire area 5-A-4 results in an equivalent fire severity of 21 minutes. Fire area 4-B on elevation 85 feet has an equivalent fire severity of 7.1 minutes. Fire area 6-A-5 on elevation 115 feet has an equivalent fire severity of 9 minutes. Because of the minimal in situ combustible loading and the existing

designation of the areas (4-B, 5-A-4 and 6-A-5) in the immediate vicinity of the 1-inch thick steel hatches as "No Storage," the propagation of fire to the referenced fire areas via the steel hatches is unlikely.

3. Automatic smoke detection is provided in the fire area and inside the hot shutdown panel, and alarms in the continuously manned control room.

4. Manual fire fighting capability is provided for this fire area in the form of fire hose stations, CO_2 hose reels and portable fire extinguishers in the fire area and in adjacent areas.

5. An isolator will be provided on each diesel generator RPM tach-pack to preclude a trip of the diesel generators due to a fire-induced circuit failure of the RPM indication circuitry.

6. The control switch associated with ASW pump 1-1 will be switched to a normally cut out position to prevent loss of control from the control room.

7. The addition of a fixed suppression system would not enhance to a significant degree the protection of safe shutdown functions provided by the current configuration.

FIRE AREA: 6-A-5

TITLE: ELECTRICAL AREA WEST OF BATTERY ROOM

FIGURE: 3-9

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 6-A-5 is located in the northwest corner of the auxiliary building at elevation 115 feet, just west of the F bus battery inverter and dc switchgear room, (fire area 6-A-1). The fire area walls, floor and ceiling are 3-hour rated fire barriers with the following exceptions:

1. Equipment access openings, with unrated 1-inch thick steel hatchs, are located in the floor and ceiling in the northwest corner of this area communicating with fire areas 5-A-4 below and 7-A above. (See exemption request for steel hatches page 29)

2. A duct without a fire damper in the wall communicates with stairway S-1.

3. Duct penetrations without fire dampers penetrate the walls of fire areas 6-A-1, 6-A-2, and 6-A-3, passing into fire area 6-A-4. The ducts and support are fire proofed to achieve a 1-hour fire rating as it passes through fire areas 6-A-1, 6-A-2, and 6-A-3 with 1-1/2 hour rated fire dampers in the registers at the ceilings of these three areas.

4. Duct penetrations without fire dampers communicate with fire area TB-7.

5. Duct penetrations without fire dampers in the floor communicate with fire area 5-A-4.

The area ventilation ducting and supports are fireproofed with a 1-hour rated coating.

COMBUSTIBLES

Fire area 6-A-5 of this fire area has an approximate floor area of about 575 square feet. The in situ combustible loading within this fire area is approximately 11,960 BTU/ft^2 with an equivalent fire severity of 9 minutes. In situ combustible loading is comprised primarily of electrical cable insulation and small amounts of lubricating oil.

Transient combustible loading is estimated to present no additional increase in fire load since this area is designated a "No Storage" area.

MAJOR EQUIPMENT

Fire area 6-A-5 contains the non-vital computer inverter. This equipment is not required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and CO_2 hose stations is available for this area.

FIRE AREA: 6-A-5

TITLE: ELECTRICAL AREA WEST OF BATTERY ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 6-A-5 does not meet the requirements of Appendix R, Section III.G.2 in that ducts without fire dampers penetrate the west wall of the fire area and floor of this fire area into fire area 5-A-4.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2 of Appendix R which requires dampers to be placed in ductwork penetrating the boundary fire barriers. The technical bases which justify the exemption request are detailed below:

1. Except for the duct penetrations without fire dampers, all fire barriers and penetrations are either 3-hour fire rated or, as is the case with a 1-inch thick steel hatch in the floor to fire area 5-A-4, have been previously accepted as providing a level of protection equivalent to the hazard in the area (see hatch exemption request page 29).

2. While no fire dampers are in the two duct penetrations into fire area 5-A-4, the ducts in the subject fire area and fire area 5-A-4 have been coated with materials to achieve a 1-hour fire rating.

3. The duct that penetrates into stairway S-1 is to a fire area with a negligible fuel loading. The ducts that penetrate into fire area TB-7 would only be exposed to a combustible loading of under 18 minutes in zone 14-A and 9 minutes in fire area 6-A-5. As can be seen from the fire severities exposing the barriers that are penetrated by the ductwork, fire barriers with ratings of more than 1 hour are not required.

4. Automatic smoke detection is provided in fire area 6-A-5 and alarms in the continuously manned control room.

5. Automatic suppression is provided in fire area TB-7 including the vicinity of the duct penetrations from fire area 6-A-5.

6. A fire hose station is available in fire area 6-A-5 for manual fire fighting purposes.

7. The addition of fire dampers in the ductwork penetrating the boundary fire barriers of this fire area would not enhance to a significant degree the protection provided by the current configuration.

FIRE AREA: 7-A

TITLE: CABLE SPREADING ROOM (UNIT 1)

FIGURE 3-11

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 7-A has numerous vital control and indication circuits necessary for safe shutdown routed through this area.

This fire area is located directly under the control room at elevation 127 feet in the auxiliary building. The walls, floor, and ceiling of this fire area are 3-hour rated fire barriers with the following exceptions.

1. The doors to the communications room (fire area 7-C) and stairway (S-5) are 1-1/2 hour rated doors.

2. A 1-1/2 hour rated ventilation exhaust duct fire damper separates this fire area from a concrete encased ventilation exhaust plenum in stairway S-1.

3. A hatch with a 1-inch thick steel cover is located in the floor in the west end of this area which communicates with fire area 6-A-5 below.

Fire area 7-A is separated to the south from the Unit 2 cable spreading room (fire area 7-B) by 3-hour rated walls with 3-hour rated doors. All electrical penetrations in the cable spreading room barriers have 3-hour rated penetration seals.

COMBUSTIBLES

Fire area 7-A has an approximate floor area of about 3650 square feet. The in situ combustible loading within this fire area is approximately 55,900 BTU/ft^2 with an equivalent fire severity of 42 minutes. In situ combustible loading is comprised of electric cable insulation in cable trays.

Transient combustible loading is estimated to present no significant increase in fire load.

MAJOR EQUIPMENT

The major equipment in this area includes the reactor protection sets, other electrical cabinets, and cable trays and steel conduits containing cabling that feeds into the control room.

For listing of raceway requied for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area.

SUPPRESSION

A heat actuated, automatic total flooding CO_2 fire suppression system is provided for this area.

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 7-A

TITLE: CABLE SPREADING ROOM (UNIT 1)

DESCRIPTION OF MODIFICATIONS

STATEMENT OF PROBLEM

Failure of the control room diesel generator alarm reset circuit could impair local control capability for the diesel generators.

Failure of the control circuit of the pressurizer PORV block valves 8000A, B and C could impair the capability to close these valves.

Either of these two conditions could degrade the alternate shutdown system.

PROPOSED MODIFICATIONS

An isolation contact will be provided in the diesel generator local control panel to isolate the alarm reset circuit from the control room.

A disconnect switch for PCV-455C, 456 and 474 will be provided at the hot shutdown panel. This will ensure that these valves can be failed closed in the event a hot short due to a postulated fire in the cable spreading room causes them to open prematurely.

FIRE AREA: 11-D

TITLE: CORRIDOR OUTSIDE DIESEL GENERATOR ROOM

FIGURE: 3-1

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 11-D is a corridor at elevation 85 feet in the turbine building that separates the diesel generator rooms from fire area 10.

The corridor is separated from all other fire areas by 3-hour rated barriers, with the following exceptions:

1. An unrated access hatch to fire zone 11-C-2 at elevation 85 feet.

2. A duct penetration without fire dampers from fire area 12-B above into fire area 10.

3. The door opening to the outdoors (fire area 28) at the north end of the area is an unrated metal door.

COMBUSTIBLES

Fire area 11-D has an approximate floor area of about 624 square feet. The in situ combustible loading within this fire zone is negligible since cables are in conduit.

Transient combustible loading is estimated to present an additional 16,050 BTU/ft^2 with an equivalent severity of 12 minutes. Anticipated transient combustibles are lubricating oil to the top off the diesel generator lube oil systems and solvent and rags for component cleaning.

Due to the possibility of transient combustibles in this corridor, safe shutdown trains are enclosed in a 2-hour rated fire barriers to isolate vital F, G, and H conduits from a fire in this area.

MAJOR EQUIPMENT

Although no safety related equipment is housed in this fire area, vital F, G, & H bus circuitry associated with diesel generators 1-1, 1-2, & 1-3 and diesel fuel transfer pumps 0-1 and 0-2 are located in this area. Diesel generator emergency stop switches are also located in this area.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided for this area.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided in this area. The waterflow alarm annunciates in the continuously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 11-D

TITLE: CORRIDOR OUTSIDE DIESEL GENERATOR ROOM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 11-D does not meet the requirements of Appendix R, Section III.G.2. The fire area contains circuitry associated with diesel generators 1-1, 1-2, and 1-3 and diesel fuel transfer pumps 0-1 and 0-2. These circuits are separated by less than 20 feet. These circuits are or will be enclosed by a barrier with a fire rating of at least 2 hours. A duct without fire dampers penetrates down from the area 12-B to fire area 10. Full area suppression is provided, however, detection is not.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(c) requiring full area detection. The technical bases which support this exemption request are itemized below.

1. A 2-hour rated fire barrier encloses the power and control circuitry for each diesel generator.

2. Circuits for diesel generator 1-1, 1-2, and 1-3 low speed indication will be provided with isolators for the RPM tach-pack unit to preclude tripping the diesel generator due to a short circuit of this indication circuitry.

3. Emergency stop push button switches for diesel generators 1-1 and 1-2 will be enclosed in a 1-hour barrier to prevent a short across the push button contact from prematurely tripping the diesel.

4. Automatic suppression is provided for the entire area.

5. The in situ combustible consisting primarily of cable insulation is enclosed in 2-hour fire rated construction representing a negligible fire loading. The estimated combustible loading due to transient combustible is estimated to be 16,050 BTU/ft^2 with an equivalent severity of 12 minutes.

6. The presence of the automatic suppression system, combined with the level of protection provided by the sheet metal duct, limits the potential for a fire in fire areas TB-5, 11-D, or 10 from affecting the adjoining areas through ductwork without fire dampers.

7. Manual fire suppression capabilities are available in this and adjacent areas.

8. The addition of a fire detection system or dampers in the duct connecting fire area 11-D with fire areas 10 and 13-E would not enhance to a significant degree the protection of safe shutdown functions provided by the current configuration.

FIRE AREA: 13-E

TITLE: 4.16kV SWITCHGEAR VENTILATION FAN ROOM

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 13E is located at the north end of the turbine building at elevations 107 and 119 feet.

The 4.16kV switchgear ventilation air intake plenum is an irregular shaped area at elevation 107 feet providing an air flow path from the open louvers in the west wall to the open ventilation hatch in the southeast corner of the ceiling.

The 4.16kV switchgear ventilation supply fans are located in this area at elevation 119 feet. The air supply for these fans is from the elevation 107 feet air plenum via the open ventilation hatch located in the southwest corner of the floor. These fans supply ventilation air through ductwork without fire dampers to fire areas TB-4, TB-5, TB-6, TB-7, and 10. The ducting to fire area 10 is routed from fire area 13-E through fire areas TB-5 and 11-D below.

This fire area is separated by 3-hour fire rated barriers from fire areas TB-1, TB-2, TB-3, TB-4, 13-D, 13-F, and TB-7 with the following exceptions.

1. The unrated metal personnel and equipment hatches in the irregularly shaped wall separate this area from fire area TB-1, TB-2, and TB-3.

2. A 1-1/2 hour rated door in the east wall separates this area from fire area TB-4.

3. Open louvers on the west wall communicating with the outside.

4. One and one-half hour rated fire doors and dampers communicate with fire area 13-F.

5. One and one-half hour rated fire doors and ducts without fire dampers communicate with fire area 13-D.

6. Ducts without fire dampers communicate with fire areas TB-4, TB-5, TB-6, and TB-7.

7. An unrated north wall provides separation from fire area 28 (outside).

8. An unsealed diesel exhaust stack communicates with fire area TB-7 above.

COMBUSTIBLES

Fire area 13-E has an estimated floor area of about 1350 square feet. The in situ combustible loading within this fire area is approximately 754 BTU/ft^2 with an equivalent fire severity of 0.6 minutes. In situ combustible loading is comprised primarily of grease, filters, cable and fan belts.

Transient combustible loading is estimated to present an additional 1566 BTU/ft^2 with an increased severity of 1.2 minutes. Anticipated transient combustibles are solvent and rags used for maintenance cleaning and extra grease and roughing filters.

MAJOR EQUIPMENT

Fire area 13-E contains six switchgear ventilation air supply fans. These fans are not required for safe shutdown as portable fans are available in the event these fans are unavailable due to a fire.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this zone on elevation 119 feet and alarms in the continuously manned control room.

SUPPRESSION

A wet pipe automatic sprinkler system is located on elevation 119 feet of this fire area. The water flow alarm annunciates in the continuously manned control room. Manual fire suppression capability consisting of fire hose stations, CO_2 hose station and portable extinguishers are available.

FIRE AREA: 13-E

TITLE: SWITCHGEAR VENTILATION FOR ROOM AND AIR INTAKE PLENUM

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 13-E does not meet the requirements of Appendix R, Section III.G.2.(a) in that ducts without fire dampers penetrate into fire areas TB-4, TB-5, TB-6, TB-7, and 13-D and unrated personnel and equipment hatches are provided in the barriers of fire areas TB-1, TB-2, and TB-3.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R, which requires fire barriers to include appropriately rated dampers and doors. The technical bases which justify the exemption are detailed below.

1. Fire area 13-E is separated from other interior fire areas and zones by minimum 3-hour rated fire walls. A vent opening approximately 160 square feet in the floor of the area connects the fan room of fire area 13-E at elevation 119 feet with the plenum room of the fire area 13-E at elevation 107 feet. The floor of the plenum room, the ceiling of the fan room and the south wall of both are 3-hour rated. The diesel generator 1-3 exhaust stack penetration will be sealed to provide a 3-hour rated barrier. The north wall of both elevations and the west wall of the plenum room are unrated exterior walls.

2. The total in situ combustible loading in fire zone 13-E is located on elevation 119 feet and consists primarily of

lubricants in the fans and motors and filters; transient combustibles are more likely to be located in the fan room at elevation 119 feet than in the plenum room at elevation 107 feet due to security considerations and the limited maintenance requirements in the diesel generator exhaust silencers areas (TB-1, TB-3, and TB-3) accessible from this room. The total combustible loading, which is made up entirely of the combustibles in the fan room, is under 2 minutes.

3. The sheet metal personnel and equipment hatches on elevation 107 feet which provide access from fire area 13-E into area TB-2 will be coated with materials to achieve a minimum one-hour rating. With this modification, a spatial separation of at least 20 feet with no intervening combustibles, will be provided between fire areas TB-1 and TB-3.

4. An automatic smoke detection system is provided on elevation 119 feet of this fire area, and alarms in the continuously manned control room.

5. A wet pipe automatic sprinkler system is located in the fan room on elevation 119 feet, which, as previously described, is the elevation of this fire area where the combustible loading is located. While automatic suppression is not provided in the plenum room on elevation 107 feet, sprinklers in the fan room are located above the vent opening to the plenum room.

6. A fire hose station and portable fire extinguisher are located in the fan room. In addition, a CO_2 hose reel is located in an adjacent zone for manual fire suppression use.

7. Providing additional fire dampers (see proposed modifications for fire areas TB-4, TB-5, and TB-6) and upgrading the hatches and doors to a 3-hour rating would not enhance to a significant degree the protection provided by the currently proposed configuration.

FIRE AREA: 14-E

TITLE: COMPONENT COOLING WATER HEAT EXCHANGER ROOM

FIGURE: 3-1 and 3-28

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area 14-E is located in the southeast corner of the Unit 1 turbine building at elevation 85 feet. This area is separated from fire area 14-A by a 3-hour rated barrier. This barrier is constructed of reinforced concrete walls, concrete block walls, thick steel guard plates fire proofed with pyrocrete 102, and 3-hour rated fire doors, dampers and penetration seals. The south end of this fire area extends above the 3-hour rated ceiling of the sprinklered entry corridor that separates the machine shop from the machinery area of the turbine building. This fire area is separated from fire zone 16 by a 3-hour rated fire barrier.

COMBUSTIBLES

The in situ combustible loading in fire area 14-E is approximately 16,000 BTU/ft^2 for an equivalent fire severity of 12 minutes. It is evenly distributed over an area of approximately 1700 square feet. In situ combustibles are primarily cables in trays.

Anticipated transient combustibles include cable, rags and solvents for cleaning, paper procedures and drawings. Transients are expected to add about 4660 BTU/ft^2 loading with an increased severity of 3.5 minutes.

MAJOR EQUIPMENT

The equipment in this zone is limited to the two component cooling water heat exchangers and three motor operated and two air operated valves associated with the component cooling water system and auxiliary saltwater system for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout this area and alarms in the continuously manned control room.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided throughout this area and the water flow alarm annunciates in the continuously manned control room.

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREA: 14-E

TITLE: COMPONENT COOLING WATER HEAT EXCHANGERS

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area 14-E does not meet the requirements of Appendix R, Section III.G.2(c) in that a 1-hour enclosure is not provided around one train of redundant safe shutdown systems. The diesel generator 1-2 and 1-3 tachometer indication circuits are run in conduit within 5 feet of each other. Auxiliary saltwater valves FCV 602 and FCV 603 and the associated conduits are located less than 10 feet apart. Component cooling water motor operated valves FCV 430 and FCV 431 and the associated conduits are located less than 20 feet apart and the component cooling water heat exchangers are less than 5 feet apart.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(c) of Appendix R which requires 1-hour rated enclosures around one train of redundant safe shutdown systems. The technical bases which support the exemption request are detailed below.

1. The combustible loading is approximately 20,660 BTU/ft^2 for an equivalent fire severity of under 16 minutes.

2. The upper portion of the south end of the fire area extends over an entry corridor to the plant; however, there are no in situ combustibles in the corridor and due to the limited width of this high traffic corridor, transient combustible storage is not expected.

3. A wet pipe automatic sprinkler system protects the entire area.

4. An automatic ionization smoke detection system is provided in the area which alarms in the continuously manned control room.

5. Isolation for the diesel generator tachometer indication circuits will be provided to prevent diesel generator trip due to the failure of the diesel generator tachometer circuit.

6. Failure of the valve circuits to the auxiliary saltwater valves would cause the valves to remain in the closed position, thereby losing auxiliary saltwater to the component cooling water heat exchangers. However, manual action can be taken to open either or both valves by removing air supply to the valves locally.

7. Failure of the valve circuits to the component cooling water motor operated valves will fail the valves as is. One of the two redundant valves is normally open and one is normally closed; flow through only one component cooling water heat exchanger is required for safe shutdown.

8. A reinforced concrete missle shield separates the redundant heat exchangers, and extends approximately 2.5 feet beyond the ends of the heat exchangers.

9. A fire hose station within the fire area and portable extinguishers in fire zone 14-A are available for manual fire fighting purposes.

10. Providing a 1-hour enclosure around the heat exchangers and the valve circuits for the auxiliary saltwater and component cooling water valves would not enhance to a significant degree the protection provided by the current configuration.

FIRE AREAS: 30-A-1 and 30-A-2
TITLE: AUXILIARY SALTWATER PUMPS 1-1 AND 1-2
FIGURE: 3-12

AREA DESCRIPTION

Fire area 30-A-1 houses auxiliary saltwater pump 1-1, located in the intake structure. (The area description and exemption request for fire area 30-A-1 are identical to that of fire area 30-A-2, which houses the redundant auxiliary saltwater pump 1-2. Conditions described in this section apply to both fire areas.)

PHYSICAL CHARACTERISTICS

This area is bounded by 3-hour fire barriers, including a common wall to fire area 30-A-2, and has a unrated-steel watertight door facing southwest to fire area 30-A-5 (see Dwg. No. 10024 attached). This door is equipped with a security alarm in the control room to ensure the door is closed. The ceiling of this area is penetrated by an open metal ventilation stack to the outside and a 3-hour rated concrete plug to the outside.

The power supply to the auxiliary saltwater pump and its associated exhaust fan is separated from the redundant train by the 3-hour rated fire barriers and the watertight doors. Furthermore, each unit has two auxiliary saltwater pumps, only one of which per unit is required for safe shutdown, and the auxiliary saltwater systems can be cross-connected between units.

COMBUSTIBLES

Fire areas 30-A-1 and 30-A-2 have an approximate floor area of about 160 ft^2 each. The in situ combustible loading within these fire

areas is approximately 1700 BTU/ft^2 with an equivalent fire severity of 1.2 minutes. In situ combustible loading is comprised primarily of lubricating oil and a rubber boot on the pump discharge.

Transient combustible loading is estimated to present an additional 3100 BTU/ft^2 with an increased severity of 2.3 minutes to each area. Anticipated transient combustibles are lubricating oil, a wood ladder and grease.

MAJOR EQUIPMENT

30-A-1 - This fire area houses auxiliary saltwater pump 1-1. This equipment is required for safe shutdown.

30-A-2 - This fire area houses auxiliary saltwater pump 1-2. This equipmment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided immediately outside of the entry to these areas and alarms in the continuously manned control room.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for these areas.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire areas 30-A-1 and 30-A-2 do not meet the requirements of Appendix R, Section III.G.2. The fire areas are separated from each other by a 3-hour rated enclosure. However, an unrated steel watertight door is provided for access to both pump vaults from the adjoining fire area, IS-1.

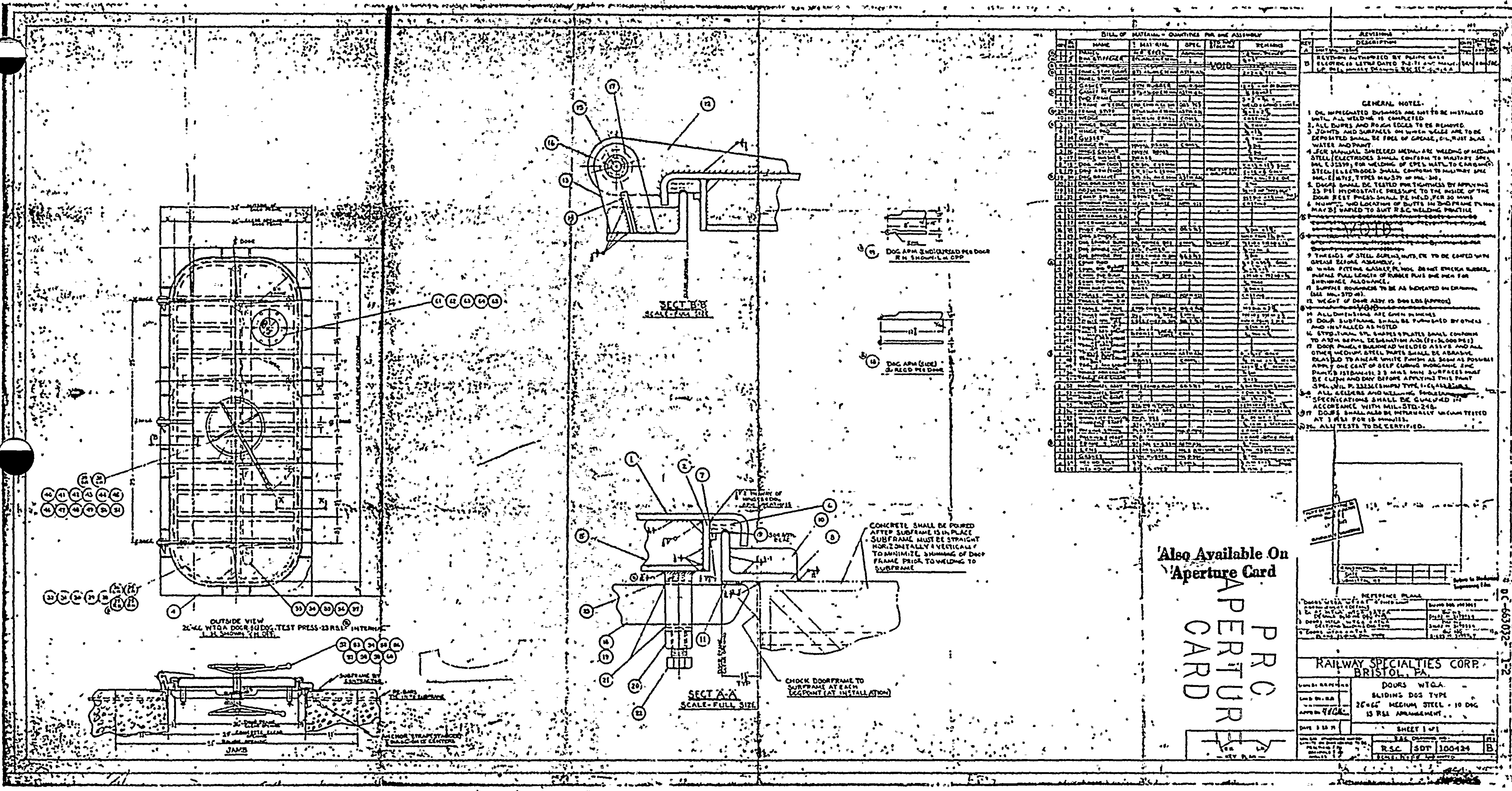
BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(a) requiring 3-hour rated fire barriers with door openings protected by 3-hour rated doors. The technical bases which support this exemption are itemized below.

1. The door is fabricated of about 1/2-inch steel with a wire glass circular view plate under 30 square inches in area (see Dwg. No. 100424 attached).

2. The in situ combustible loading for each of fire areas 30-A-1 and 30-A-2 is approximately 1700 BTU/ft^2. The in situ combustible loading in adjacent fire zone 30-A-5 is approximately 540 BTU/ft^2. When the estimated transient combustible loading is added, the combustible loadings are under 4000 BTU/ft^2 and 2000 BTU/ft^2 respectively. Based on the combustible loadings, an exposure fire is not likely to have an adverse effect on the watertight doors.

3. Replacing the unrated watertight door with a rated fire door in fire area 30-A-1 or 30-A-2 would not enhance to a significant degree the protection of the safe shutdown equipment provided by the current configuration.



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FIRE AREA: 35-A and 35-B

TITLE: DIESEL FUEL OIL TRANSFER PUMP VAULTS 0-1 and 0-2

FIGURE: 3-29

AREA DESCRIPTION

Fire areas 35-A and 35-B house diesel fuel oil transfer pumps 0-1 (Fire area 35-A) and 0-2 (Fire area 35-B), associated fuel oil piping, and power and control circuitry. These areas lie under the turbine building seismic buttress support below elevation 85 feet, which houses the condensate polishing system. Conditions described in this section apply to both fire areas.

PHYSICAL CHARACTERISTICS

Each fire area is bounded by minimum 3-hour rated barriers with the following exceptions:

1. A curbed personnel hatch in the ceiling of each area communicates with the buttress area above. A 3/8-inch thick, locked steel cover protects these openings.

2. Concrete hatches provide restricted access to the areas for equipment removal. Caulked gaps of approximately 1/4 inch in width may exist between the concrete hatch pieces.

3. Each fire area communicates with the associated fuel oil piping trench through an open pipeway (less than 30 square inch area). The pipe trench associated with pump 0-1 is separated from the pipe trench for pump 0-2 by a 6 inch reinforced concrete vertical barrier. A single pipe penetration in this barrier is sealed. Each pipe trench is provided with concrete trench covers.

COMBUSTIBLES

Each fire area contains an approximate floor area of 110 ft^2. In situ combustible loading in fire area is approximately 141,370 BTU/ft^2 with an equivalent severity of 106 minutes and is comprised of fuel oil in the pump, piping, strainers, and filter. Transient combustible loading in each fire area will include small quantities of rags and solvents for cleaning. Transients are expected to add about 19,370 BTU/ft^2 or an equivalent severity of 14.6 minutes to each fire.

MAJOR EQUIPMENT

The major equipment in each fire area consists of a diesel fuel oil transfer pump, fuel oil filters, strainers, piping and valves. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided for these fire areas.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this area.

FIRE AREAS: 35-A and B

TITLE: DIESEL FUEL OIL TRANSFER PUMP VAULTS

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire areas 35-A and 35-B do not meet the requirements of Appendix R, Section III.G.2. Each fire area is below the 85 foot elevation and is a 3-hour rated concrete vault except for a curbed personnel hatch with a 3/8 inch thick steel cover, and gaps between concrete equipment hatches. Area 35-A is separated from 35-B by 13 feet with the connecting covered piping trenches blocked by a 3-hour rated barrier.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(a) which requires 3-hour rated fire barriers with appropriately rated doors and fire dampers. The technical bases which support this exemption request are itemized below.

1. The combustible loading in each fire area is 161,000 BTU/ft^2 with an equivalent severity of approximately 120.6 minutes. As each fire area is bounded by mostly 3-hour rated barriers and the limited opening through the open pipeway (each pipe trench has concrete covers and are separated by a vertical barrier), the air supply necessary to support continued combustion with an area is very restricted. Should oil leakage and ignition occur, an oxygen-controlled fire would occur.

2. A smoky fire, as described above, would be visually detected by personnel in, or near, the condensate demineralizer area or by security cameras surveying the area outside. Due to security requirements, a security guard will be posted in the immediate area whenever the personnel hatch cover or concrete equipment hatch pieces are removed.

3. The steel hatch covers are separated by over 25 feet with an intervening concrete buttress wall and noncombustible equipment (tanks, piping, etc).

4. Curbing around the personnel hatch and the caulked equipment hatch pieces would prevent a liquid spill from entering the fire areas.

5. The common area above fire areas 35-A and 35-B contains negligible exposed in situ combustibles and limited potential for transient storage due to the equipment arrangement. Any exposure fire would produce limited damage to the steel hatches at elevation 85 feet.

6. The addition of a 3-hour rated barrier for the personnel hatch cover would not significantly enhance the level of protection provided by the current configuration.

FIRE AREA: AB-1

TITLE: MISCELLANEOUS - AUXILIARY BUILDING AND FUEL HANDLING BUILDING

FIGURES: 3-5, 3-6, 3-7 3-8, 3-9, 3-10, 3-11

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area AB-1 is composed of numerous zones. This area encompasses the main portion of the auxiliary building from elevation 54 to 140 feet and fuel pool and machine shop areas of the fuel handling building from elevation 99 to 140 feet.

a. 3-A, Liquid Holdup Tanks
b. 3-B-3, Unit 1 Boron Injection Tank Room
c. 3-C, Drain Receiving and Gas Decay Tanks
d. 3-D-3, Unit 2 Boron Injection Tank Room
e. 3-F, Unit 1 Containment Spray Pump Area
f. 3-G, Unit 2 Containment Spray Pump Area
g. 3-J-1, Unit 1 Component Cooling Water Pump 1-1 Area
h. 3-J-2, Unit 1 Component Cooling Water Pump 1-2 Area
i. 3-J-3, Unit 1 Component Cooling Water Pump 1-3 Area
j. 3-K-1, Unit 2 Component Cooling Water Pump 2-1 Area
k. 3-K-2, Unit 2 Component Cooling Water Pump 2-2 Area
l. 3-K-3, Unit 2 Component Cooling Water Pump 2-3 Area
m. 3-L, Boric Acid and Waste Evaporators
n. 3-M, Unit 1 Safety Injection Pump Area
o. 3-N, Unit 2 Safety Injection Pump Area
p. 3-Q-2, Unit 1 Motor-Driven Auxiliary Feedwater Pumps

q. 3-R, Unit 1 New and Spent Fuel Storage

r. .3-S, Hot Shop

s. 3-T-2, Unit 2 Motor-Driven Auxiliary Feedwater Pumps

t. 3-W, Unit 2 New and Spent Fuel Storage

u. 3-X, Boric Acid Transfer Pumps and CVCS Demineralizers

v. 3-AA, Boric Acid Tanks Area

w. 8-B-1, Unit 1 Area-K Aux. Building Ventilation Supply Fan Room

x. 8-B-2, Unit 2 Area-K Aux. Building Ventilation Supply Fan Room

y. S-2, Stair Tower

z. S-3 and S-4, Stair Tower

Numerous unprotected vents, equipment hatches, manways, ducts, pipeways, electric raceways, and diverse openings communicate between different zones.

Fire Zone 3-A, Liquid Holdup Tanks

Fire zone 3-A is located in the east end of the auxiliary building at elevation 55 to 115 feet. This zone is separated from other fire areas by 3-hour barriers with the following exceptions.

1. Two-hour rated plaster on metal lath panels providing separation at elevation 85 feet from fire zones 3-P-3 (fire area V-1) and 3-V-3 (3-P-3 counter part in Unit 2).

2. Duct penetrations without fire dampers communicate with fire zones 3-P-3, and 3-V-3, at elevation 85 feet.

Fire Zone 3-B-3, Unit 1 Boron Injection Tank Room

Fire zone 3-B-3 is located on the north side of the auxiliary building at elevation 64 feet. This zone is separated from other fire areas by 3-hour rated barriers with the following exceptions.

1. Duct penetrations without fire dampers communicate with fire areas 3-B-1 and 3-B-2.

2. One and one-half hour rated doors providing separation from fire areas 3-B-1 and 3-B-2.

Fire Zone 3-C, Drain Receiving and Gas Decay Tanks

Fire zone 3-C is located in the main portion of the auxiliary building at elevations 54, 64, and 75 feet. This zone is separated from other fire areas and zones by 3-hour rated barriers with the following exceptions.

1. Open overflow penetrations communicate with fire areas 3-B-1, 3-B-2, 3-D-1, 3-D-2 on elevation 54 feet.

2. Doorway openings communicate with fire zones 3-J-1, 3-J-2, 3-J-3, 3-K-1, 3-K-2, and 3-K-3 at elevation 75 feet.

3. Duct penetrations without fire dampers communicate with fire areas 3-H-1, 3-H-2, 3-I-1, and 3-I-2 at elevation 75 feet.

4. One and one-half hour rated doors provide separation from fire areas 3-H-1 and 3-I-1 at elevation 75 feet.

Fire Zone 3-D-3, Unit 2 Boron Injection Tank Room

Fire zone 3-D-3 is located on the south side of the auxiliary building at elevation 64 feet and is equivalent to its Unit 1 counterpart (fire zone 3-B-3).

Fire Zone 3-F, Unit 1 Containment Spray Pump Area

Fire zone 3-F is located in the northeast corner of the auxiliary building at elevation 75 feet. This zone is separated from fire areas 3-B-2, 3-H-2, 3-P-3, and 3-BB, by 3-hour rated barriers at elevations 64, 75, and 85 feet with the following exceptions.

1. Duct penetrations without fire dampers communicate with fire area 3-P-3 at elevation 64 and 75 feet.

2. A doorway opening communicates with fire area 3-H-2 (at elevation 75 feet).

Fire Zone 3-G, Unit 2 Containment Spray Pump Area

Fire zone 3-G is located in the southeast corner of the auxiliary building at elevation 75 feet, and is equivalent to its Unit 1 counterpart (fire zone 3-F).

Fire Zones 3-J-1, 3-J-2, and 3-J-3, Unit 1 Component Cooling Water Pump Areas

These fire zones are located in the northwest corner of the auxiliary building at elevation 75 feet. In fire zone 3-J-1, the walls to the north and west are 3-hour rated barriers, and the wall to the east is a 3-hour rated barrier with an unsealed pipe penetration and duct penetrations without fire dampers. In fire zone 3-J-2, the north wall is a 3-hour rated barrier and the east and west walls are 3-hour rated barriers with unsealed pipe and duct penetrations without fire dampers. In fire zone 3-J-3 the wall to the west is a 3-hour rated barrier with unsealed pipe penetrations and duct penetrations without fire dampers. The wall to the east is a 3-hour rated barrier, and the wall to the north will be a 3-hour rated barrier. The south sides of 3-J-1, 3-J-2, and 3-J-3, are open

to zone 3-C (Figure 3-17). Each of these openings is provided with an approximately 4-inch high curb to prevent oil spillage from communicating between zones.

Fire Zone 3-K-1, 3-K-2, and 3-K-3, Unit 2 Component Cooling Water Pump Areas

Fire zone 3-K-1, 3-K-2, and 3-K-3 are located in the southwest corner of the auxiliary building at elevation 75 feet and are equivalent to their Unit 1 counterparts (fire zone 3-J-1, 3-J-2, and 3-J-3).

Fire Zone 3-L, Boric Acid and Waste Evaporators

Fire zone 3-L is located at the west end of the auxiliary building at elevations 85 and 115 feet. The zone is separated by 3-hour rated barriers from fire areas 3-B-1, 3-B-2, 3-D-1, 3-D-2, 3-H-1, 3-H-2, 3-I-1, 3-I-2, 3-P-3, 3-V-3, and 3-BB, and the Unit 2 penetration area at elevations 75, 85, 104, and 115 feet with the following exceptions.

1. Duct penetrations without fire dampers communicate with fire zones 3-P-3 (fire area V-1) and 3-V-3 (Unit 2 counterpart to fire area V-1).

2. A 2-hour rated barrier separates this zone from fire area 4-A.

3. One and one-half hour rated doors provide separation from fire areas 3-P-3, 3-V-3, 3-BB, and the Unit 2 penetration area.

Fire Zone 3-M, Unit 1 Safety Injection Pump Area

Fire zone 3-M is located on the north side of the auxiliary building at elevations 85 feet and is separated from other fire areas by 3-hour rated fire barriers with the following exception.

1. A duct penetration without a fire damper which communicates with fire area 3-B-2.

Fire Zone 3-N, Unit 2 Safety Injection Pump Area

Fire zone 3-N is located on the south side of the auxiliary building at elevation 85 feet and is equivalent to its Unit 1 counterpart (fire zone 3-M).

Fire Zone 3-Q-2: Unit 1 Motor Driven Auxiliary Feedwater Pumps

Fire zone 3-Q-2 is located at the south end of the Unit 1 fuel handling building at elevation 100 feet. This zone is separated from other fire areas by 3-hour rated barriers with the following exceptions.

1. A 1-1/2 hour rated door in the west wall separates this zone from fire area 3-BB.

2. A 3-hour rated wall provides the east boundary with fire area 3-Q-1. This wall contains a 1-1/2 hour rated ventilation fire damper, 3-hour fire doors, and a duct penetration without a fire damper.

3. A 1-1/2 hour rated door in the north wall separates this zone from fire area 3-O.

Fire Zone 3-R, Unit 1 New and Spent Fuel Storage

Fire zone 3-R is located in the fuel handling building, just east of the Unit 1 reactor containment building.. It extends from elevation 99 to 140 feet. This zone is separated from adjacent fire areas by 3-hour rated fire barriers with the following exceptions.

1. One and one-half hour fire doors provide separation at elevation 100 feet from fire zones 31 and fire zone 3-P-2 (fire area V-1).

2. One and one-half hour rated doors provide separation at elevation 115 feet from fire zone 3-P-2 and fire area 3-BB.

3. Duct penetrations without fire dampers and vent openings provide separation at elevation 115 feet from fire zone 3-P-4.

4. Duct penetrations without fire dampers communicate with fire zone 3-P-8 (fire area V-2) at elevation 140 feet.

5. The east, west, and north walls and the ceiling are unrated and communicate with the outside at elevation 140 feet. The supporting structural steel is unprotected.

Fire Zone 3-S, Hot Shop

Fire zone 3-S is located in the east end of the auxiliary building at elevation 140 feet and is common to both units. This zone adjoins the Unit 1 and Unit 2 new and spent fuel areas (fire zones 3-R and 3-W) to the north and south, respectively.

The east and west walls and ceiling of this zone are unrated metal and communicate with the outside. The structural steel is unprotected.

Fire Zone 3-T-2, Unit 2 Motor-Driven Auxiliary Feedwater Pumps

Fire zone 3-T-2 is located at the north end of the Unit 2 fuel handling building at elevation 100 feet. The description of this area is equivalent to its Unit 1 counterpart (fire zone 3-Q-2).

Fire Zone 3-W, Unit 2 New and Spent Fuel Storage

Fire zone 3-W is located in the fuel handling building, just east of the Unit 2 containment building. The description of this area is equivalent to its Unit 1 counterpart, fire zone 3-R.

Fire Zone 3-X, Boric Acid Transfer Pumps and CVCS Demineralizers

Fire zone 3-X, which houses the boric acid transfer pumps and CVCS demineralizers for Units 1 and 2, occupies the largest portion of the east side of the auxiliary building at elevation 104 feet.

This zone is separated from adjacent fire areas by 3-hour rated barriers with the following exceptions.

1. One and one-half hour rated doors providing separation from fire areas 3-Q-1 and 3-BB to the north and their Unit 2 counterparts to the south.

2. Duct penetrations without fire dampers communicating with fire areas 3-B-1, 3-B-2, 3-D-1, and 3-D-2.

Fire Zone 3-AA, Boric Acid Tanks Area

Fire zone 3-AA, which contains the boric acid storage tanks, is located on the east side of the auxiliary building at elevation 115 feet. The north half of fire zone 3-AA contains the tanks for Unit 1, the other half contains Unit 2 equipment. This fire zone is separated from adjacent fire areas by 3-hour rated barriers with the following exception.

1. One and one-half hour rated doors provide separation from fire areas 3-BB and the Unit 2 counterpart to 3-BB.

2. A 1-1/2-hour rated door provides separation from the outside on the east wall.

Fire Zone 8-B-1, Unit 1, Auxiliary Building Ventilation Supply Fan Room

Fire zone 8-B-1, which houses Unit 1 ventilation supply fans for the auxiliary building and associated roughing filters and heating coils, is located to the northeast of the control room complex at elevation 140 feet. It is separated from adjacent areas by a 3-hour rated fire barrier with the following exception:

1. Unrated louvers and a door communicate through the north and east walls with fire area 34 outside.

Fire Zone 8-B-2, Unit 2, Auxiliary Building Ventilation Supply Fan Room

Fire zone 8-B-2, which houses Unit 2 ventilation supply fans for the auxiliary building and associated roughing filters and heating coils, is located to the southeast of the control room complex at elevation 140 feet. It is separated from adjacent fire areas with 3-hour rated barriers with the following exception.

1. Unrated louvers and a door communicate through the south and east walls with fire area 34 outside.

S-2 - Stairway

Stairway S-2 extends from elevation 54 feet to elevation 140 feet in the center of the auxiliary building. This fire zone is separated from adjacent fire areas by 3-hour rated barriers with the following exceptions:

1. An unrated door which provides separation from fire area 4-B at elevation 85 feet.

2. One and one-half hour rated doors which provide separation from stairway S-5 (fire area CR-2) and fire area 34 outside at elevation 140 feet, and fire zone 8-B-3 and 8-B-4 (fire area CR-1) on elevation 154 feet.

S-3 and S-4 - Stairways

Stairways S-3 and S-4 extend from elevation 64 feet to elevation 140 feet at the northeast and southeast corners of the auxiliary building respectively. These sairways have 1-1/2 hour rated doors providing separation from adjacent fire zones. Each stairway terminates in the hot shop (fire zone 3-S) and is open at this elevation.

COMBUSTIBLES

Combustible loading for this fire area is divided by fire zones as follows:

a) Fire zone 3-A of this fire area has an approximate floor area of about 1200 square feet. The in situ combustible loading within this fire zone is approximately 129 BTU/ft^2 with an equivalent fire severity of 0.1 minutes. In situ combustible loading is comprised primarily of lubricating oil.

   Transient combustible loading is estimated to present an additional 358 BTU/ft^2 with an increased severity of 0.3 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls.

b) Fire zone 3-B-3 of this fire area has an approximate floor area of about 550 square feet. The in situ combustible loading within this fire zone is approximately 566 BTU/ft^2 with an equivalent fire severity of 0.4 minutes. In situ combustible loading is comprised primarily of oil and grease.

Transient combustible loading is estimated to present an additional 9598 BTU/ft^2 with an increased severity of 7.2 minutes. Anticipated transient combustibles are oil, grease, solvents and Class A combustibles used for radiological controls.

c) Fire zone 3-C of this fire area has an approximate floor area of about 15,000 square feet. The in situ combustible loading within this fire zone is approximately 1956 BTU/ft^2 with an equivalent fire severity of 1.6 minutes. In situ combustible loading is comprised primarily of electric cable in cable trays and lubricating oil.

Transient combustible loading is estimated to present an additional 880 BTU/ft^2 with an increased severity of 0.7 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents, grease and lubricating oil for maintenance activities.

d) Fire zone 3-D-3 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-B-3).

e) Fire zone 3-F of this fire area has an approximate floor area of about 3200 square feet. The in situ combustible loading within this fire zone is approximately 5100 BTU/ft^2 with an equivalent fire severity of 3.8 minutes. In situ combustible loading is comprised primarily of electric cable, grease and lubricating oil.

Transient combustible loading is estimated to present an additional 5550 BTU/ft^2 with an increased severity of 4.2 minutes. Anticipated transient combustibles are electric cable, solvents for cleaning, lubrication oils, grease and Class A combustibles used for radiological controls.

f) Fire zone 3-G has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-F).

g) Fire zone 3-J-1 of this fire area has an approximate floor area of about 480 square feet. The in situ combustible loading within this fire zone is approximately 11,150 BTU/ft^2 with an equivalent fire severity of of 8.4 minutes. In situ combustible loading is comprised primarily of electric cable insulation, lubricating oil and grease.

Transient combustible loading is estimated to present an additional 25,750 BTU/ft^2 with an increased severity of 19.3 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents, lubricating oil, and grease for maintenance.

h) Fire zone 3-J-2 of this fire area has an appropriate floor area of about 480 square feet. The in situ combustible loading within this fire zone is approximately 11,150 BTU/ft^2 with an equivalent fire severity of 8.4 minutes. In situ combustible loading is comprised primarily of electric cable insulation, lubricating oil and grease.

Transient combustible loading is estimated to present an additional 25,750 BTU/ft^2 with an increased severity of 19.3 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents, lubricating oil, and grease for maintenance.

i) Fire zone 3-J-3 of this fire area has an approximate floor area of about 810 square feet. The in situ combustible loading within this fire zone is approximately 6600 BTU/ft^2 with an equivalent fire severity of 5 minutes. In situ combustible loading is comprised primarily of electric cable insulation, lubricating oil and grease.

Transient combustible loading is estimated to present an additional 15,260 BTU/ft^2 with an increased severity of 11.4 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents, lubricating oil, and grease for maintenance.

j) Fire zone 3-K-1 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-J-1).

k) Fire zone 3-K-2 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-J-2).

l) Fire zone 3-K-3 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-J-3).

m) Fire zone 3-L of this fire area has an approximate floor area of about 10,000 square feet. The in situ combustible loading within this fire zone is approximately 9700 BTU/ft^2 with an equivalent fire severity of 7.3 minutes. In situ combustible loading is comprised primarily of electric cable insulation, lubricating oil, grease and plastic.

Transient combustible loading is estimated to present an additional 6850 BTU/ft^2 with an increased severity of 5.1 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, lubricating oil cable, grease, cleaning solvent, and fire retardant treated wood used for scaffold and cribbing.

n) Fire zone 3-M of this fire area has an approximate floor area of about 900 square feet. The in situ combustible loading within this fire zone is approximately 2410 BTU/ft^2 with an equivalent fire severity of 1.8 minutes. In situ combustible loading is comprised primarily of oil and grease.

Transient combustible loading is estimated to present an additional 6730 BTU/ft^2 with an increased severity of 5.0 minutes. Anticipated transient combustibles are oil, grease, Class A combustibles used for radiological controls, and solvent.

o) Fire zone 3-N has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-M).

p) Fire zone 3-Q-2 of this fire area has an approximate floor area of about 400 square feet. The in situ combustible loading within this fire zone is approximately 17,970 BTU/ft^2 with an equivalent fire severity of 13.5 minutes. In situ combustible loading is comprised primarily of grease in motor bearings.

Transient combustible loading is estimated to present an additional 8906 BTU/ft^2 with an increased severity of 6.7 minutes. Anticipated transient combustibles are grease, solvent, and Class A combustibles used for radiological controls.

q) Fire zone 3-R of this fire area has an approximate floor area of about 7700 square feet. The in situ combustible loading within this fire zone is approximately 953 BTU/ft^2 with an equivalent fire severity of 0.7 minutes. In situ combustible loading is comprised primarily of electric cable insulation, paper in procedures and drawings, grease and plastic.

Transient combustible loading is estimated to present an additional 13,010 BTU/ft^2 with an increased severity of 9.8 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents, lubricating oil, cables, grease and fire, and fire retardant treated wood for scaffold and cribbing.

r) Fire zone 3-S of this fire area has an approximate floor area of about 7200 square feet. The in situ combustible loading within this fire zone is approximately 630 BTU/ft^2 with an equivalent fire severity of 0.5 minutes. In situ combustible loading is comprised primarily of lubricating oil, grease and acetylene cylinders, used for cutting and welding.

Transient combustible loading is estimated to present an additional 8130 BTU/ft^2 with an increased severity of 6.1 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, cleaning solvents and rags, paper, grease, fire retardant treated wood and acetylene in cylinders, used for welding and cutting.

s) Fire zone 3-T-2 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-Q-2).

t) Fire zone 3-W has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-R).

u) Fire zone 3-X of this fire area has an approximate floor area of about 10,000 square feet. The in situ combustible loading within this fire zone is approximately 2200 BTU/ft^2 with an equivalent fire severity of 1.6 minutes. In situ combustible loading is comprised primarily of electric cable insulation, grease lubricating oil and primary system hydrogen.

Transient combustible loading is estimated to present an additional 2700 BTU/ft^2 with an increased severity of 2 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, grease, lubricating oil, acetylene in cylinders for welding and burning, paper in procedures and drawings, cleaning solvents and fire retardant treated wood.

v) Fire zone 3-AA of this fire area has an approximate floor area of about 15,000 square feet. The in situ combustible loading within this fire zone is approximately 3270 BTU/ft^2 with an equivalent fire severity of 2.4 minutes. In situ combustible loading is comprised primarily of lubricating oil and grease.

Transient combustible loading is estimated to present an additional 10,070 BTU/ft^2 with an increased severity of 7.6 minutes. Anticipated transient combustibles are Class A combustibles used for radiological controls, lubricating oil, rags and solvents for cleaning, grease, electric cable, paper procedures and drawings, fire retardant treated wood for scaffold and cribbing, acetylene in cylinders for welding and cutting and replacement resin for ion exchangers.

w) Fire zone 8-B-1 of this fire area has an approximate floor area of about 1650 square feet. The in situ combustible loading within this fire zone is approximately 1145 BTU/ft^2 with an equivalent fire severity of 0.9 minutes. In situ combustible loading is comprised primarily of fan belts, electric cable insulation, grease and roughing filters.

Transient combustible loading is estimated to present an additional 320 BTU/ft^2 with an increased severity of 0.2 minutes. Anticipated transient combustibles are replacement roughing filters, grease and replacement fan belts.

x) Fire zone 8-B-2 has a combustible loading equivalent to its Unit 1 counterpart (fire zone 3-B-1).

y) S-2, S-3, and S-4 are stairways and as such have a negligible in situ combustible loading. Transient combustible loading in the stairways is also assumed to be negligible.

MAJOR EQUIPMENT

Zone 3-A:

Fire zone 3-A contains Unit 1 and 2 liquid holdup tanks, located in individual compartments. None of this equipment is required for safe shutdown.

Zone 3-B-3:

Fire zone 3-B-3 contains the Unit 1 boron injection tank (BIT) and heat tracing and valves associated with the BIT flow path.

Zone 3-C:

Fire zone 3-C contains Unit 1 and 2 equipment drain tanks, floor drain tanks, waste gas compressors, gas decay tanks, auxiliary building sump pumps, radwaste filters, and waste concentrator tanks and associated transfer pumps. None of this equipment is required for safe shutdown.

Zone 3-D-3:

Fire zone 3-D-3 contains the Unit 2 BIT and heat tracing and valves associated with the BIT flow path.

Zone 3-F:

Fire zone 3-F contains the Unit 1 containment spray pumps 1-1 and 1-2, the spray additive tank, and a non-vital motor control center. The containment spray pumps and the spray additive tanks are safety-related but not required for safe shutdown.

Zone 3-G:

Fire zone 3-G contains the Unit 2 containment spray pumps 2-1 and 2-2, the spray additive tank, and a non-vital motor control center. The containment spray pumps are safety-related but not required for safe shutdown.

Zone 3-J-1:

Fire zone 3-J-1 contains Unit 1 component cooling water (CCW) pump 1-1. This equipment is required for safe shutdown.

Zone 3-J-2

Fire zone 3-J-2 contains Unit 1 CCW pump 1-2. This equipment is required for safe shutdown.

Zone 3-J-3

Fire zone 3-J-3 contains Unit 1 CCW pump 1-3. This equipment is required for safe shutdown.

Zone 3-K-1:

Fire zone 3-K-1 contains Unit 2 CCW pump 2-1. This equipment is required for safe shutdown.

Zone 3-K-2:

Fire zone 3-K-2 contains Unit 2 CCW pump 2-2. This equipment is required for safe shutdown.

Zone 3-K-3:

Fire zone 3-K-3 contains Unit 2 CCW pump 2-3. This equipment is required for safe shutdown.

Zone 3-L:

Fire zone 3-L contains the Unit 1 and 2 boric acid evaporators, waste evaporators, letdown heat exchangers, and the non-vital auxiliary building control panel. This equipment is not required for safe shutdown.

Zone 3-M

Fire zone 3-M contains the Unit 1 safety injection pumps. These pumps are not required for safe shutdown.

Zone 3-N

Fire zone 3-N contains the Unit 2 safety injection pumps. These pumps are not required for safe shutdown.

Zone 3-Q-2

The major equipment in this zone consists of the two motor driven auxiliary feedwater (AFW) pumps. One AFW pump is required for safe shutdown.

Zone 3-R

Fire zone 3-R contains the Unit 1 spent fuel pool and its transfer system, cask decontamination equipment, new fuel storage vault, one traveling crane and one shared with zones 3-S and 3-W, two fire pumps, and the AFW chemical addition tanks. This equipment is not required for safe shutdown.

Zone 3-S:

Fire zone 3-S contains machine equipment associated with the hot shop, the vacuum deaerator, and the hot shop exhaust fan. The equipment in this fire zone is not required for safe shutdown.

Zone 3-T-2:

The major equipment in this zone consists of the two motor driven AFW pumps for Unit 2. One AFW pump is required for safe shutdown.

Zone 3-W:

Fire zone 3-W contains the Unit 2 spent fuel pool and its transfer system, cask decontamination equipment, new fuel storage vault, two traveling cranes (one of them shared between zones 3-R and 3-S) and the AFW chemical addition tanks. This equipment is not required for safe shutdown.

Zone 3-X:

Fire zone 3-X contains Unit 1 and 2 boric acid transfer pumps, CVCS demineralizers, filters, and volume control tanks. The equipment required for safe shutdown includes the boric acid transfer pumps, seal water injection filters, boric acid filters and emergency borate valve 8104.

Zone 3-AA

Fire zone 3-AA contains Units 1 and 2 boric acid tanks, blowdown cleanup demineralizers, primary makeup demineralizers spent resin storage tanks, waste concentrates holding tanks, and the solid radwaste drumming station. The boric acid tanks are required for safe shutdown.

Zone 8-B-1

Fire zone 8-B-1 contains the Unit 1 auxiliary building ventilation supply fans and associated roughing filters and heating coils. This equipment is not required for safe shutdown.

Zone 8-B-2

Fire zone 8-B-2 contains the Unit 2 auxiliary building ventilation supply fans and associated roughing filters and heating coils. This equipment is not required for safe shutdown.

S-2, S-3 and S-4

Stairways S-2, S-3, and S-4 contain no equipment.

For listing of raceways required for safe shutdown routed through the subject fire area/zone, see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

3-A	:	None
3-B-3	:	None
3-C	:	Smoke detection is provided throughout this zone on elevations 64 and 75 feet.
3-D-3	:	None
3-F	:	Smoke detection is provided throughout this zone.
3-G	:	Smoke detection is provided throughout this zone.
3-J-1	:	Smoke detection is provided throughout this zone.
3-J-2	:	Smoke detection is provided throughout this zone.
3-J-3	:	Smoke detection is provided throughout this zone.
3-K-1	:	Smoke detection is provided throughout this zone.
3-K-2	:	Smoke detection is provided throughout this zone.
3-K-3	:	Smoke detection is provided throughout this zone.
3-L	:	Smoke detection is located above the boric acid evaporators providing coverage for about 18% of this zone.
3-M	:	Smoke detection is provided throughout this zone.
3-N	:	Smoke detection is provided throughout this zone.
3-Q-2	:	Smoke detection is provided throughout this zone.
3-R	:	Smoke or flame detection is provided throughout this zone.
3-S	:	Flame detection is provided throughout this zone.
3-T-2	:	Smoke detection is provided throughout this zone.
3-W	:	Smoke or flame detection is provided throughout this zone.
3-X	:	Smoke detection is located in the east end providing coverage for about 36% of this zone.
3-AA	:	Smoke detection is located in the vicinity of the boric acid storage tanks providing coverage for about 56% of this zone.
8-B-1	:	Smoke detection is provided throughout this zone.
8-B-2	:	Smoke detection is provided throughout this zone.
S-2	:	None
S-3	:	None
S-4	:	None

Note: Each smoke detection system alarms in the continuously manned control room.

SUPPRESSION

3-A : No automatic suppression provided.

3-B-3 : No automatic suppression provided.

3-C : No automatic suppression provided.

3-D-3 : No automatic suppression provided.

3-F : No automatic suppression provided.

3-G : No automatic suppression provided.

3-J-1 : Wet pipe automatic sprinkler protection is provided throughout this zone.

3-J-2 : Wet pipe automatic sprinkler protection is provided throughout this zone.

3-J-3 : Wet pipe automatic sprinkler protection is provided in this zone except in the east alcove.

3-K-1 : Wet pipe automatic sprinkler protection is provided throughout this zone.

3-K-2 : Wet pipe automatic sprinkler protection is provided throughout this zone.

3-K-3 : Wet pipe automatic sprinkler protection is provided throughout this zone except in the east alcove.

3-L : No automatic suppression provided.

3-M : No automatic suppression provided.

3-N : No automatic suppression provided.

3-Q-2 : Wet pipe automatic sprinkler protection is provided throughout this zone.

3-R : No automatic suppression provided.

3-S : No automatic suppression provided.

3-T-2 : Wet pipe automatic sprinkler system is provided throughout this zone.

3-W : No automatic suppression provided.

3-X : Wet pipe automatic sprinkler protection is located in the east end of this zone only and covers about 20% of the entire zone.

SUPPRESSION (cont'd.)

3-AA : No automatic suppression provided.

8-B-1 : Wet pipe automatic sprinkler protection is provided in the vicinity of the filter area and fans and motors only.

8-B-2 : Wet pipe automatic sprinkler protection is provided in the vicinity of the filter area and fans and motors only.

S-2 : Limited wet pipe automatic sprinkler protection is provided at elevation 140 feet of this zone.

S-3 : No automatic suppression provided.

S-4 : No automatic suppression provided.

Note: Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for all these zones. Waterflow alarms for thee wet pipe automatic sprinkler systems annunciate in the continuously manned control room.

FIRE AREA: AB-1

(FIRE ZONES 3-C and 3-J-1)

TITLE: DRAIN RECEIVER AND GAS DECAY TANK AREA AND COMPONENT COOLING WATER PUMP 1-1 AREA

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Circuitry for the diesel generator fuel transfer pumps 0-1 and 0-2 is located in zones 3-C and 3-J-1. They are separated by 15 feet. The conduits containing the circuitry for diesel generator fuel transfer pump 0-1 (zone 3-J-1) is enclosed in a 2-hour barrier. Zone 3-J-1 is provided with wet pipe automatic sprinkler protection and smoke detection. Zone 3-C has only smoke detection on this elevation. This configuration does not meet Appendix R, Section III.G.2(c).

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(c) requiring full area detection and suppression. The technical bases which support this exemption request are itemized below:

1. The combustible loading in fire zone 3-C, consisting primarily of oil in pumps and compressors and cable insulation, is approximately 2800 BTU/ft^2 with an equivalent severity of 2.3 minutes. The combustible loading in fire zone 3-J-1, consisting primarily of oil and cable insulation is 36,900 BTU/ft^2 with an equivalent severity of 27.7 minutes.

2. Products of combustion from a fire originating in zone 3-C, in the vicinity of zone 3-J-1; would rise upward and be dispersed in all directions from the burning materials. Only a portion of the products of combustion would enter zone 3-J-1, making it unlikely that circuitry in 3-J-1 would be affected. In the unlikely event significant heat buildup occurred at the ceiling of 3-J-1, the wet pipe automatic sprinkler system protecting the zone would be actuated, further reducing the likelihood of damage to this circuitry.

3. A fire in zone 3-J-1 of significant magnitude to impact adversely on the circuits within the 3-hour rated enclosure in the zone and the circuits in the conduit 15 feet away in zone 3-C would result in actuation of the wet pipe automatic sprinklers within this zone. A fire involving the oil in 3-J-1 would not propagate to zone 3-C because of the minimum 4-inch curb provided at the opening and the area floor drain system.

4. A 2-hour rated barrier around the circuits for diesel generator fuel transfer pump 0-2, which is in excess of the 1-hour enclosure required under Section III.G.2(c), provides additional assurance that one pump would be available.

5. The addition of area wide detection and suppression throughout fire area AB-1 would not enhance to a significant degree the protection of the safe shutdown function provided by the current configuration.

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

The CCW systems in fire zones 3-J-1, 3-J-2, and 3-J-3 do not meet Appendix R, Section III.G.2 separation criteria. As described in the area description, zones 3-J-1, 3-J-2 and 3-J-3 communicate through unsealed pipe penetrations, duct penetrations without fire dampers, and through openings to zone 3-C. The individual pump cubicles are provided with area smoke detection and wet pipe automatic sprinkler protection.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Appendix R, Section III.G.2(c) requiring full area detection and suppression. The technical bases which support this exemption request are itemized below.

1. The three CCW pumps are located in individual cubicles at elevation 75 feet, and each is open to fire zone 3-C. The pumps are approximately 5 feet apart with a 3-hour rated barrier provided between each pump that has duct penetrations without fire dampers and unsealed pipe penetrations.

2. The control circuitry for charging pumps 1-1, 1-2, and 1-3 is routed through fire zones 3-J-2 and 3-J-3. However, the starting circuitry for each pump can be bypassed by individual switches located in the switchgear of fire area TB-4 for charging pump 1-1 and fire area TB-5 for charging pumps 1-2 and 1-3.

3. Access to the pump cubicles is provided by a catwalk which is routed on east-west orientation 8 feet above the floor of zone 3-C.

4. The floor of zone 3-C directly below the pump cubicle (elevation 64 feet) and the catwalk (elevation 75 feet) provides access to the drain receiving and gas decay tanks. Access to this elevation is controlled for radiation protection considerations. Due to this consideration, the potential for transient combustibles being stored underneath the pump cubicles or the catwalk is low.

5. The corridor at elevation 64 feet, below the pump cubicle and catwalk, circles the drain receiving and gas decay tanks, running the entire length and width of auxiliary building.

6. The ceilings of the pump cubicles and elevation 64 feet of the auxiliary building is at elevation 83 feet, with the pumps at approximately elevation 75 feet. In order for a fire on elevation 64 feet of zone 3-C to adversely impact all three pumps, a stratified layer of hot gases would have to build down to the level of.the pumps. This would require building the layer of hot gases down to this elevation throughout the entire access corridor surrounding the drain receiving and gas decay tanks. Grated security doors and openings provide access to several large rooms off the catwalk; heat and smoke would also flow into these rooms, thereby increasing the volume which must become filled with a layer of hot gases prior to adversely affecting the CCW pumps.

7. The in situ and transient combustible loadings on elevation 64 feet of fire zone 3-C is approximately 2800 BTU/ft^2 for an equivalent severity of under 2.3 minutes. From a fire protection viewpoint, a combustible loading several orders of magnitude

larger than what would be available on this elevation would be required to form a stratified layer of hot gases to the depth necessary to adversely affect the pumps.

8. Each pump cubicle is provided with automatic smoke detection and wet pipe automatic sprinkler protection. Should a layer of hot gases build up within the pump cubicles, the sprinkler system in the cubicles would actuate. The water discharged from the sprinkler system would act to cool the hot gases that may enter these cubicles prior to it having an adverse affect on the pumps.

9. The in situ combustible loading in each of zones 3-J-1, 3-J-2, and 3-J-3 consisting primarily of oil and cable insulation, is approximately 11,150 BTU/ft^2 for 3-J-1 and 3-J-2 and 6607 BTU/ft^2 for 3-J-3 with an equivalent severity of approximately 8.4 minutes and 5 minutes respectively. The combustible loading in adjacent zone 3-C, consisting primarily of insulation, is approximately 2800 BTU/ft^2 with an equivalent severity of approximately 2 minutes.

   The transient combustible loading in 3-J-1, 3-J-2, and 3-J-3, consisting primarily of radiological Class A combustibles, solvents, lubricating oil and grease for maintenance, is approximately 25,750 BTU/ft^2 for 3-J-1 and 3-J-2 and 15,260 BTU/ft^2 for 3-J-3, with an equivalent severity of 19 minutes and 11 minutes respectively. The transient combustible loading in zone 3-C, consisting primarily of radiological Class A combustibles, solvents, grease and lubricating oil for maintenance activities, is approximately 880 BTU/ft^2 with an equivalent severity of less than 1 minute.

10. The existing suppression and detection systems within each pump cubicle will provide early fire annunciation in the control room and also provide suppression capability, thereby limiting the potential for damage to the cubicle in which it originates.

11. Providing area-wide detection and suppression throughout fire area AB-1 which contains zones 3-J-1, 3-J-2 and 3-J-3 would not enhance to a significant degree the protection of safe shutdown equipment provided by the current configuration.

FIRE AREA: CR-1

TITLE: CONTROL ROOM COMPLEX

FIGURES: 3-10 and 3-11

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area CR-1, the control room complex, occupies the west end of the auxiliary building at elevations 140 feet and 163 feet. It encompasses the following fire zones:

a. Fire zone 8-A, Unit 1 computer room
b. Fire zone 8-D, Unit 2 computer room
c. Fire zone 8-C, control room
d. Fire zone 8-E, office
e. Fire zone 8-F, central alarm station
f. Fire zone 8-B-3, Unit 1 control room ventilation equipment room
g. Fire zone 8-B-4, Unit 2 control room ventilation equipment room

<u>Fire Zone 8-A, Unit 1 Computer Room</u>

This fire zone is located in the north-northwest side of the control room complex at elevation 140 feet. It is separated from adjacent fire areas by 3-hour rated walls. It communicates with fire zone 8-C to the south and fire area 8-G to the west through 3/4-hour rated and 3-hour rated doors, respectively. These barriers extend above the unrated suspended ceiling up to the rated concrete ceiling. The floor and ceiling of this fire zone are 3-hour rated. The duct penetration in the west wall is provided with a fire damper.

Fire Zone 8-D, Unit 2 Computer Room

This fire zone is located in the south-southwest side of the control room complex at elevation 140 feet. This zone is the Unit 2 counterpart of fire zone 8-B-3.

Fire Zone 8-C, Control Room

Fire zone 8-C is located in the west side of the auxiliary building at elevation 140 feet. This zone is separated from adjacent fire areas by 3-hour rated barriers with the following exemptions:

- o A 3/4-hour rated door separting this zone from stairway S-1 (fire area AB-3).

Fire Zone 8-E, Office and Storage Room

Fire zone 8-E is located on the west side of the auxiliary building at elevation 140 feet. This zone is separated from the outside and the stairway S-1 by 3-hour barriers and from fire zone 8-C by a 1-hour barrier from zone 8-C.

Fire Zone 8-F, Central Alarm Station

Fire zone 8-F is located on the west side of the auxiliary building at elevation 140 feet. This zone is separated from other fire areas by 3-hour barriers and by a 1-hour barrier from zone 8-C. A 3-hour hour rated bullet proof panel separates fire zone 8-F from the turbine deck (fire area TB-7) on the west wall.

Fire Zone 8-B-3, Unit 1 Control Room Ventilation Equipment Room

Fire zone 8-B-3 is located in the auxiliary building at elevation 163 feet 4 inches. This zone is separated from area AB-1 by a 3-hour

rated barrier except for a 1-1/2 hour rated door to the S-2 elevator machinery room. It is separated by a 1-1/2 hour rated door from zone 8-B-4, and communicates with the outdoors (area 34) through open louvers and ceiling penetration.

Fire Zone 8-B-4, Unit 2 Control Room Ventilation Equipment Room

Fire zone 8-B-4 is located in the auxiliary building at elevation 163 feet. This zone is the Unit 2 counterpart of Fire Zone 8-B-3.

COMBUSTIBLES

Fire area CR-1 has an approximate floor area of about 7450 square feet. The in situ combustible loading within this fire area is approximately 29420 BTU/ft^2 with an equivalent fire severity of 22 minutes. In situ combustible loading is comprised primarily of electric cable insulation, paper in books, computer printouts, prints etc. and combustible vinyl ceiling lighting diffusers.

Transient combustible loading is estimated to present an additional 3160 BTU/ft^2 with an increased severity of 2.4 minutes. Anticipated transient combustibles are additional paper goods for copy machines and small amounts of cleaning solvents and rags and fire brigade protective clothing.

MAJOR EQUIPMENT

Fire Zone:

8-A: Plant computer for Unit 1
8-D: Plant computer for Unit 2
8-C: Units 1 and 2 control boards and consoles.
8-E: Office furniture and equipment, and halon storage tanks
8-F: Plant security consoles and monitors, and halon storage tanks

8-B-3: Control room ventilation equipment including fans, air conditioning equipment, carbon and HEPA filters

8-B-4: Control room ventilation equipment including fans, air conditioning equipment, carbon and HEPA filters.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout zones 8-A, 8-B-3, 8-B-4, 8-C, 8-D, 8-E, and 8-F. Smoke detection in zone 8-C is provided inside cabinets and consoles. These systems alarm in this fire area.

SUPPRESSION

Wet pipe automatic sprinkler protection is provided for zones 8-B-3, 8-B-4 and in the north side of 8-E. The waterflow alarms annunciate in this fire area. Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for zones in fire area CR-1.

FIRE AREA: CR-1

TITLE: CONTROL ROOM AND ASSOCIATED SUPPORT AREA

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire area CR-1 is made up of zones 8-A, 8-B-3, 8-B-4, 8-C, 8-D, 8-E, and 8-F. This fire area does not meet the requirements of Appendix R, Section III.G.3 in that a full area fixed suppression system is not provided in the fire area. The full area fixed suppression system is required for any fire area in which alternate shutdown capability has been provided.

Failure of the conntrol room diesel generator alarm reset circuit could impair local control capability for the diesel generators.

Failure of the control circuit of the pressurizer PORV block valves 800A, B, and C could impair the capability to close these valves.

Either of these two conditions could degrade the alternate shutdown system.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.3 of Appendix R, which requires full area fixed suppression in any fire area for which alternate shutdown capability has been provided. The technical bases which justify the exemption request are detailed below.

1. Alternate shutdown capability is available outside of the fire area, should a fire occur in the control room.

2. This control room (fire zone 8-C) is separated from adjacent areas by 3-hour rated walls with 3-hour rated barriers.

3. The combustible loading in the fire area results in an equivalent fire severity of under 25 minutes.

4. Full area detection is provided in zones 8-A, 8-D, 8-E and 8-F. In the control room itself, zone 8-C, smoke detectors are located inside the control panels containing all the electrical equipment and cabling within this zone. These panels are the most probable location for a fire. Any fire would immediately be detected and suppressed by the operators, who are on duty 24 hours a day.

5. Complete automatic suppression and area detection are provided in zones 3-B-3 and 3-B-4, the control room ventilation equipment rooms.

6. Portable extinguishers are located in the fire area for manual fire fighting purposes.

7. An isolation contact will be provided in the diesel generator local control panel to isolate the alarm reset circuit from the control room.

8. A disconnect switch for PCV-455C, 456, and 474 will be provided at the hot shutdown panel. This will ensure that these valves can be failed close in the event a hot short due to a postulated fire in the cable spreading room causes them to open prematurely.

9. The addition of a fixed suppression system to provide coverage for the entire fire area would not enhance to a significant degree the protection of safe shutdown functions provided by the current configuration.

FIRE AREA: IS-1

TITLE: INTAKE STRUCTURE

FIGURE: 3-12

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

This fire area is located in the common (Unit 1 and Unit 2) intake structure at all elevations. The fire area is divided into fire zones 30-A-5 and 30-B. This fire area represents the bulk of the intake structure, with the remaining floor area consisting of fire areas 30-A-1 and 30-A-2 (Unit 2: 30-A-3 and 30-A-4), which are the auxiliary saltwater pump enclosures. This fire area is remote from the balance of the plant structures. The individual fire zones are discussed below.

A. Fire Zone 30-A-5 - Circulating Water Pump Area

This fire zone comprises the bulk of the intake structure at elevation minus 2 feet. This zone is bounded by 3-hour rated fire barriers, with the exception of exterior doors and stairways and concrete machinery access plugs that communicate with the exterior. The walls between fire zone 30-A-5 and fire areas 30-A-1 through 30-A-4 are 3-hour rated with unrated steel watertight doors.

B. Fire Zone 30-B - Intake Structure Control Room

This zone is located at the intake structure at elevation 18 feet. This zone consists of two non-vital switchgear rooms (Unit 1 and 2) plus non-vital intake structure control and one ton chlorine cylinders and evaporator control room.

COMBUSTIBLES

Fire zone 30-A-5 of this fire area has an approximate floor area of about 10,000 square feet. The in situ combustible loading within this fire zone is approximately 540 BTU/ft^2 with an equivalent fire severity of 0.4 minutes. In situ combustible loading is comprised primarily of lubricating oil in the circulating water pumps.

Transient combustible loading is estimated to present an additional 1240 BTU/ft^2 with an increased severity of 0.9 min. Anticipated transient combustibles are replacement lube oil for the circulating water pumps, cleaning solvent and rags, ladders and scaffold (fire retardant treated).

Fire zone 30-B of this fire area has an approximate floor area of about 1,800 square feet. The in situ combustible loading within this fire zone is approximately 760 BTU/ft^2 with an equivalent fire severity of 0.6 minutes. In situ combustible loading is comprised primarily of electric cable insulation and electric panels.

Transient combustible loading is estimated to present an additional 777 BTU/ft^2 with an increased severity of 0.6 min. Anticipated transient combustibles are cleaning solvents and rags, procedures, and drawings and personnel protective equipment.

MAJOR EQUIPMENT

A. Fire Zone 30-A-5

Major equipment in fire zone 30-A-5 consists of the circulating water pumps (2 per unit-four total), auxiliary saltwater pump suction gate operators, intake coolers and pumps, screen wash pumps, screen refuse pumps, and circulating water pump discharge valves and piping.

B. Fire Zone 30-B

Major equipment in fire zone 30-B consists of the non-vital 480V intake structure switchgear, control panels, and chlorine cylinders and control rooms.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

30-A-5: Smoke detection is provided for this zone outside each of the ASW pump rooms and annunciates in the continuously manned control room.

30-B: Smoke detection is provided throughout the switchgear room in this zone and annunciates in the continuously manned control room.

SUPPRESSION

30-A-5: A heat actuated, local application CO_2 suppression system is provided for each circulating water pump motor. Actuation of these suppression systems annuciate in the continuously manned control room. Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this zone.

30-B: Manual suppression capability in the form of portable fire extinguishers and fire hose stations is available for this zone.

FIRE AREA: IS-1

TITLE: CIRCULATING WATER PUMPS

DESCRIPTION OF MODIFICATION

STATEMENT OF PROBLEM

The power circuits for auxiliary saltwater pumps 1-1 and 1-2 and their respective exhaust fans E-103 and E-101 run in conduits embedded in the floor slab. The conduits for PS-186 and exhaust fan E-103 pass through junction box BJZ 114 mounted 4 feet off the floor on the outside of the northwest wall of fire area 30-A-1 with the starter for SW 1-8 mounted adjacent to it. Similarly, the conduits for pressure switch PS-125 and exhaust fan E-101 pass through junction box BJZ 110 mounted on the southeast wall of fire area 30-A-2 with the starter mounted adjacent to it. The redundant conduits, junction boxes and starters are located more than 20 feet apart with no intervening combustibles; however, total area detection and suppression coverage is not provided.

PROPOSED MODIFICATION

A 3-hour fire rated enclosure will be provided around the conduits for one of the auxiliary saltwater pumps and its exhaust fan as they come up out of the floor and into the bottom of the juction box, the junction box itself and the starter located adjacent to it.

FIRE AREAS: TB-1, TB-2, AND TB-3
TITLE: DIESEL GENERATORS 1-1, 1-2 and 1-3 (INCLUDING AIR INTAKES AND EXHAUST EQUIPMENT)
FIGURES: 3-1, 3-2, and 3-27

AREA DESCRIPTION

Fire areas TB-1, TB-2, and TB-3 are separate fire areas containing the emergency diesel generators, and their associated air supply and exhaust equipment. Two of the three diesel generators are required for safe shutdown. These fire areas are situated side by side, with fire area TB-2 located between fire area TB-3 to the south and TB-1 to the north. Due to the similarities between these three areas, they have been combined into one section.

PHYSICAL CHARACTERISTICS

These areas are located at the northwest corner of the Unit 1 turbine building at elevations 85 and 107 feet. Fire areas TB-1, TB-2 and TB-3 are divided into fire zones 11-A-1, 11-A-2, 11-B-1, 11-B-2, 11-C-1 and 11-C-2 to differentiate between the generator rooms and the ventilation intake and exhaust rooms.

The subject fire areas are provided with curbs at door openings to the elevation 85 feet diesel generator rooms to contain any oil leakage. These rooms are also provided with a floor drain system which drains a postulated oil spill to the turbine building sump. Area fire barriers are 3-hour rated with the following exceptions.

1. The north barrier of fire zones 11-A-2, 11-B-2, and 11-C-2 is provided with open louvers which communicate with fire area 28 outside. These louvers are provided as a ventilation exhaust path for the diesel generators. The barriers separating fire

zones 11-A-2, 11-B-2, and 11-C-2 stop about 2 feet short of these open louvers. Startup transformer 2-1 is located in fire area 28, approximately 15 feet north of the louvers. The transformer is provided with an automatic water spray system and the ground is sloped to direct postulated oil leakage away from the louvers. No significant combustible loading is located between the louvers and the transformer.

2. Fire zones 11-A-2, 11-B-2 and 11-C-2 are separated from fire area 13-E at elevation 107 feet by an irregularly shaped 3-hour rated barrier with unrated metal personnel and equipment hatches.

3. The west barriers of fire zones 11-A-2, 11-B-2, and 11-C-2 at elevation 85 feet are open via air intake louvers to the outside.

4. An unrated steel access hatch communicates from fire zone 11-C-2 to fire area 11-D at elevation 85 feet.

5. On elevation 85 feet, a 1-inch thick sliding steel shield door provides separation between fire zone 11-C-2 and fire zone 14-A (fire area TB-7). This door is normally locked shut for plant security.

COMBUSTIBLES

Fire areas TB-1, TB-2 and TB-3 at elevation 85 feet each have an approximate floor area of about 1100 square feet. The in situ combustible loading within each fire area is approximately 150,800 BTU/ft^2 with an equivalent severity of 113 minutes. In situ combustible loading is comprised primarily of diesel fuel and lubricating oil. Filter media and cable insulation are insignificant contributors to this fire load. Elevation 107 feet of fire areas TB-1, TB-2 and TB-3 has no in situ combustible loading.

Transient combustible loading is estimated to present an additional 8970 BTU/ft^2 with an increased severity of approximately 7 minutes. Anticipated transients combustibles are lubricating oil, solvent and rags for cleaning and grease.

MAJOR EQUIPMENT

Fire area TB-1 contains diesel generator 1-1 and its associated equipment. This equipment is required for safe shutdown.

Fire area TB-2 contains diesel generator 1-2 and its associated equipment. This equipment is required for safe shutdown.

Fire area TB-3 contains diesel generator 1-3 and its associated equipment. This equipment is required for safe shutdown.

For listing of raceway required for safe shutdown routed through the subject fire area/zone Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided for these areas.

SUPPRESSION

Automatic total flooding CO_2 systems are provided for fire zones 11-A-1, 11-B-1 and 11-C-1. Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for use in fire areas TB-1, TB-3 and TB-3.

FIRE AREAS: TB-1, TB-2, and TB-3

TITLE: DIESEL GENERATOR ROOMS
F, G, and H Buses

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Areas TB-1, TB-2, and TB-3 constitute three separate fire areas. Due to sheet metal personnel and equipment hatches in fire barriers of these areas on elevation 107 feet the fire area separation requirements of Appendix R, Section III.G.2 are not met.

BASIS FOR EXEMPTION REQUEST

An exemption is requested to Section III.G.2(a) of Appendix R which requires fire areas containing redundant components of safe shutdown systems to be separated by 3-hour rated barriers. The technical bases which justify the exemption request are detailed below.

1. The sheet metal personnel and equipment hatches on elevation 107 feet which provide access from fire area 13-E into zones 11-A-2, 11-B-2 will be coated with materials to achieve a minimum 1-hour fire rating. Fire proofing the hatches for this zone will provide a minimum 20 feet spatial separation without intervening combustibles between fire areas TB-1 and TB-3.

2. An automatic CO_2 suppression system provides coverage for each diesel generator zone. (Upon system trip, the roll-up fire doors in the zone will be released and CO_2 will flood only the zone in alarm.)

3. There is no in situ or transient combustible loading in fire area 13-E on elevation 107 feet to present an exposure hazard to fire zones 11-A-2, 11-B-2, and 11-C-2.

4. Upgrading the hatches to 3-hour rating would not enhance to a significant degree the protection provided by the current configuration.

FIRE AREAS: TB-4, TB-5, and TB-6

TITLE: 4.16KV F, G and H BUS SWITCHGEAR AND CABLE SPREADING ROOMS

FIGURES: 3-2 and 3-3

AREA DESCRIPTION

Fire areas TB-4, TB-5 and TB-6 are separate fire areas containing the 4.16kV F, G and H bus switchgear and cable spreading rooms, two of the three buses are required for safe shutdown. These fire areas are situated side by side, with fire area TB-5 located between fire area TB-4 to the south and TB-6 to the north. Due to the similarities between these three areas, they have been combined into one section.

PHYSICAL CHARACTERISTICS

Each fire area consists of a cable spreading room (zones 12-A, 12-B and 12-C) located on elevation 107 feet and a switchgear room above (zones 13-A, 13-B and 13-C) located on elevation 119 feet. The floor slabs of the cable spreading rooms (zones 12-A, 12-B and 12-C) on elevation 107 feet are 3-hour rated. The 3-hour rated floor slab for fire zone 12-B is penetrated by a duct without a fire damper communicating with fire area 11-D below and a 3-hour rated, 10-inch thick concrete equipment hatch.

The ceilings of these fire areas are 3 hour rated concrete slabs. Ventilation ducts without fire dampers communicate with fire area 13-E above fire zones 12-A, 12-B and 12-C. A 3-hour rated, 10-inch thick concrete equipment hatch is located in the ceiling of fire zone 12B. A duct without a fire damper communicates with fire area 13-D above fire zone 12-A. A ventilation exhaust penetration exists in the ceiling of the switchgear rooms on elevation 119 feet to the main turbine deck, elevation 140 feet. Each ventilation opening to the turbine deck is fitted with a 3-hour rated fire damper to ensure the integrity of the fire barrier.

The barriers running east-west which separate fire area TB-5 from TB-4 to the south and TB-6 to the north are 2-hour rated with 1-1/2 hour rated doors on elevation 119 feet and 3-hour and 1-1/2 hour doors on elevation 107 feet. Corner gaps are sealed, and all structural steel is fire proofed. The exterior walls of all three fire areas are 2-hour rated. The south wall separating fire area TB-4 from fire zone 12-E (fire area TB-7) is 3-hour rated with 1-1/2 hour rated doors on elevation 107 and 119 feet. The west wall on elevation 107 feet is 3-hour rated and separates zones 12-A, 12-B and 12-C from zone 11-C-2 (fire area TB-1). The 3-hour rated west wall with a 1-1/2 hour rated door separates zone 12-A from the plenum of fire area 13-E. On elevation 119 feet, the west wall separates zone 13-A, 13-B and 13-C from fire area 13-D with 1-1/2 hour rated doors and removable panels and 1-1/2 hour rated dampers.

COMBUSTIBLES

Fire zones 12-A, 12-B and 12-C each have an approximate floor area in the cable spreading rooms of about 860 square feet. The in situ combustible loading within each cable spreading room is approximately 14,200 BTU/ft^2 with an equivalent fire severity of 10.7 minutes. In situ combustible loading is comprised primarily of electric cable insulation.

Transient combustible loading is estimated to present an additional 7900 BTU/ft^2 with an increased severity of 5.9 minutes. Anticipated transient combustibles are additional cable on spools which could be present during modification work.

Fire zones 13-A, 13-B and 13-C each have an approximate calculated floor area of about 825 square feet. The in situ combustible loading within each zone is approximately 3300 BTU/ft^2 with an equivalent fire severity of 2.5 minutes. In situ combustible loading is comprised primarily of cable and switchgear components.

Transient combustible loading is estimated to present an additional 750 BTU/ft^2 with an increased severity of 0.6 minutes. Anticipated transient combustibles are solvents and rags used for the cleaning of switchgear components.

MAJOR EQUIPMENT

Fire areas TB-4, TB-5 and TB-6 house the F, G, and H buses, respectively of the 4.16 kV switchgear and associated cable.

For listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

Smoke detection is provided throughout the switchgear and cable spreading room of each fire area and alarm in the continuously manned control room.

SUPPRESSION

Manual suppression capability in the form of portable fire extinguishers and both CO_2 and fire hose stations is available for each zone of each fire area.

DESCRIPTION OF MODIFICATION

STATEMENT OF PROBLEM

Three separate fans within the fan room of fire area 13-E provide ventilation air through ductwork without fire dampers to zones 12-A,

12-B and 12-C (fire areas TB-4, TB-5 and TB-6). The potential exists for a fire in fire area 13-E to adversely impact on the F, G and H buses of the 4.16kV switchgear and cable spreading rooms through the ductwork without fire dampers.

PROPOSED MODIFICATIONS

A 3-hour rated fire damper will be installed within the ductwork from each of the three fans in fire area 13-E at the barrier interface between fire area 13-E and fire zones 12-A, 12-B and 12-C. No modifications are proposed for the duct penetrating from a separate fan in fire area 13-E which penetrates through zone 12-B to fire area 11-D below because, should a fire propagate down into zone 12-B from fire area 13-E, adequate separation is provided to ensure that the fire will not spread into either fire area TB-4 or TB-6. No modifications are proposed for the duct penetrating the ceiling of fire zone 12-A from fire area 13-E because, should a fire propagate down into zone 12-A, adequate separation is provided to ensure that the fire will not spread into either fire area TB-5 or TB-6.

FIRE AREA: TB-7

TITLE: TURBINE BUILDING MACHINERY AREA

FIGURES: 3-1, 3-2, 3-3 and 3-4

AREA DESCRIPTION

PHYSICAL CHARACTERISTICS

Fire area TB-7 is located in the turbine building of both Units 1 and 2 at all elevations. The Unit 1 portion of this fire area is divided into fire zones 14-A, 14-D, 12-E and 16. Fire area TB-7 is separated from adjacent Unit 1 fire areas by 3-hour rated fire barriers except where identified in the description of the physical characteristics for each zone.

A. Fire Zone 14-A - Main Condenser, Feedwater, Condensate Equipment Area and the Reverse Osmosis Unit.

This fire zone comprises the bulk of the turbine building in Unit 1 at elevations 85, 104, and 119 feet. Fire zone 14-A is separated from adjacent fire areas by 3-hour rated fire barriers with the following exceptions.

1. A normally closed and alarmed sliding concrete missile shield at the north west corner of this zone on elevation 85 feet provides separation from fire zone 11-C-2 of fire area TB-3.

2. Unrated doors and ventilation openings in the east and west walls of this zone on elevations 84, 104 and 119 feet communicate with fire area 28 outside and with the condensate demineralizers in the west buttresses.

3. The exterior of the reverse osmosis unit is separated from fire area 28 by 2-hour rated barriers with 3-hour rated doors.

4. Ventilation ducts without fire dampers communicate with fire area 6-A-5 at about elevation 115 feet.

Within this zone are fire areas 14-B (clean and dirty lube oil rooms, elevation 85 feet), 14-C (non vital electrical load center, elevation 125 feet), fire area 14E (component cooling water heat exchangers, elevation 85 feet), and fire area 17 (the warehouse, at elevation 123 feet). These fire areas are separated from fire zone 14-A by 3-hour rated barriers except for a sheet metal barrier on either side of the ventilation penetration into the west wall of fire area 14-C..

B. Fire Zone 14-D Unit 1 Turbine Operating Deck

This fire zone consists of the Units 1 and 2 main turbine operating deck at elevation 140 feet. This zone is separated from the remaining portion of the Unit 1 fire area TB-7 by a concrete floor slab penetrated by open stairways and equipment hatches. Fire zone 14-D is separated from adjacent fire areas by 3-hour rated fire barriers with the following exceptions.

1. The exterior wall is unrated and communicates with fire areas 28 and 34 (outdoors).

2. Unsealed diesel exhaust stack penetrations at the north end of this zone communicate with fire areas 13-E and 13-F.

3. An open ventilation exhaust vent along the center ridge of the roof.

4. A valve operator linkage penetration in the floor of this zone communicates with fire area 15 below.

C. Fire Zone 12-E - Isophase Bus Area

This zone is located in the northeast corner of the turbine building and occupies the space between elevations 107 and 140 feet. This fire zone is separate from adjacent fire areas by 3-hour rated fire barriers with the following exceptions.

1. A 1-1/2 hour rated door separating this fire zone from fire area 10 on elevation 107 feet by the south stairway.

2. One and one-half hour rated doors separating this zone from fire zone 12-A on elevation 107 feet.

3. One and one-half hour rated fire doors separating this zone from fire zones 13-A and fire area 13-D to the north on elevation 119 feet.

4. A 2-hour fire rated wall and an unrated isophase bus penetration at the east wall communicating with fire area 28 (outside).

D. Fire Zone 16 - Machine Shop

This fire zone, common to both units, is located at elevation 85 feet in the turbine building. This fire zone communicates with the turbine deck (fire zone 14-D) via the open main equipment hatch. Fire zone 16 is provided with 3-hour rated fire barriers between adjacent fire areas.

COMBUSTIBLES

A. Fire Zone 14-A

The in situ combustible loading in this zone is approximately 23,600 BTU/ft^2 with an equivalent severity of about 18 minutes due to electric cables and lubricating oil. Anticipated transients are acetylene, fire retardant treated wood, paper, rags, solvents,

lubricating oil and fuel oil. Transients are anticipated to add approximately 11,650 BTU/ft^2 loading and 9 minutes to the fire severity in this fire zone.

B. Fire Zone 14-D

The in situ combustible loading in this fire zone is approximately 3960 BTU/ft^2 with an equivalent severity of about 3 minutes due to hydrogen, grease, lubricating oil and Class A combustibles in sprinklered office and shop areas. The anticipated transients are grease, paper, fire retardant treated wood, solvents, cable and rags. Transients are anticipated to add approximately 2900 BTU/ft^2 combustible loading and an increased fire severity of 2.2 minutes.

C. Fire Zone 12E

The in situ combustible loading in this fire zone is approximately 3400 BTU/ft^2 with an equivalent severity of 2.5 minutes due to cable and electrical equipment. The anticipated transients are grease, rags, paper and solvents. Transients are anticipated to add approximately 780 BTU/ft^2 with an additional severity of 0.7 minutes.

D. Fire Zone 16

The in situ combustible loading in this fire zone is approximately 17270 BTU/ft^2 with an equivalent severity of about 13 minutes due to flammable gases, lubricating and hydraulic oil, grease, paper and solvents. Anticipated transient combustible loading in this area will be relatively high, since the main equiment hatch is located in this area. Transients are anticipated to add approximately 20,550 BTU/ft^2 loading and 16 minutes to the fire severity. Typical transients will include diesel oil, acetylene, grease, fire retardant treated wood, solvents, lubricating oil, paper and rags.

MAJOR EQUIPMENT

A. Fire Zone 14-A

The major equipment in this zone consists of the main condenser, the condensate and feedwater equipment (pumps, heat exchangers, moisture separators, reheaters, feedwater heaters, etc.), plant air compressors, hydrogen seal oil unit, oily water separator, service water cooling pumps and heat exchangers, cardox storage tank, seawater evaporator, non-vital battery rooms, reverse osmosis unit and the ventilation system for the post LOCA sample room (fire area 3-BB).

B. Fire Zone 14-D

The major equipment in this zone consists of the main turbine generator, the overhead crane, the control room pressurization system, the instrument and control shop, and non-combustible offices. There is no safe shutdown equipment in this zone.

C. Fire Zone 12-E

The equipment in this fire zone includes the isophase buses and isophase bus cooler, the potential transformer and the generator neutral grounding transformer. This equipment is utilized for the plant's electrical power generation. It is not safety related and is not required for safe shutdown.

D. Fire Zone 16

The equipment in this zone includes machine shop equipment, a welding shop, a tool issue room, an overhead crane, the freight elevator equipment room, offices and the main equipment hatch. There is no safe shutdown equipment in this zone.

Listing of raceway required for safe shutdown routed through the subject fire area/zone see Table 3-4.

ACTIVE FIRE PROTECTION CAPABILITY

DETECTION

No detection is provided for these zones.

SUPPRESSION

12-E: Manual fire suppression capability in the form of portable fire extinguishers and both fire and CO_2 hose stations is available for this zone.

14-A, 16: Wet pipe automatic sprinkler protection is provided in these zones. Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for these zones. Special hazard protection is provided by an automatic water spray systems for the hydrogen seal oil unit and feedwater pump turbines. The water flow alarms for these systems annunciate in the continuously manned control room.

14-D: The instrument shop and non-combustible offices on elevation 140 feet are provided with wet pipe automatic sprinkler protection. Special hazard protection is provided by an automatic water spray system for exposed high pressure lube oil piping and turbine generator bearings Nos. 2 through 9. A heat activitated CO_2 system is provided for turbine generator bearing No. 10. The water flow alarms and CO_2 system actuation annunciate in the continuously manned control room. Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for this zone.

FIRE AREA: TB-7

TITLE: TURBINE BUILDING MACHINERY AREA

FIGURES: 3-1, 3-2, 3-3, and 3-4

DESCRIPTION OF DEVIATION

STATEMENT OF PROBLEM

Fire zone 14-A located within fire area TB-7 does not meet the requirements of Appendix R, Section III.G.2(b) due to redundant low signal RPM indication circuits of the diesel generator 1-1 (H bus), 1-2 (G bus), and 1-3 (F bus) being routed at varying separation distances from 2 to 15 feet.

PROPOSED MODIFICATION

An isolator will be provided on each diesel generator RPM tach-pack to preclude a premature trip of a diesel generator due to a short circuit of RPM indication circuitry.

TABLE 3-1

TABLE OF FIRE AREAS AND FIRE ZONES

Fire Area	Fire Zones Within the Fire Area	Description
1	1-A, 1-B, 1-C	Containment Building
2	-	Auxiliary Boiler
3-B-1	-	RHR Pump and Hx Room
3-B-2	-	RHR Pump and Hx Room
3-H-1	-	Centrifugal Charging Pump Room
3-H-2	-	Reciprocating Charging Pump Room
3-P-1	-	Ventilation Room
3-P-5	-	Ventilation Room
3-P-12	-	Ventilation Room
3-Q-1	-	Auxiliary Feedwater Pump Room
3-BB	-	Containment Penetration Area
4-A	-	Counting and Chemical Laboratory
4-A-1	-	Chemical Lab Area, G Bus Compartment
4-A-2	-	Chemical Lab Area, H Bus Compartment
4-B	-	Showers, Lockers, and Access Control
5-A-1	-	480V Vital Switchgear, F Bus
5-A-2	-	480V Vital Switchgear, G Bus
5-A-3	-	480V Vital Switchgear, H Bus

TABLE 3-1

TABLE OF FIRE AREAS AND FIRE ZONES
(cont'd.)

Fire Area	Fire Zones Within the Fire Area	Description
5-A-4	-	480V Non-Vital Switchgear and Hot Shutdown Panel Area
6-A-1	-	Battery, Inverter and DC Switchgear, F Bus
6-A-2	-	Battery, Inverter and DC Switchgear, G Bus
6-A-3	-	Battery, Inverter and DC Switchgear, H Bus
6-A-4	-	Reactor Trip Switchgear
6-A-5	-	Electrical Area
7-A	-	Cable Spreading Room
7-C	-	Communications Room
8-G	-	Safeguards Room - Unit 1
8-H	-	Safeguards Room - Unit 2
10	-	12KV Switchgear Room
11-D	-	Hallway Outside Diesel Generator Rooms
13-D	-	Excitation Switchgear Room
13-E	-	Switchgear Ventilation Fan Room
13-F	-	Storage Room
14-B	-	Clean and Dirty Lube Oil
14-C	-	Non-Vital Electrical Load Center
14-E	-	CCW Heat Exchangers

TABLE 3-1

TABLE OF FIRE AREAS AND FIRE ZONES
(cont'd.)

Fire Area.	Fire Zones Within the Fire Area	Description
15	–	Turbine Lube Oil Reservoir
17	–	Unit 1 and 2 Warehouse
26	–	Unit 1 and 2 Chemical and Gaseous Storage
27-A	–	Boxed Waste Zone
27-B	–	Drum Storage Zone
27-C	–	Contaminated Oil Storage
28	–	Unit 1 Main Transformer
30-A-1	–	Auxiliary Saltwater Pump 1-1 Vault
30-A-2	–	Auxiliary Saltwater Pump 1-2 Vault
34	–	Outside Building (Elevation 140 feet)
35-A	–	Diesel Fuel Oil Transfer Pump Vault
35-B	–	Diesel Fuel Oil Transfer Pump Vault
AB-1	3-A, 3-B-3, 3-C, 3-D-3, 3-F, 3-G, 3-J-1, 3-J-2, 3-J-3, 3-K-1, 3-K-2; 3-K-3 3-L, 3-M, 3-N, 3-Q-2, 3-R, 3-S, 3-W, 3-X, 3-AA, 8-B-1, 8-B-2, S-2, S-3, S-4	Auxiliary Building
AB-2	8-B-5, 8-B-6, S-5	Electrical Area Ventilation Room

TABLE 3-1

TABLE OF FIRE AREAS AND FIRE ZONES
(cont'd.)

Fire Area	Fire Zones Within the Fire Area	Description
AB-3	8-B-7, 8-B-8, S-1	Electrical Area Ventilation Room
CB-1	1-A, 1-B, 1-C	Containment Building
CR-1	8-A, 8-B-3, 8-B-4, 8-C, 8-D, 8-E, 8-F	Control Room
IS-1	30-A-5, 30-B	Circulating Water Pump Room Intake Structure Control Room
TB-1	11-A-1, 11-A-2	Emergency Diesel Generator 1-1
TB-2	11-B-1, 11-B-2	Emergency Diesel Generator 1-2
TB-3	11-C-1, 11-C-2	Emergency Diesel Generator 1-3
TB-4	12-A, 13-A	4.16kV Cable Spreading Room and Switchgear Room, F Bus
TB-5	12-B, 13-B	4.16kV Cable Spreading Room and Switchgear Room, G Bus
TB-6	12-C, 13-C	4.16KV Cable Spreading Room and Switchgear Room, H Bus
TB-7	12-E, 14-A, 14-D, 16	Turbine Building
V-1	3-P-2, 3-P-3, 3-P-4, 3-P-9	Ventilation Room
V-2	3-P-6, 3-P-7, 3-P-8, 3-P-10, 3-P-11	Ventilation Room

TABLE 3-2

DIABLO CANYON UNITS 1 AND 2
10 CFR 50 APPENDIX R REVIEW
MINIMUM EQUIPMENT REQUIRED FOR SAFE SHUTDOWN

The following list represents the minimum equipment required to bring the plant to a cold shutdown as defined by 10 CFR 50, Appendix R, Sections III.G.1.a and b.

While it recognized that there may be alternate paths available to achieve a cold shutdown, it is of interest to reduce to the maximum extent practical the list of equipment necessary to do so. This in turn reduces the number of circuits which must be evaluated and protected in the unlikely event of a postulated fire.

SYSTEMS AND ACTIVE COMPONENTS		REDUNDANCY AND/OR COMMENTS
1.	Emergency Power Supply	
a.	Diesel generators, 1-1, 1-2, 1-3	2 of 3 required
b.	Diesel fuel oil transfer pumps, 0-1, 0-2	1 of 2 pumps required
c.	Day tank level control valves LCV-85, LCV-88, LCV-86, LCV-89, LCV-87, LCV-90	1 of 2 LCVs per day tank required
d.	125V dc batteries	2 of 3 required
e.	Battery chargers	2 of 5 required
f.	Inverters	2 of 4 required
g.	4kV power supplies to 480 volt load centers and load center transformers	2 of 3 required
h.	125V dc supplies to 4kV switchgear	2 of 3 required
i.	125V power supplies to main switchgear board	2 of 3 required
j.	Instrument ac power channels	2 of 4 channels required

TABLE 3-2
(continued)

SYSTEMS AND ACTIVE COMPONENTS		REDUNDANCY AND/OR COMMENTS
2. Auxiliary Feedwater System		
a. Auxiliary feedwater (AFW) pumps (turbine-driven AFW pump 1-1 and electric motor-driven AFW pumps 1-2 and 1-3)		1 of 3 pumps required
b. Associated steam supply valves for AFW pump 1-1:		Applicable only to AFW pump 1-1
FCV-95, FCV-152, FCV-15,		Required for AFW pump 1-1
FCV-37, FCV-38		1 of 2 valves required for AFW pump 1-1
c. Associated level control valves:		
Pump 1-1:	LCV-107, LCV-108	1 of 2 valves required for pump 1-1
Pump 1-2:	LCV-110, LCV-111	1 of 2 valves required for pump 1-2
Pump 1-3:	LCV-113, LCV-115	1 of 2 valves required for pump 1-3
d. Water supply and associated valves:		1 of 2 water supplies required
1) Condensate storage tank, or		No valves required
2) Fire water storage tank FCV-436, FCV-437		1 of 2 valves required for fire water storage tank. Can be manually operated if required.
3. Residual Heat Removal System*		
a. Residual heat removal (RHR) pumps 1-1 and 1-2		1 of 2 pumps required
b. RHR heat exchangers, 1-1 and 1-2		1 of 2 Hx required
c. RHR valves:		
HCV-637, HCV-638 (RHR flowpath)		1 of 2 valves required
8809-A, 8809-B (RHR flowpath)		1 of 2 valves required
8700A, 8700B (RHR suction)		1 of 2 valves required
8716A, 8716B, (RHR flowpath)		1 of 2 valves required

* Components of RHR system are required for COLD SHUTDOWN.

TABLE 3-2
(continued)

SYSTEMS AND ACTIVE COMPONENTS	REDUNDANCY AND/OR COMMENTS
d. RHR heat sink:	
Component cooling water (CCW) system	See Item 5
Auxiliary saltwater (ASW) system	See Item 6
e. RHR valves 8701 and 8702 (hot leg RHR suction)	1 of 2 required to maintain reactor coolant pressure boundary during HOT SHUTDOWN. Can be manually opened for COLD SHUTDOWN. Valve power circuits are normally racked out at the motor control center
4. <u>Charging and Boration</u>	
a. Centrifugal charging pumps 1-1, 1-2 reciprocating pump 1-3 (used as backup to 2 centrifugal pumps)	1 of 3 pumps required
b. Charging pump cooling:	
CCW system	See Item 5
ASW system	See Item 6
c. Centrifugal charging pump 1-1 and 1-2 auxiliary lube oil pumps. Can be bypassed	Only utilized to start charging pumps
d. Charging and boration flow path.	1 flow path required
1) Using boric acid tanks:	
Boric acid tanks	1 of 2 tanks required
Boric acid transfer pumps	1 of 2 pumps required
Boric acid filter	Only flow path required
Valve 8104	Required for boric acid tank flowpath
Charging pumps	1 of 3 pumps required
Valve FCV-128	Required for centrifugal charging pumps. Two manual bypass flow paths
and a) Charging through reactor coolant pump seal via RCP seal injection	No additional components required

TABLE 3-2
(continued)

SYSTEMS AND ACTIVE COMPONENTS	REDUNDANCY AND/OR COMMENTS
b) Charging through regenerative HX and valves HCV-142, 8108, 8107, and:	All these valves required for this flow path
(1) Valve 8145 and 8148, charging to auxiliary pressurizer spray	1 of 2 valves required for pressurizer auxiliary spray
or (2) Valve 8146, charging to loop 3 cold leg	Valve required
or (3) Valve 8147, charging to loop 4 cold leg	Valve required
or 2) Using boron injection tanks:	
Refueling water storage tank	Required for this flowpath
Valves 8805A, 8805B	1 of 2 valves required
Charging pumps	1 of 3 pumps required
Valve FCV-128	Required for reciprocating charging pump
Valve 8803A, 8803B	1 of 2 valves required
Boron injection tank (BIT)	Required
Valves 8801A, 8801B	1 of 2 valves required
5. <u>Component Cooling Water System</u>	
a. CCW pumps 1-1, 1-2, and 1-3	1 of 3 pumps required
b. CCW heat exchanger 1-1, 1-2	1 of 2 Hx required
c. CCW valves:	
FCV-355 (CCW Misc. Service Header)	Required for reciprocating charging pump 1-3 cooling Can be opened manually if required
FCV-430, FCV-431 (CCW vital service headers)	1 of 2 valves required
FCV-364, FCV-365 (CCW to RHR Hx)	1 of 2 valves required for RHR system cooling. Valves required for COLD SHUTDOWN. Manual operation assumed in event of failure of remote control.

TABLE 3-2
(continued)

SYSTEMS AND ACTIVE COMPONENTS	REDUNDANCY AND/OR COMMENTS
d. CCW pump 1-1, 1-2, 1-3 auxiliary lube oil pumps	Only required to start CCW pump
e. CCW heat sink:	
ASW system	See Item 6
6. <u>Auxiliary Saltwater System</u>	
a. Auxiliary saltwater (ASW) pump, 1-1, 1-2	1 of 2 pumps required
b. ASW valves:	
FCV-602, FCV-603 (ASW to CCW Hx)	1 of 2 valves required
7. <u>Main Steam System</u>	
a. 10% steam relief valves: PCV-19, PCV-20, PCV-21, PCV-22	1 of 4 valves required Backup to 10% steam relief valves provided by main steam code safety valves
b. Steam generator blowdown isolation valves: FCV-760, FCV-761, FCV-762, FCV-763	Required to close to maintain water inventory for safe shutdown
8. <u>Instrumentation</u>	
a. Steam generator level SG 1-1: LT-516, LT-517, LT-518, LT-519 SG 1-2: LT-526, LT-527, LT-528, LT-529 SG 1-3: LT-536, LT-537, LT-538, LT-539 SG 1-4: LT-546, LT-547, LT-548, LT-549	1 steam generator required for cooldown
b. Steam generator pressure Loop 1: PT-514, PT-515, PT-516 Loop 2: PT-524, PT-525, PT-526 Loop 3: PT-534, PT-535, PT-536 Loop 4: PT-544, PT-545, PT-546	1 steam generator required for cooldown 1 of 3 PTs required for that loop

TABLE 3-2
(continued)

SYSTEMS AND ACTIVE COMPONENTS	REDUNDANCY AND/OR COMMENTS
c. Reactor coolant system temperature	1 of 2 required per loop, 1 loop required for cooldown
Loop 1: TE-413A, TE-413B Loop 2: TE-423A, TE-423B Loop 3: TE-433A, TE-433B Loop 4: TE-443A, TE-443B	
d. Reactor coolant system or pressurizer pressure	1 of 3 wide range PTs required
PT-403, PT-405, PT-406,	Wide range
PT-455, PT-456, PT-457, PT-474	Narrow range
e. Pressurizer level LT-459, LT-460, LT-461, LT-406	1 of 4 required
f. Source range flux monitors NE-31, NE-32	1 of 2 required
9. <u>Ventilation for Safe Shutdown Equipment</u>	
a. *480V switchgear room and inverter room supply and exhaust fans	
S-43, S-44	1 of 2 required
E-43, E-44	1 of 2 required
Dampers	
HD43, HD44	1 of 2 required
b. *4.16kV switchgear room supply fans S-67, S-68, S-69.	2 of 3 required
c. ASW pump room exhaust fans E-101, E-103	1 of 2 required
10.0 <u>Reactor Coolant System</u>	
a) Pressurizer power operated relief valves PCV-455C, 474, 456 and block valves 8000A, B and C	Required to prevent LOCA due to stuck open valve

* . Portable fans are available in the event these fans are unavailable due to a fire.

TABLE 3

POTENTIAL SPURIOUS MALFUNCTIONS THAT COULD AFFECT SAFE SHUTDOWN

Potential Spurious Component	System	Effect of Malfunction	Resolution
8145 8148	CVCS	Spurious opening of the pressurizer auxiliary spray air-operated valves (with CVCS pumps running) will result in uncontrolled RCS pressure reduction	Manually close 8107 or 8108 (if affected by the fire, otherwise shut electrically) or fail HCV-142 closed (air operated fail close valve)
8166 8167	CVCS	Spurious opening of all valves in series will result in uncontrolled excess letdown.	Manually fail (fails HCV-123 closed on loss of electrical power) to isolate excess letdown
LCV-459 LCV-460 8149A 8149B 8149C	CVCS	Spurious opening of LCV-459 and LCV-460 and either orifice isolation valve will result in uncontrolled letdown.	For this extremely improbable condition to exist, 3 valves in series must fail open. If this were to occur the letdown system can be isolated by manually failing either LCV-459 or LCV-460 at the dc panel or at the solenoid associated with the valves.
PCV 19 PCV 20 PCV 21 PCV 22	MS	Spurious opening of the steam generator 10% steam relief valves (as a result of fire-induced control circuit failures) will result in uncontrolled cooldown.	Procedural detection and subsequent isolation by placing auto/manual controller (control room or at HSD panel) in manual position. (Valves fail closed on loss of air or loss of current signal.)

TABLE 3-3

POTENTIAL SPURIOUS MALFUNCTIONS THAT COULD AFFECT SAFE SHUTDOWN
(cont'd.)

Potential Spurious Component	System	Effect of Malfunction	Resolution
FCV-763 FCV 160 FCV-762 FCV 157 FCV-761 FCV 154 FCV-760 FCV 151		Spurious opening of any pair of steam blowdown valves could cause excessive RCS cooldown.	Procedural detection and subsequent manual isolation of the blowdown system for the affected steam generator(s).
8078 A 8078 B 8078 C 8078 D	RCS	Spurious opening of pressurizer or reactor head vent valves will result in breach of RCS boundary.	Procedural detection and subsequent opening of dc supply circuit to the valves.
PCV-474 PCV-455c PCV-456	RCS	Spurious opening of any of the pressurizer PORVs will result in RCS boundary breach.	Procedural detection and closure of respective block valve or opening of DC distribution panel breakers. (Air operated PORVs fail closed with loss of power or loss of air.)
8982A 8982B	RHR	Spurious opening of the containment sump isolation valves when in shutdown cooling mode (RHR) will divert RCS water to the containment sump.	Valve line up will be checked prior to RHR system operation.
8701 8702	RHR	Spurious opening of both RHR/RCS boundary isolation valves when not in shutdown cooling mode will result in breach of the RCS boundary.	Valves are closed and breakers are racked out at the MCC.

)0¢%F/0050F/7:15am

TABLE 3-3

POTENTIAL SPURIOUS MALFUNCTIONS THAT COULD AFFECT SAFE SHUTDOWN
(cont'd.)

Potential Spurious Component	System	Effect of Malfunction	Resolution
9003 A 9003 B	RHR	Spurious opening of any of the containment spray headers isolation valves when in shutdown cooling will divert RCS water to the containment.	Valve line up will be checked prior to RHR system operation.
8804 A 8807 A 8807 B	RHR	Spurious opening of the RHR/CVCS/SIS pump suction tie lines will divert RCS water to the pressurizer relief tank (PRT) through the charging pump suction safety valve RV525WB	This condition would be procedurally detected however low flow would exist through the relief valve to the PRT. Affected valves can be manually closed if necessary.

Table 3-4

Computer Tabulation of Safe Shutdown
Circuits for Fire Areas/Zones Requiring Exemptions

This Table contains the results of the computer sort of safe shutdown equipment and raceway by vitality and fire zone for those fire areas in which exemptions have been requested.

Sections A through D below provides a description of the coding used to define the information contained in the computer tabulation.

A. General Safe Shutdown Component Code

ALOP	=	Auxiliary Lube Oil Pump
ASPE	=	Auxiliary Saltwater Pump Room Exhaust Fan
ASWP	=	Auxiliary Saltwater Pump
BAXFRP	=	Boric Acid Transfer Pump
CCWP	=	Component Cooling Water Pump
CP	=	Charging Pump
DCHPNL	=	DC Panel Powered from H Bus
DFTP	=	Diesel Fuel Transfer Pump
DSGEN	=	Diesel Generator
FCV	=	Flow Control Valve
IY	=	DC Inverter
LCV	=	Level Control Valve
LT	=	Level Transmitter
NISNE	=	Nuclear Instrumentation System Neutron Flux Detector
PCV	=	Pressure Control Valve
PP	=	Pump
PT	=	Pressure Transmitter
PY	=	Instrumentation AC Power Panel
RHRP	=	Residual Heat Removal Pump
TE	=	Temperature Element
VV	=	Valve

B. General Safe Shutdown System Code

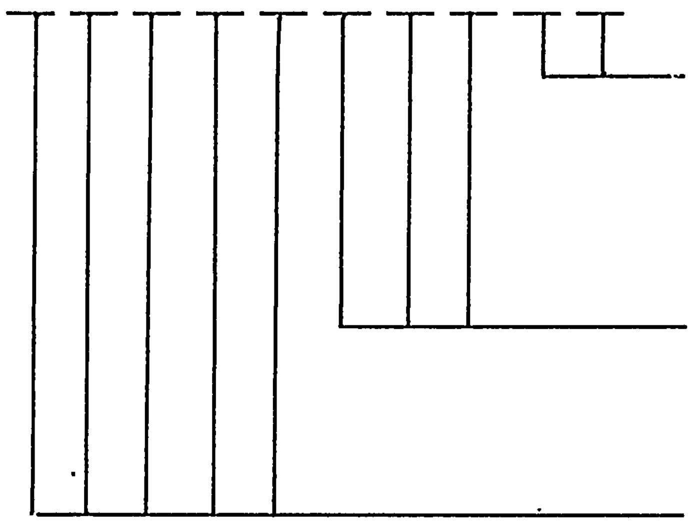
System Code		System Description
AF	=	Auxiliary Feedwater System
AS	=	Auxiliary Saltwater System
CB	=	Charging and Boration System
CC	=	Component Cooling Water System
EP	=	Emergency Power System
IT	=	Instrumentation
MS	=	Main Steam System
RC	=	Reactor Coolant System
RH	=	Residual Heat Removal System
VE	=	Ventilation Equipment System

Table 3-4

(continued)

C. <u>General Interpretation of Fire Area/Zone Coding</u>

Fire zone:



These two spaces are used for indicating if the raceway/circuit is embedded.
Blank Spaced = Exposed
EF = Embedded From
ET = Embedded To

These three spaces are used for indicating the floor elevation where the raceway/circuit/component can be found.

These five spaces are used for indicating the fire zone (See Figures 3-1 thru 3- for fire area/zone boundaries).

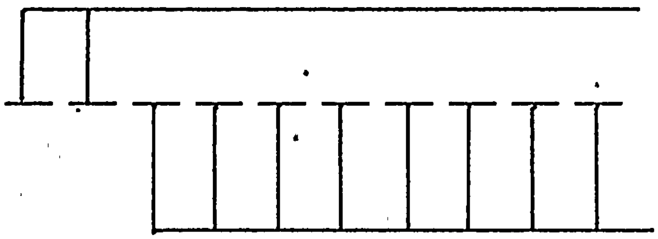
Example: 3BB 085EF

Embedded from Elevation 85 feet of Fire Zone 3BB

Table 3-4

(continued)

D. <u>General Interpretation of Safe Shutdown Device (ID) Coding</u>

ID: 

These two spaces are used for identifying safe shutdown system (see safe shutdown system code)

These eight spaces are used for identifying safe shutdown component (see safe shutdown component code)

Examples:

Emergency Power System

ID: EP – DSGEN13

Diesel Generator 1-3

Auxiliary Feedwater

ID: AF – PP13

Auxiliary Feedwater Pump 1-3

TABLE 3 -

(Computer Tabulation of Fire Area/Zone vs. Raceway)

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
S3 085	AF-PF12	6998
	AF-PF13	6993

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
1A	IT-LT406	X092							
			X097	X268	X272				
	IT-LT459	X018	X036	X150	X166	X167	X158	X564	X594
		X681							
	IT-LT460	X034	X044	X109	X246	X296	X553		
	IT-LT461	X012	X114	X144	X145	X146	X280		
	IT-LT516	X092	X097	X098					
	IT-LT517	X122	X127	X152	X191				
	IT-LT518	X105	X120	X187	X313				
	IT-LT519	X044	X185	X296					
	IT-LT526	X092	X097	X268	X270				
	IT-LT527	X122	X127	X152	X193	X194	X195		
	IT-LT528	X105	X114	X120	X196	X280	X313		
	IT-LT529	X018	X036	X150	X166	X167	X197	X564	X594
	IT-LT536	X092	X096						
	IT-LT537	X124	X177						
	IT-LT538	X125	X178	X771					
	IT-LT539	X112	X121	X180	X245				
	IT-LT546	X092	X093	X094					
	IT-LT547	X103	X173						
	IT-LT548	X106	X204						
	IT-LT549	X110	X176	X558					
	IT-NISNE31	1502	1590						
	IT-NISNE32	1506	1592						
	IT-PT406	X092	X093	X095					
	IT-PT455	X018	X036	X150	X166	X167	X192	X197	X277
		X381	X564	X594					
	IT-PT456	X044	X109	X198	X246	X296			
	IT-PT457	X144	X145	X146	X171	X172	X280		
	IT-PT474	X122	X189	X190	X193	X194	X195		
	IT-TE413A	X418							
	IT-TE413B	X418							
	IT-TE423A	X418							
	IT-TE423B	X418							
	IT-TE433A	X411							
	IT-TE433B	X411							
	IT-TE443A	X411							
	IT-TE443B	X411							
	HS-FCV760	1720	1724	1735	1786	1785			
	HS-FCV761	1720	1724	1726	1735	1739	1785	1868	1959
		1960							
	HS-FCV762	1736	1741	1745	1747	1779	1880	1881	1964
		1969							
	HS-FCV763	1741	1742	1964	1965				
	RC-PCV455C	X453	X462						
	RC-PCV456	X457	X463						
	RC-PCV474	X461							
	RC-VV8000A	1760	1961	1962					
	RC-VV8000B	1720	1724	1726	1728	1735	1739	1868	1960
	RC-VV8000C	1736	1747	1749	1790	1975			

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS			
1B	IT-NISNE31	1502			
	IT-NISNE32	1506			
	IT-TE413A	X418	X420	X421	
	IT-TE413B	X418	X419		
	IT-TE423A	X418	X420	X422	X423
	IT-TE423B	X418	X420	X422	X424
	IT-TE433A	X411	X413	X415	X416
	IT-TE433B	X411	X413	X415	X417
	IT-TE443A	X411	X413	X414	
	IT-TE443B	X411	X412		
	MS-FCV760	1787	1963		
	MS-FCV761	1784	1963		
	MS-FCV762	1791	1970		
	MS-FCV763	1788	1970		
	RC-PCV455C	X452			
	RC-PCV456	X456			
	RC-PCV474	X460			
	RC-VV8000A	1768			
	RC-VV8000B	1730			
	RC-VV8000C	1752			

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS		
1C	IT-NISHE31	1642		
	IT-NISHE32	1650		
	RC-PCV455C	X450	X451	X452
	RC-PCV456	X454	X455	X456
	RC-PCV474	X458	X459	X460
	RC-VV8000A	1768		
	RC-VV8000B	1730		
	RC-VV8000C	1752		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
11A1	EP-DFTP01	2308							
			2328	2470	2472	2473	2474		
	EP-DFTP02	2301	2484	2492	2493	2494	2495		
	EP-DSGEN11	A300	A302	2240	2327	2328	2337	2338	2339
		2467	2468	2470	2471	2476	2477	2479	2480
		2484	2498	2499	2500	2501			

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
11A1 ET	EP-OSGEN11	2127

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
1181	EP-DFTP01	2504							
			2505	2506	2508				
	EP-DFTP02	2330	2511	2513	2514	2515	2516		
	EP-DSGLN12	A305	A307	2239	2300	2329	2330	2343	2344
		2346	2348	2349	2502	2511	2512	2518	2520
		2521	2523	2526	2529	2531	2550		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
1101 ET	EP-DSGEN12	2130

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
11C1	EP-DFTP01	2561							
			2568	2569	2570	2571	2583		
	EP-DFTP02	2510	2579	2580	2581				
	EP-DSGEN13	A310	A312	2238	2531	2332	2333	2334	2335
		2350	2351	2573	2574	2575	2576	2577	2583
		2584	2585	2586	2587	2588	2590		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
11C1 ET	EP-DSGEN13	2133

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
11D	EP-DFTP01	2328							
			2466	2503	2504	2583	2607		
	EP-DFTP02	2330	2484	2509	2510	2617			
	EP-DSGEN11	A303	2240	2328	2467	2484	2607	2608	2609
		2617	2618	2695					
	EP-DSGEN12	A307	A308	2239	2330	2502	2509	2559	2560
		2604	2613	2617	2618	2619	2692		
	EP-DSGEN13	A312	A313	2238	2331	2466	2503	2527	2558
		2583	2584	2604	2607	2608	2609	2613	2614
		2694							

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
12A	AF-LCV113	2447							
			2860						
	AF-LCV115	2447	2860						
	AF-PP12	2665							
	AF-PP13	FDB	FDBA	FDBB	FDBC	FDC	FDCA	FDCB	FDCC
		FDCD	FDD	FDDA	FDDB	FDDC	FDDD	FDDE	FDDF
		2437	2444	2446	2447	2448	2557	2666	2721
		2765							
	AS-ASHP11	FDAD	FDAE	FDC	FDCA	FDCB	FDCC	FDCD	FDD
		FDDA	FDDB	FDDC	FDDD	FDDE	FDDF	2445	2446
		2448	2557	2622	2626	2690	2720	2765	
	AS-ASHP12	2637							
	CB-ALOP11	FDC	FDCA	FDCB	2448				
	CB-CP11	FDA	FDAA	FDAB	FDC	FDCA	FDCB	FDD	FDDA
		FDDB	2439	2444	2446	2448	2557	2722	2765
	CC-ALOP11	FDC	FDCA	2448					
	CC-CGHP11	FDB	FDBA	FDBB	FDC	FDCA	FDCB	FDD	FDDA
		FDDB	2442	2444	2446	2448	2557	2723	2765
	EP-DSGEN12	FDD	FDDA	FDDB	FDDC	FDDD	FDDE	FDDF	2018
		2445	2446	2604	2613	2692	2776		
	EP-DSGEN13	FDAE	FDBE	FDC	FDCA	FDCB	FDCC	FDCD	FDD
		FDDA	FDDB	FDDC	FDDD	FDDE	FDDF	2018	2444
		2445	2446	2447	2448	2604	2613	2614	2620
		2624	2654	2660	2687	2796			
	EP-4KVLC1F	FDA	FDAA	FDAE	FDD	FDDA	FDDB	FDDC	2438
		2444	2446						
	VEASPE103	FDC	FDCA	FDCB	FDCC	FDCD	2447	2448	2626
		2627							

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
12B	AF-PI 12	2665							
	AS-ASWP11	2669	2690	2691					
	AS-ASWP12	GDAE	GDC	GDCA	GDCB	GDCC	GDCD	GDCE	GDD
		GDDA	GDDB	GDDC	GDDD	GDDE	GDDF	GDDG	2427
		2429	2431	2552	2610	2616	2637	2688	2717
		2764							
	CB-ALOP12	GDC	GDCA	GDCB	GDCC	2431			
	CB-CP12	GDA	GDAA	GDAB	GDAC	GDC	GDCA	GDCB	GDCC
		GDD	GDDA	GDDB	GDDC	2426	2427	2429	2431
		2552	2718	2764					
	CB-CP13	GDB	GDBA	GDC	GDCA	GDCB	GDD	GDDA	GDDB
		2419	2427	2429	2431				
	CC-ALOP12	GDC	GDCA	2431					
	CC-CCWP12	GDA	GDC	GDCA	GDD	GDDA	GDDB	2420	2427
		2429	2431	2552	2719	2764			
	EP-DFTP02	GDD	GDDA	GDDB	GDDC	GDDD	GDDE	GDDF	GDDG
		2428	2617						
	EP-DSGEN11	GDD	GDDA	GDDB	GDDC	GDDD	GDDE	GDDF	GDDG
		2428	2429	2617	2618	2652	2686	2698	2689
		2693							
	EP-DSGEN12	GDAE	GDC	GDCA	GDCB	GDCC	GDCD	GDCE	GDD
		GDDA	GDDB	GDDC	GDDD	GDDE	GDDF	GDDG	2428
		2429	2431	2612	2617	2616	2619	2653	2669
		2688	2691	2692	2776				
	EP-DSGEN13	2686	2687	2694					
	LP-4KVLC1G	GDB	GDBA	GDBE	GDD	GDDA	GDDB	GDDC	2423
		2429							
	RH-RHRP11	GDA	GDAA	GDAB	GDAC	GDC	GDCA	GDCB	GDCC
		GDD	GDDA	GDDB	GDDC	GDDD	2422	2427	2429
		2431							
	VEASFE101	GDC	GDCA	GDCB	GDCC	GDCD	2431	2552	2717
		2764							

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
12C	AF-LCV110	2412							
			2862						
	AF-LCV111	2412	2862						
	AF-PI12	HDA	HDAA	HDAB	HDAC	HDAL	HDC	HDCA	HDCB
		HDCC	HDCD	HDD	HDDA	HDDB	HDDC	HDDD	HDDE
		2408	2409	2410	2413	2548	2665	2700	2763
	CC-ALOP13	HDC	HDCA	HDD	HDDA	HDDB	2411	2413	
	CC-CCHP13	HDBA	HDBB	HDC	HDCA	HDD	HDDA	HDDB	2400
		2409	2410	2413	2548	2716	2763		
	EP-DITP01	HDD	HDDA	HDDB	HDDC	HDDD	HDDE	HDDF	2411
		2607							
	EP-DSGEN11	HDBB	HDC	HDCA	HDCB	HDCC	HDCD	HDD	HDDA
		HDDB	HDDC	HDDD	HDDE	HDDF	2014	2410	2411
		2413	2602	2607	2608	2609	2652	2672	2686
		2689	2997						
	EP-DSGEN13	HDC	HDCA	HDCB	HDCC	HDCD	HDD	HDDA	HDDB
		HDDC	HDDD	HDDE	HDDF	2410	2411	2413	2607
		2608	2609	2686	2694				
	EP-4KVLC1H	HDBA	HDBB	HDD	HDDA	HDDB	HDDC	2402	2411
	RH-RHRP12	HDBA	HDBB	HDC	HDD	HDDA	HDDB	2401	2409
		2410	2413						

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
12E	EP-DSGEN11	2652	
			2821
	EP-DSGEN12	2653	2820
	EP-DSGEN13	2654	2819

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
13A	AF-LCV113	2860	
	AF-LCV115	2860	
	AF-PF 13	2721	
	AS-ASWP11	2720	
	AS-ASWP12	2637	
	CB-CF 11	2722	
	CC-CCWP11	2723	
	LP-DSGLN13	2660	2796

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
13B	AS-ASHP11	2669	
	AS-ASHP12	2717	
	CB-CP12	2718	
	CC-CCWP12	2719	
	EP-DSGEN12	2669	2776
	VEASFE101	2717	

214

REPORT 9: -FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
13C	AF-LCV110	2862
	AF-LCV111	2862
	AF-PP12	2700
	CC-CCWP13	2716
	EP-DSGEN11	2997

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
130	EP-DSGEN11	2652
	LP-DSGEN12	2653
	LP-DSGEN13	2654

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS					
14A 085	AF-PP12	2665					
			4000	4006	4012	4033	4030
	AF-PP13	2666	4002	4015	4020	4032	4079
	EP-DSGEN11	A303					
	EP-DSGEN12	A308	D338				
	EP-DSGEN13	A313					

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
14A 085EF	AF-PP12	4700
	AF-PP13	4711

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
14A 085ET	AF-PP12	4700	4713
	AF-PP13	4711	4723

REPORT 9: FIRE ZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
14A 104	AF-LCV113	T243	
			7567
	AF-LCV115	T243	7567
	AF-PP12	2665	
	AF-PP13	2666	
	LP-DSGEN11	A303	T554
	LP-DSGEN12	D338	T113
	LP-DSGEN13	D339	T115

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS		
14E	AS-FCV602	4846		
			4866	4881
	AS-FCV603	4847	4867	4880
	CC-FCV430	4878	4881	
	CC-FCV431	4879	4880	
	LP-DSGEN12	0338		
	LP-DSGEN13	A313	0339	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS			
3AA	CB-VV8104	9112			
			9604		
	CB-VV8805A	9234			
	CB-VV8805B	9112			
	IT-LT102	T727	T879	T886	T887
	IT-LT106	T736	T880	T886	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3AA	EF	CB-VV8805A	9714
		CB-VV8805B	9713

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3AA ET	CD-VV8104	9775

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS				
3BB 095	AF-FCV95	6764				
	AF-LCV110	T242	6143	6729	7569	
	AF-LCV111	T242	6143	6729	7569	
	CB-HCV142	6793				
	CB-VV8108	6101	6104	6113	6325	6326
	CB-VV8805A	8533	8534			
	CB-VV8805B	9241	9243			
	CC-FCV364	6987	6988	6989		
	CC-FCV365	6984	6985	6986		
	EP-DSGEN11	7256				
	EP-DSGEN12	8661				
	EP-DSGEN13	8661				
	IT-PT403	K204				
	IT-PT405	K205				
	IT-PT514	T157				

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
3BB 085EF	AF-PP12	6998	
	AF-PP13	6993	
	CB-ALOP11	6991	
	CB-ALOP12	6994	
	CB-CP11	6991	
	CB-CP12	6994	
	CB-CP13	6975	6994
	CC-ALOP11	6991	
	CC-ALOP12	6994	
	CC-ALOP13	6997	
	CC-CCWP11	6991	
	CC-CCWP12	6994	
	CC-CCWP13	6997	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
3BB 085ET	AF-LCV110	0511							
			6956						
	AF-LCV111	0511	6956						
	AF-LCV113	0573	6936						
	AF-LCV115	0573	6936						
	AF-PP12	0503	0509	0513	0514	0515	0516	0517	6954
		6955	6957	6959	6960	6961			
	AF-PP13	0548	0565	0566	0569	0570	0572	6935	6938
		6939	6940	6942					
	AS-ASWP11	0565	0569	0570	0572	6935	6939	6940	6942
	AS-ASWP12	0533	0537	0540	0541	6946	6947	6949	6951
	CB-ALDP11	0572	6940						
	CB-ALDP12	0541	6947						
	CB-CP11	0556	0569	0570	0572	6935	6940	6942	6972
	CB-CP12	0532	0533	0537	0540	0541	6946	6947	6949
		6951	6974						
	CB-CP13	0525	0533	0536	0540	0541	6947	6949	6951
	CC-ALDP11	0572	6940						
	CC-ALDP12	0541	6947						
	CC-ALDP13	0515	0516	6960					
	CC-CCWP11	0553	0565	0569	0570	0572	6935	6939	6940
		6942	6970						
	CC-CCWP12	0526	0533	0537	0540	0541	6946	6947	6949
		6951	6973						
	CC-CCWP13	0504	0509	0513	0514	0516	6954	6957	6959
		6961	6977						
	EP-DFTP01	0515	6960						
	EP-DFTP02	0540	6949						
	EP-DSGEN11	0510	0514	0515	0516	0539	0540	6949	6952
		6957	6960	6961					
	EP-DSGEN12	0538	0539	0540	0541	0568	0570	0571	6941
		6942	6947	6949	6952	6953			
	EP-DSGEN13	0515	0516	0517	0566	0567	0568	0570	0571
		0572	6937	6938	6940	6941	6942	6955	6957
		6960							
	EP-4KVLC1F	0549	0570	0571	6934	6941	6942		
	EP-4KVLC1G	0529	0539	6944	6952				
	EP-4KVLC1H	0505	0515	6960	6962				
	RH-RHRP11	0528	0533	0540	0541	6947	6949	6951	6976
	RH-RHRP12	0500	0509	0514	0516	6957	6959	6961	6979
	VEASPE101	0537	0541	6946	6947				
	VEASPE103	0567	0572	6937	6940				

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
3BB 100	AF-FCV37	DU05							
			6497						
	AF-FCV36	DU01	6495						
	AF-FCV95	6764							
	AF-LCV107	DU03	5971						
	AF-LCV108	DU04	5962	6254					
	AF-LCV110	5755	7244	7363					
	AF-LCV111	5755	7244	7363					
	AF-LCV113	DU01	DU02	T243	6096	6097	6098	6302	6329
		6495							
	AF-LCV115	DU01	DU02	T243	6096	6097	6098	6302	6329
		6495							
	CB-HCV142	6793							
	CB-VV8104	6304	9503						
	CB-VV8107	DU02	6204	6266	6278	6329	6345	6397	
	CB-VV8108	DU04	6326						
	CB-VV8145	7784	7788						
	CB-VV8146	JNK	6232						
	CB-VV8147	JNK	6232						
	CB-VV8801A	DU02	6204	6253	6397				
	CB-VV8801B	DU04	6252	6254	6355	6494			
	CC-FCV364	6989							
	CC-FCV365	6984							
	EP-DSGLN11	7250							
	IT-LT406	T148							
	IT-LT459	T350							
	IT-LT461	T358							
	IT-LT516	T148							
	IT-LT517	T362							
	IT-LT518	T358							
	IT-LT526	T148							
	IT-LT527	T362							
	IT-LT528	T358							
	IT-LT529	T351							
	IT-LT536	T148							
	IT-LT537	T362							
	IT-LT538	T358							
	IT-LT539	T350							
	IT-LT546	T148							
	IT-LT547	T362							
	IT-LT548	T358							
	IT-PT403	K204	T359						
	IT-PT405	K205	T363						
	IT-PT406	T148							
	IT-PT455	T350							
	IT-PT457	T359							
	IT-PT474	T362							
	IT-PT514	T157	T305	T353					
	IT-PT515	T296	T357	T622					
	IT-PT516	T365							
	IT-PT524	T294	T305	T353	T621				
	IT-PT525	T296	T357	T622					
	IT-PT526	T361							
	IT-PT534	T353							
	IT-PT535	T357							

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS			
38B 10C	IT-PT536	T361			
	IT-PT544	T353			
	IT-PT545	T357			
	IT-PT546	T365			
	IT-TE413A	K308			
	IT-TE413B	K306			
	IT-TE433A	K359	K362	K381	K789
	IT-TE433B	K359	K362	K381	K789
	IT-TE443A	K359	K362	K381	K789
	IT-TE443B	K359	K362	K381	K789
	MS-FCV760	DU04	6207		
	MS-FCV761	DU04	6207		
	MS-FCV762	DU06	6215		
	MS-FCV763	DU06	6215		
	MSPCV19620	5769			
	RC-VV8000A	DU01	DU02	6230	6231
	RC-VV8000B	DU04	6206		
	RC-VV8000C	DU06	6214		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3BB 100FT	IT-LT460	T354
	IT-LT519	T354
	IT-LT549	T354
	IT-PT456	T354

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
3BB 115	AF-FCV37	5836							
			6448	6487	6488	6497			
	AF-FCV38	6455	6466	6467	6476	6491	6492	6495	
	AF-FCV95	6764							
	AF-LCV108	5961	5962	6437					
	AF-LCV113	K510	T243	T245	6140	6142	6302	6455	6466
		6467	6481	6491	6495	6718	6719	6754	
	AF-LCV115	K510	T243	T244	6140	6141	6302	6455	6466
		6467	6481	6491	6495	6718	6719	6754	
	CB-HCV142	5792	6793						
	CB-VV8104	6304							
	CB-VV8145	7784							
	CB-VV8146	JNK	6232	7759					
	CB-VV8147	JNK	6232	7759					
	CB-VV8148	7151	7266						
	CB-VV8801B	6490	6494						
	CC-FCV364	6989	7355						
	CC-FCV365	5792	6984						
	CP-DSGEN11	6063	7250						
	IT-LT406	T148							
	IT-LT516	T148							
	IT-LT526	T148							
	IT-LT536	T148							
	IT-LT546	T148							
	IT-NISNE31	6211	6414	6416					
	IT-NISNE32	6203	6418	6420					
	IT-PT403	K204							
	IT-PT405	K205							
	IT-PT406	T148							
	IT-PT514	T305							
	IT-PT515	T296							
	IT-PT516	T610	T672						
	IT-PT524	T305							
	IT-PT525	T296							
	IT-PT526	T298	T612	T673					
	IT-PT534	T696							
	IT-PT535	T791							
	IT-PT536	T298	T788						
	IT-PT544	T696							
	IT-PT545	T791							
	IT-PT546	T648							
	IT-TE413A	K307	K308	K309					
	IT-TE413B	K307	K308	K309					
	IT-TE423A	K307	K309						
	IT-TE423B	K307	K309						
	IT-TE433A	K359							
	IT-TE433B	K359							
	IT-TE443A	K359							
	IT-TE443B	K359							
	MS-FCV760	T027	6207						
	MS-FCV761	T027	6207						
	MS-FCV762	T026	6215						
	MS-FCV763	T026	6215						
	MSPCV19E20	5769	5788						
	MSPCV21E22	5779	5792	6556					

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
3BB 115	RC-PCV455C	7151	7266
	RC-PCV456	7152	7283
	RC-PCV474	7150	7204
	RC-VV8000A	6230	6231
	RC-VV8000B	6206	
	RC-VV8000C	6214	

232

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
38B 115EF	CB-VV8104	9775	
	IT-LT459	T350	
	IT-LT460	T354	
	IT-LT461	T358	
	IT-LT517	T362	
	IT-LT518	T356	
	IT-LT519	T354	
	IT-LT527	T362	
	IT-LT528	T358	
	IT-LT529	T351	
	IT-LT537	T362	
	IT-LT538	T358	
	IT-LT539	T350	
	IT-LT547	T362	
	IT-LT548	T358	
	IT-LT549	T354	
	IT-NISNE31	6406	6407
	IT-NISNE32	6402	6403
	IT-PT403	T359	
	IT-PT405	T363	
	IT-PT455	T350	
	IT-PT456	T354	
	IT-PT457	T359	
	IT-PT474	T362	
	IT-PT514	T353	
	IT-PT515	T357	
	IT-PT516	T365	
	IT-PT524	T353	
	IT-PT525	T357	
	IT-PT526	T361	
	IT-PT534	T353	
	IT-PT535	T357	
	IT-PT536	T361	
	IT-PT544	T353	
	IT-PT545	T357	
	IT-PT546	T365	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3BB 115ET	IT-NISNL32	6203
	NS-FCV760	T700
	NS-FCV761	T700
	NS-FCV762	T704
	NS-FCV763	T704

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
301 EF	RH-RHRP11	6976

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3B2	EF	RH-RHRP12	6979

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
303 073	CB-VV8803A	8820	
			8823
	CB-VV8803B	8819	8825

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3C	AF-PM12	7240
	LP-DFTP01	7240

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3C	EF	AF-PM12	4713
		EP-DFTP01	5508

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3F	CB-CP13	8807
		8830

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS						
3H1	CB-ALOP11	7047						
			7049	7050	7051	7052		
	CB-ALOP12	7057	7067	8811	8812	8813	8814	8910
	CB-CP11	7047	7049	7054				
	CB-CP12	7056	7057	8811	8812			
	CB-CP13	7057	8807					
	CB-VV8803A	7046	8820					
	CB-VV8803B	7058	8819					

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3H1	EF	CD-CP11	6972
		CD-CP12	6974

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
3H2	CB-CP13	8C07	
			8B30

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3H2	ET	CD-CF 13	6975

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS					
3J1	AF-FI13	7240					
	CC-ALUP11	7011	7018	7019	7059	7060	7082
	CC-CCHP11	7011	7059	7074	7082		
	LP-DFTP02	7242					
	LP-DSGEN12	8661					
	LP-DSGEN13	8661					
	VEASFE101	7242					

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3J1	EF	AF-II13	4723
		CC-CCWP11	6970
		EP-DFTP02	4735
		VEASPE101	4735

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
3J2	CB-ALOP11	7029							
			7030	7047					
	CB-ALOP12	7031	7057						
	CB-CP11	7047							
	CB-CP12	7057							
	CB-CP13	7057							
	CB-VV8803A	7029	7030	7048					
	CB-VV8803B	7032	7058						
	CC-ALOP11	7029	7030	7059					
	CC-ALOP12	7012	7022	7028	7031	7032	7051	7052	7083
	CC-CCWP11	7059							
	CC-CCWP12	7012	7061	7075	7083				
	EP-DSGEN12	8661							
	EP-DSGEN13	8661							

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3J2	EF	CC-CCHP12	6973

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3J2	ET	CB-ALOP11	6991
		CB-ALOP12	6994
		CB-CP11	6991
		CB-CP12	6994
		CB-CP13	6994
		CC-ALOP11	6991
		CC-ALOP12	6994
		CC-CCWP11	6991
		CC-CCWP12	6994

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
3J3	CL-ALOP11	7047							
	CL-ALOP12	7057							
	CL-CP11	7047							
	CL-CP12	7057							
	CL-CP13	7057							
	CB-VV8803A	7048							
	CB-VV8803B	7058							
	CC-ALOP13	7013	7025	7026	7033	7034	7063	7064	7084
	CC-CCHP13	6977	7013	7064	7081	7084			

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
3J3	ET	CC-ALUP13	6997
		CC-CCWP13	6997

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS		
3L	CB-ALOF12	7229		
			6910	
	CB-VV8104	7229	9112	
	CB-VV8805A	7223	8534	9234
	CB-VV8805B	7229	9112	9241
	CBBAXFRP11	7223	9123	
	CBBAXFRP12	7229	9129	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
3L ET	AF-PP12	6998
	AF-PP13	6993

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
302	AF-PP12	6998
	AF-PP13	6993

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS			
3X	CB-VV8104	9112			
			9484	9503	9506
	CB-VV8805A	9234			
	CB-VV8805B	9112			
	CBBAXFRP11	9123	9440		
	CBBAXFRP12	9129	9441		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
30A1	VEASPE103	1331

256

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
30A1	ET	AS-ASHP11	1011
		AS-ASHP12	1046
		VEASPE103	1013

257

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
30A2	VLASPE101	1333

258

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
30A2 ET	AS-ASWP11	1047
	AS-ASWP12	1017
	VLASPE101	1279

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS	
30A5	EF	AS-ASHP11	1011	1047
		AS-ASHP12	1046	
		VEASPL101	1279	
		VEASPE103	1013	

260

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
30A5	ET	AS-ASHP11	1009
		AS-ASHP12	1015
		VEASPE101	1016
		VEASPE103	1010

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
35A	EP-DFTP01	0713

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
35A	ET	LP-DFTP01	0716

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS
35B	LP-DFTP02	0714

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
35B	ET	LF-DFTP02	0715

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
4A	AF-FCV95	6764							
	AF-LCV110	6729	6956	7569					
	AF-LCV111	6729	6956	7569					
	AF-LCV113	6936							
	AF-LCV115	6936							
	AF-PP12	6954	6955	6957	6959	6960	6951		
	AF-PP13	6935	6938	6939	6940	6942	7237	7246	
	AS-ASHP11	6935	6939	6940	6942				
	AS-ASHP12	6946	6947	6949	6951				
	AS-FCV602	7237	7249						
	AS-FCV603	7248							
	CB-ALOP11	6940	7029	7030					
	CB-ALOP12	6947	7031	7229					
	CB-CP11	6935	6940	6942					
	CB-CP12	6946	6947	6949	6951				
	CB-CP13	6947	6949	6951					
	CB-VV8104	7229							
	CB-VV8803A	7029	7030						
	CB-VV8803B	7032							
	CB-VV8805A	7223							
	CB-VV8805B	7229							
	CBBAXFRP11	7223							
	CBBAXFRP12	7229							
	CC-ALOP11	6940	7029	7030					
	CC-ALOP12	6947	7031	7032					
	CC-ALOP13	6960	7033	7034					
	CC-CCWP11	6935	6939	6940	6942				
	CC-CCWP12	6946	6947	6949	6951				
	CC-CCWP13	6954	6957	6959	6961				
	CC-FCV430	7208	7237	7249					
	CC-FCV431	7200	7248						
	EP-DFTP01	6960	7211						
	EP-DFTP02	6949	7200						
	EP-DSGEN11	6949	6952	6957	6960	6961			
	EP-DSGEN12	6941	6942	6947	6949	6952	6953	8661	
	EP-DSGEN13	6937	6938	6940	6941	6942	6955	6957	6960
		8661							
	EP-4KVLC1F	6934	6941	6942					
	EP-4KVLC1G	6944	6952						
	EP-4KVLC1H	6960	6952						
	RH-RHRP11	6947	6949	6951					
	RH-RHRP12	6957	6959	6961					
	VEASPE101	6946	6947	7201					
	VEASPE103	6937	6940						

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS		
4B	AF-PP12	7235		
			7240	
	AS-FCV602	7249		
	AS-FCV603	7236	7248	
	CC-FCV430	7208	7249	
	CC-FCV431	7200	7236	7248
	EP-DFTP01	7211	7240	
	EP-DFTP02	7200	7242	
	VEASPE101	7201	7242	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
5A4	AF-LCV110	T986							
			T988	7141	7143	7228	7363	7394	7569
		8359							
	AF-LCV111	T986	T988	7141	7143	7228	7363	7394	7569
		8359							
	AF-LCV113	T201	T987	7567	8358				
	AF-LCV115	T201	T987	7567	8358				
	AF-PP12	7235							
	AF-PP13	7237							
	AS-FCV602	7237							
	AS-FCV603	7236							
	CC-FCV430	7237							
	CC-FCV431	7236							
	EP-DSGEN11	T554							
	EP-DSGEN12	T113	T114	8661					
	EP-DSGEN13	T115	T116	8661					
	IT-TL433A	K361	T955						
	IT-TL433B	K361	T955						
	IT-TE443A	K361	T955						
	IT-TE443B	K361	T955						

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS	
5A4	ET	AF-FCV95	7299	
		AF-LCV107	7293	
		AF-LCV108	7293	
		AF-LCV110	7288	
		AF-LCV111	7288	
		AF-LCV113	7284	
		AF-LCV115	7284	
		AF-PP12	7288	
		AF-PP13	7284	
		AS-ASHP11	7284	
		AS-ASHP12	7286	
		CB-CP11	7284	
		CB-CP12	7286	
		CB-VVB104	7297	
		CBBAXFRP11	7291	
		CBBAXFRP12	7297	
		CC-CCWP11	7284	
		CC-CCWP12	7286	
		CC-CCWP13	7288	
		IT-LT459	7285	
		IT-LT460	7287	
		IT-PT455	7285	
		IT-PT514	7285	
		IT-PT524	7285	
		IT-PT534	7285	
		IT-PT544	7285	
		VEASFE101	7286	7293

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS		
6A5	AF-LCV110	T988		
	AF-LCV111	T988		
	AF-LCV113	T987	6358	
	AF-LCV115	T987	8358	
	AF-PP12	7235	7496	
	AF-PP13	7237	7494	
	AS-FCV602	7237	7494	
	AS-FCV603	7236	7495	
	CB-VV8146	ERA	ETAC	
	CB-VV8147	ERA	ETAC	
	CC-FCV430	7237	7494	
	CC-FCV431	7236	7495	
	EP-DSGEN11	T554		
	EP-DSGEN12	T114	8617	8661
	EP-DSGEN13	T116	8617	8651
	IT-TE433A	T955		
	IT-TE433B	T955		
	IT-TE443A	T955		
	IT-TE443B	T955		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
7A	AF-FCV37	DU15							
			6488	7721	7743	7883	7895	7896	
	AF-FCV38	DU13	6492	7806	7811	7819			
	AF-FCV95	DU14	7816	7845					
	AF-LCV107	DU09	6159	7708	7847				
	AF-LCV108	DU09	6159	7708	7847				
	AF-LCV110	T032	T040	T046	T988	8359			
	AF-LCV111	T032	T040	T046	T988	8359			
	AF-LCV113	T031	T034	T048	T987	8358			
	AF-LCV115	T031	T034	T048	T987	8358			
	AF-PP12	DU12	7496	7717	7720	7721	7743	7833	7895
		7896	7903	8666					
	AF-PP13	DU07	DU08	7203	7494	7811	7819	7820	7862
		8637							
	AS-ASHP11	DU07	DU08	7808	7862	7979			
	AS-ASHP12	DU09	DU10	7708	7712	7840	7864	8335	
	AS-FCV602	DU08	7494	7808	7979				
	AS-FCV603	DU10	7495	7713	7987				
	CB-CP11	DU07	DU08	7812	7986				
	CB-CP12	DU09	DU10	7708	7712	7847			
	CB-CP13	DU09	DU10	7708	7712	7847			
	CB-HCV142	DU10	6794	6796	7713	7847			
	CB-VV8104	DU14	7985						
	CB-VV8107	DU13	7805	7806	7812	7862			
	CB-VV8108	DU14	7846	7851	7864	7985			
	CB-VV8145	DU11	7716	8399	8641				
	CB-VV8146	DRDE	DRDF	DTAE	DTAI	ERBD	ERBE	ERBF	ERBG
		ERI	ERLC	ERLE	ETAD	7759	7776		
	CB-VV8147	DRDE	DRDF	DTAE	DTAI	ERBD	ERBE	ERBF	ERBG
		ERI	ERLC	ERLE	ETAD	7759	7776		
	CB-VV8148	DU10	7151	7155	7163	7172	7174	7178	7713
		7847							
	CB-VV8801A	DU13	7805	7806	7812	7862			
	CB-VV8801B	DU14	6490	7708	7846	7847	7851	7864	
	CB-VV8803A	DU07	DU13	7805	7806	7812	7862		
	CB-VV8803B	DU09	DU14	7711	7846	7847	7851	7864	
	CB-VV8805A	DU13	6334	6349	7805	7806	7812	7813	7817
		7818	7862						
	CB-VV8805B	DU14	6335	6532	7842	7843	7844	7846	7847
		7851	7858	7864					
	CBBAXFRP11	DU13	7805	7811	7812	7813	7821	7822	7831
	CBBAXFRP12	DU14	7816	7844	7847	7851	7874	7877	
	CC-CCWP11	DU07	DU08	7808	7862	7979			
	CC-CCWP12	DU09	DU10	7708	7713	7840	7864		
	CC-CCWP13	DU12	7718	7721	7829	7830	7832	7833	7880
		7881	7890	7891	7912	7914	7923	8641	
	CC-FCV364	DU11	6981	7716	8640	8641			
	CC-FCV365	DU10	6794	6795	7713	7987			
	CC-FCV430	DU13	7494	7807	7808				
	CC-FCV431	DU14	7495	7840	7846	6335			
	EP-DSGEN11	DU10	DU11	DU12	T554	T775	6063	7337	7712
		7714	7716	7717	7720	7721	7832	7833	7856
		7864	7895	7896	7899	7903	7904	7910	8619
		8648	8658	8665	8666				

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
7A	EP-DSGEN12	DU08	DU09	DU10	T114	T776	7708	7711	7712
		7714	7715	7810	7856	7858	7864	7865	7867
		7868	7869	7873	7945	8617			
	EP-DSGEN13	DU07	DU08	DU12	T116	T777	T783	7035	7203
		7717	7720	7809	7810	7814	7815	7828	7829
		7830	7833	7835	7862	7863	7896	7903	8117
		8617	8666	8738	8740				
	EP-4KVLC1F	DU08	7810						
	EP-4KVLC1G	DU10	7714	7858	7867				
	EP-4KVLC1H	DU12	7721	7896	7903				
	IT-LT102	RNDF	T434	T503	T687				
	IT-LT106	RNBA	T389	T400	T451				
	IT-LT459	RNAA	RNAB	T382	T387	T401	T416	T417	T537
		T650	T651						
	IT-LT460	RNBA	T354	T404	T431	T435	T456	T653	
	IT-LT461	RNCA	RNCC	T433	T482	T507			
	IT-LT517	RNDA	RNDB	T452	T532	T536	T688		
	IT-LT518	RNCA	RNCC	T433	T482	T504	T506		
	IT-LT519	RNBA	T354	T403	T430	T457			
	IT-LT527	RNDA	RNDB	T452	T532	T536	T689		
	IT-LT528	RNCA	RNCC	T433	T482	T504	T505		
	IT-LT529	RNAA	RNAB	T383	T385	T401	T416	T418	
	IT-LT537	RNDA	RNDB	T452	T532	T536	T688		
	IT-LT538	RNCA	RNCC	T433	T482	T504	T506		
	IT-LT539	RNAA	RNAB	T383	T385	T401	T416	T418	
	IT-LT547	RNDA	T452	T532	T536	T686			
	IT-LT548	RNCA	RNCC	T433	T482	T504	T506		
	IT-LT549	RNBA	RNBB	T354	T403	T430	T457		
	IT-PT403	RNCA	RNCC	T389	T400	T416	T417		
	IT-PT405	RNDA	RNDB	T452	T516	T529	T536		
	IT-PT455	RNAA	RNAB	T382	T387	T389	T401	T416	T417
		T429	T537	T650	T651				
	IT-PT456	RNBA	T354	T404	T435	T450			
	IT-PT457	RNCA	RNCC						
	IT-PT474	RNDA	RNDB						
	IT-PT514	RNAA	RNAB	T382	T383	T385	T387	T401	T416
		T418	T650	T651					
	IT-PT515	RNBA	RNBB	T403	T430	T457			
	IT-PT516	RNDA	RNDB	T452	T515	T520	T532		
	IT-PT524	RNAA	RNAB	T382	T383	T385	T387	T401	T416
		T418	T650	T651					
	IT-PT525	RNBA	RNBB	T403	T430	T457			
	IT-PT526	RNCA	RNCC	T433	T482	T504	T506		
	IT-PT534	RNAA	RNAB	T382	T383	T385	T387	T401	T416
		T418	T650	T651					
	IT-PT535	RNBA	RNBB	T403	T430	T457			
	IT-PT536	RNCA	RNCC	T433	T482	T504	T506		
	IT-PT544	RNAA	RNAB	T382	T383	T385	T387	T401	T416
		T418	T650	T651					
	IT-PT545	RNBA	RNBB	T403	T430	T457			
	IT-PT546	RNDA	RNDB	T452	T532	T536	T688		
	IT-TE413A	K300	K302	K303	K304	K305	K306		
	IT-TE413B	K300	K302	K303	K304	K305	K306		
	IT-TE423A	K300	K302	K303	K304	K305	K306		
	IT-TE423B	K300	K302	K303	K304	K305	K306		

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS							
7A	IT-TL433A	K301	K324	T061	T955				
	IT-TL433B	K301	K324	T061	T955				
	IT-TE443A	K301	K324	T061	T955				
	IT-TE443B	K301	K324	T061	T955				
	MS-FCV760	DU10	DU14	7336	7713	7816	7845	7847	7927
		7929							
	MS-FCV761	DU10	DU14	7336	7713	7816	7645	7847	7927
		7929							
	MS-FCV762	DU11	DU15	7337	7716	7744	7853	7895	7912
		7913	7916	7917	7923	8641	8665		
	MS-FCV763	DU11	DU15	7337	7716	7744	7853	7895	7912
		7913	7916	7917	7923	8641	8665		
	MSPCV19&20	5768	5790						
	MSPCV21&22	5778	5794						
	RC-PCV455C	DU10	2687	7151	7155	7158	7163	7172	7174
		7178	7713	7847					
	RC-PCV456	DU11	7152	7156	7159	7165	7170	7177	7183
		7716	8641						
	RC-PCV474	DU08	7150	7154	7157	7173	7181	7986	
	RC-VV8000A	DU13	7805	7812					
	RC-VV8000B	DU14	7985						
	RC-VV8000C	DU15	8642						
	RH-RHRP11	DU09	DU10	7708	7712	7713	7840	8335	
	RH-RHRP12	DU12	7718	7721	7881	7891	8641		
	RH-VV8701	DU14	7985						
	RH-VV8702	DU15	7984						

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS
7A	EF	IT-LT102	T727
		IT-LT106	T736
		IT-NISNE32	6203
		HS-FCV760	T700
		HS-FCV761	T706
		HS-FCV762	T704
		HS-FCV763	T704

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS			
7A	ET	AF-FCV30	7701			
		AF-PT13	7700	7701	7704	
		AS-ASWP11	7701	7704		
		AS-FCV602	7703			
		CC-CP11	7701	7704		
		CB-VV8803A	7700			
		CB-VV8805A	9714			
		CB-VV8805B	9713			
		CC-CCWP11	7701	7704		
		EP-DSGEN12	7703			
		EP-DSGEN13	7700	7701	7703	7706
		EP-4KVLC1F	7704			
		IT-LT459	T350			
		IT-LT461	T358			
		IT-LT517	T362			
		IT-LT516	T358			
		IT-LT527	T362			
		IT-LT528	T358			
		IT-LT529	T351			
		IT-LT537	T362			
		IT-LT538	T358			
		IT-LT539	T350			
		IT-LT547	T362			
		IT-LT546	T356			
		IT-NISNE31	6406	6407		
		IT-NISNE32	6402	6403		
		IT-PT403	T359			
		IT-PT405	T363			
		IT-PT455	T356			
		IT-PT457	T359			
		IT-PT474	T362			
		IT-PT514	T353			
		IT-PT515	T357			
		IT-PT516	T365			
		IT-PT524	T353			
		IT-PT525	T357			
		IT-PT526	T361			
		IT-PT534	T353			
		IT-PT535	T357			
		IT-PT536	T361			
		IT-PT544	T353			
		IT-PT545	T357			
		IT-PT546	T365			
		RC-PCV474	7703			

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE	ID	RACEWAYS	
8C	AI-LCV113	T031	
	AI-LCV115	T031	
	CB-HCV142	6796	
	CE-VV8145	8399	
	CE-VV8148	7163	
	CC-CCHP13	7914	
	CC-FCV365	6795	
	EP-DSGEN11	T775	
	EP-DSGEN12	T776	7945
	EP-DSGEN13	T777	7035
	IT-LT102	T503	
	IT-LT106	T451	
	IT-LT459	T417	
	IT-LT460	T456	
	IT-LT461	T507	
	IT-LT517	T532	
	IT-LT518	T506	
	IT-LT519	T457	
	IT-LT527	T532	
	IT-LT528	T506	
	IT-LT529	T418	
	IT-LT537	T532	
	IT-LT538	T506	
	IT-LT539	T418	
	IT-LT547	T532	
	IT-LT548	T506	
	IT-LT549	T457	
	IT-NISNE31	6406	6407
	IT-NISNE32	6402	6403
	IT-PT403	T417	
	IT-PT405	T529	
	IT-PT455	T417	T429
	IT-PT456	T450	
	IT-PT514	T418	
	IT-PT515	T457	
	IT-PT516	T532	
	IT-PT524	T418	
	IT-PT525	T457	
	IT-PT526	T506	
	IT-PT534	T418	
	IT-PT535	T457	
	IT-PT536	T506	
	IT-PT544	T418	
	IT-PT545	T457	
	IT-PT546	T532	
	MS-FCV760	7929	
	MS-FCV761	7929	
	MS-FCV762	7917	
	MS-FCV763	7917	
	MSPCV19820	5790	
	MSPCV21822	5794	
	RC-PCV455C	7163	
	RC-PCV456	7165	
	RC-PCV474	7154	

REPORT 9: FIREZONES - IDS - RACEWAYS

FIREZONE		ID	RACEWAYS			
8C	EF	AF-FCV38	7701			
		AF-PP13	7700	7701	7704	
		AS-ASWP11	7701	7704		
		AS-FCV602	7703			
		CC-CP11	7701	7704		
		CB-VV8003A	7700			
		CC-CCWP11	7701	7704		
		EP-DSGEN12	7703			
		EP-DSGEN13	7700	7701	7703	7706
		EP-4KVLC1F	7704			
		RC-PCV474	7703			

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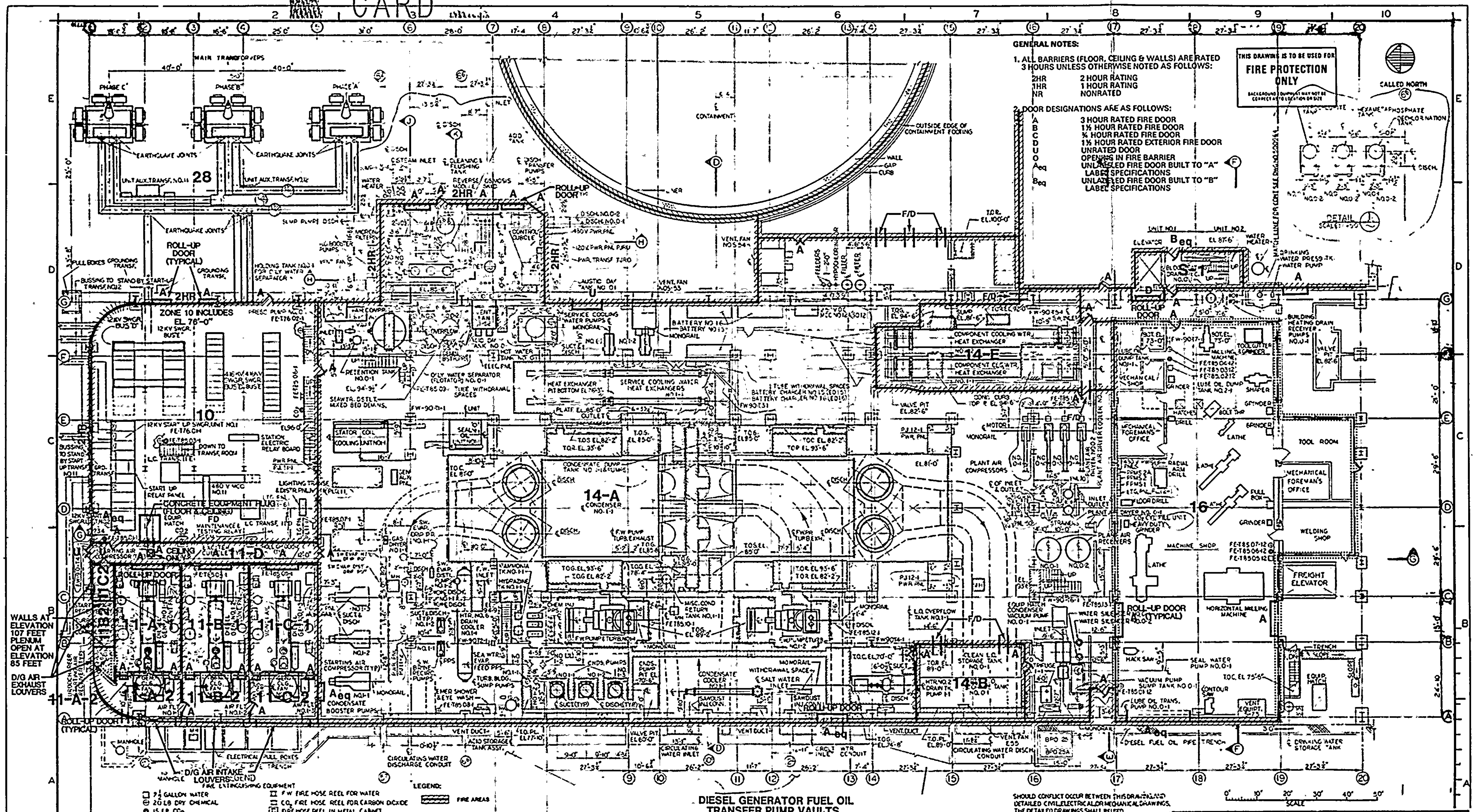

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, ELEVATION 85'

FIGURE 3-1

8307280115-04

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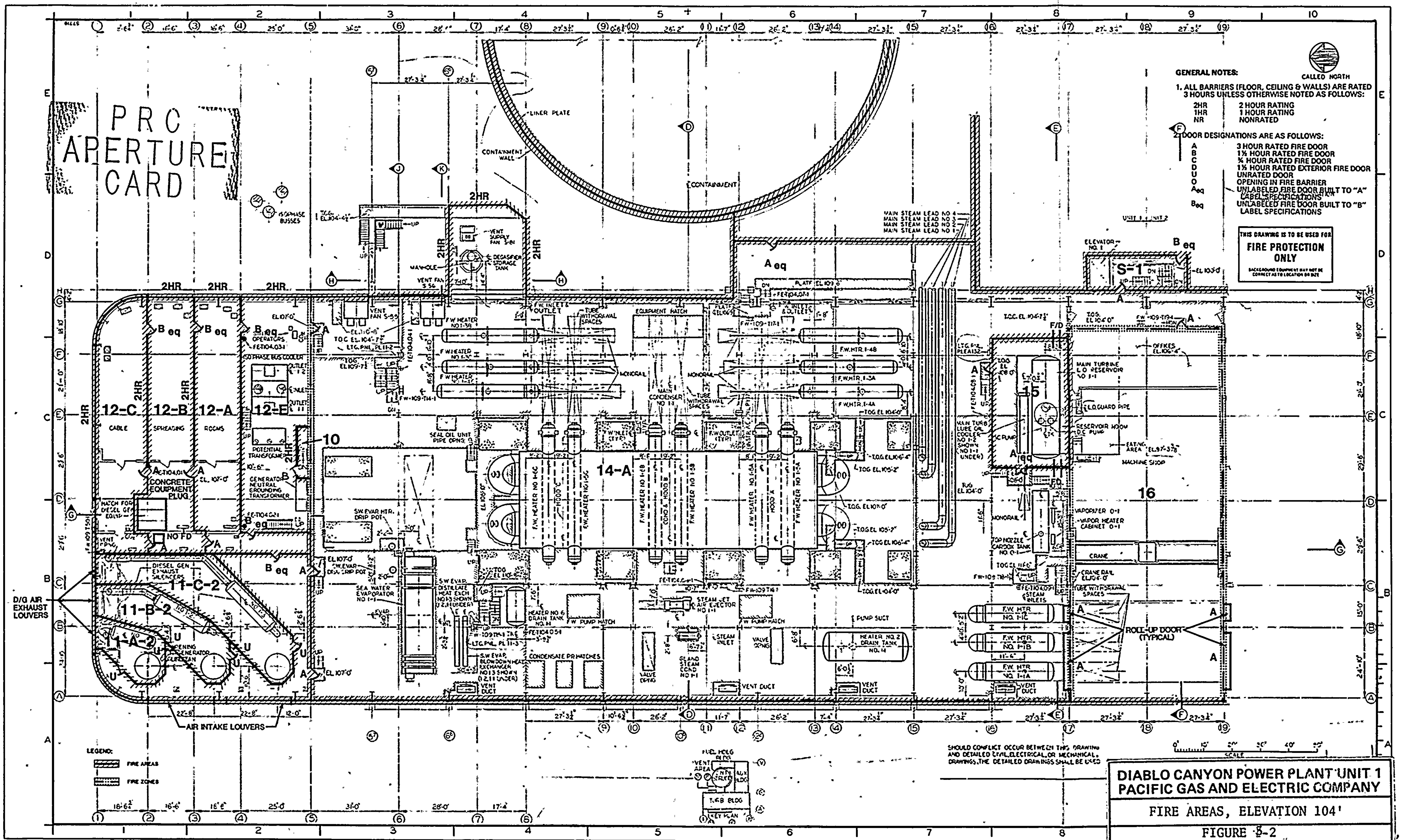

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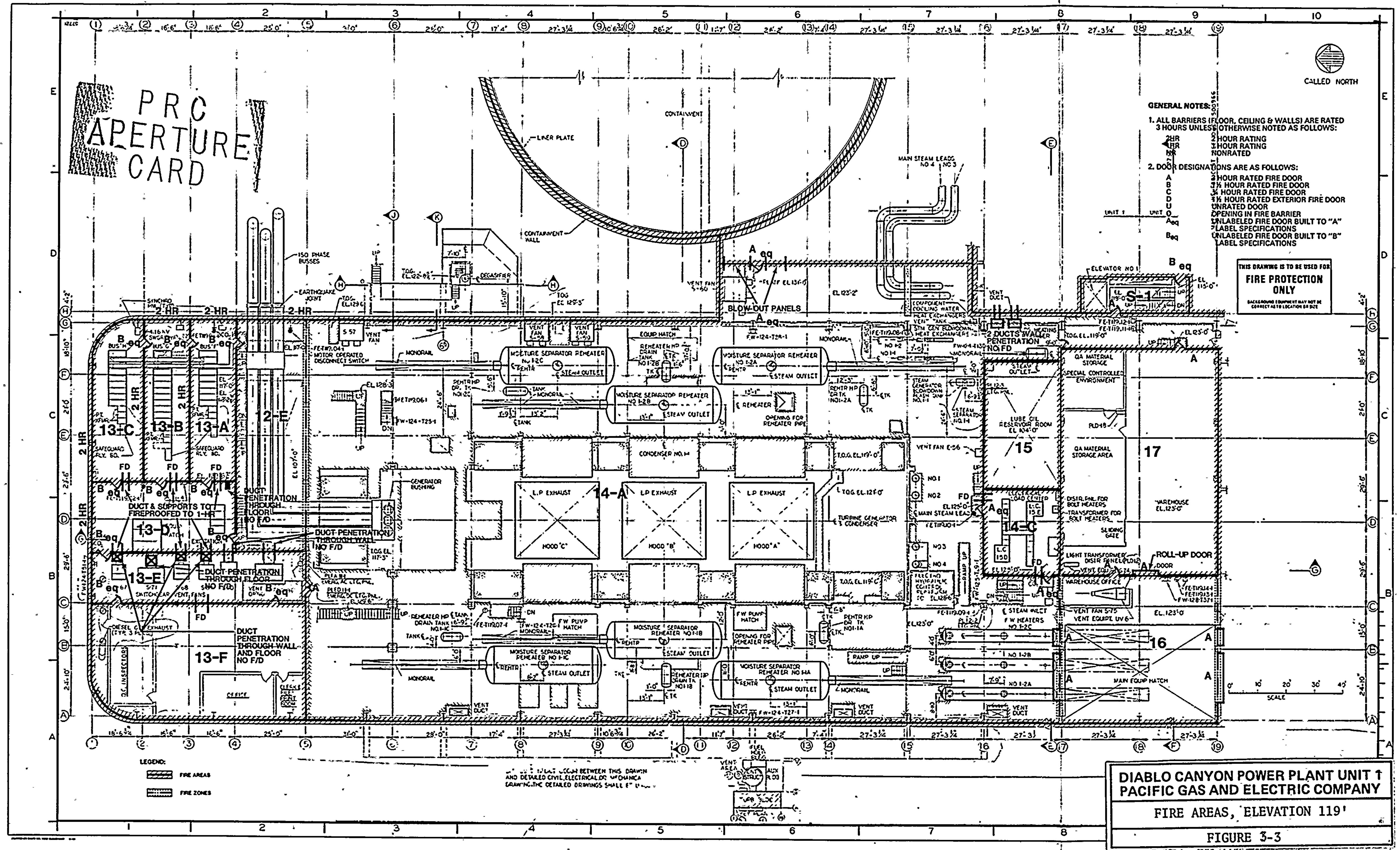


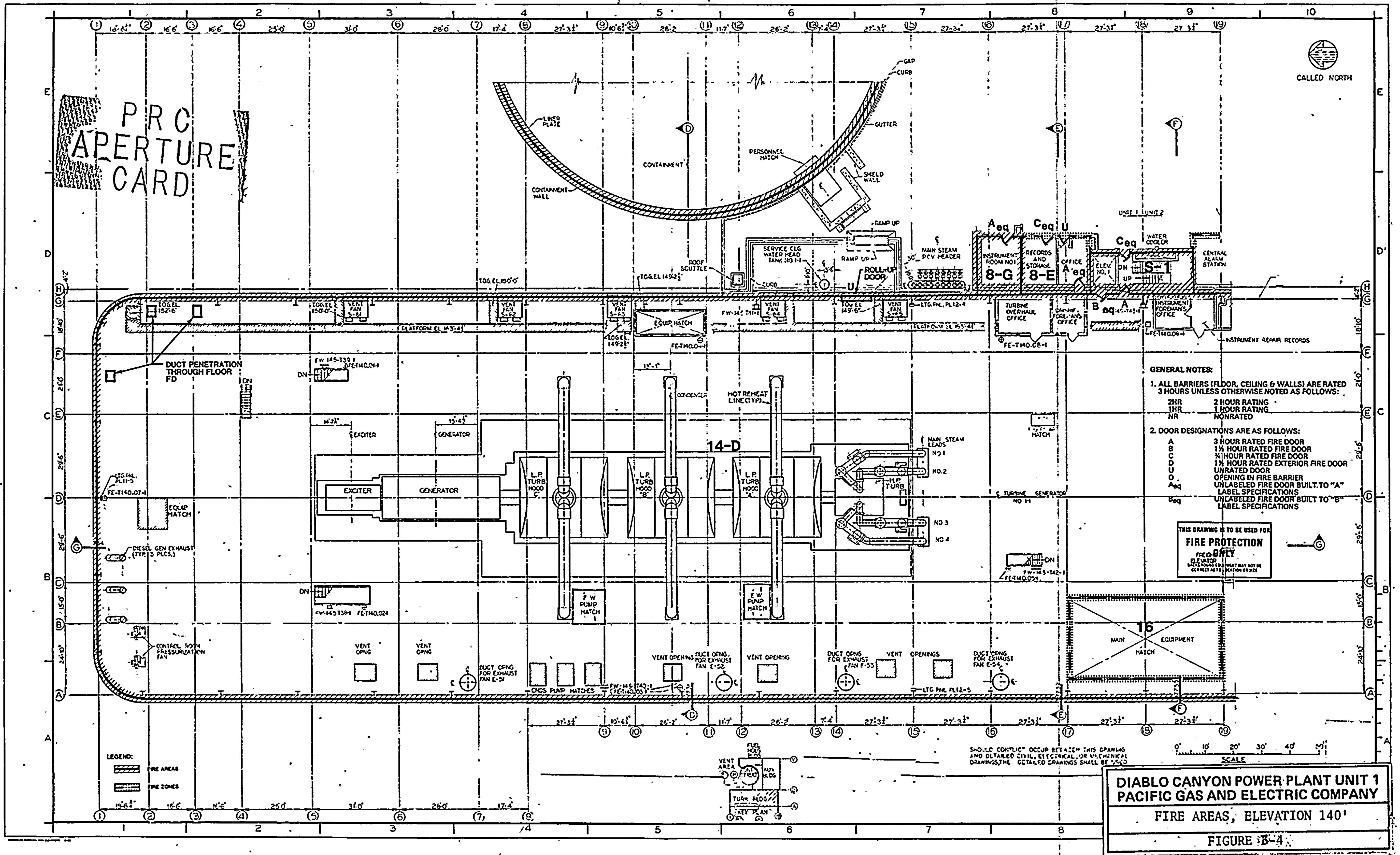
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, ELEVATION 119'

FIGURE 3-3

8307280115 -06

Also Available On
Aperture Card



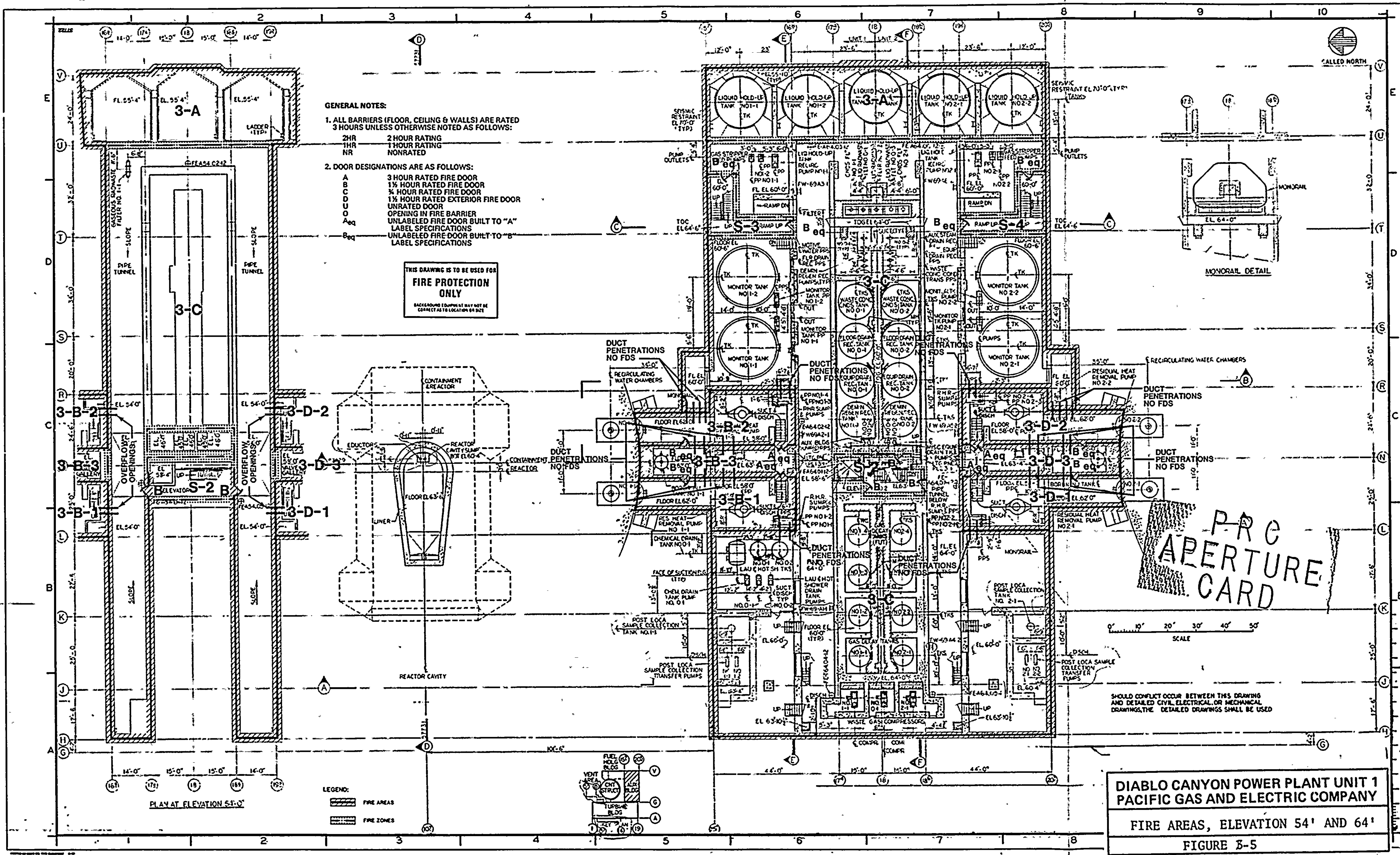
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, ELEVATION 140'

FIGURE B-4

8307280115-07

Also Available On
Aperture Card

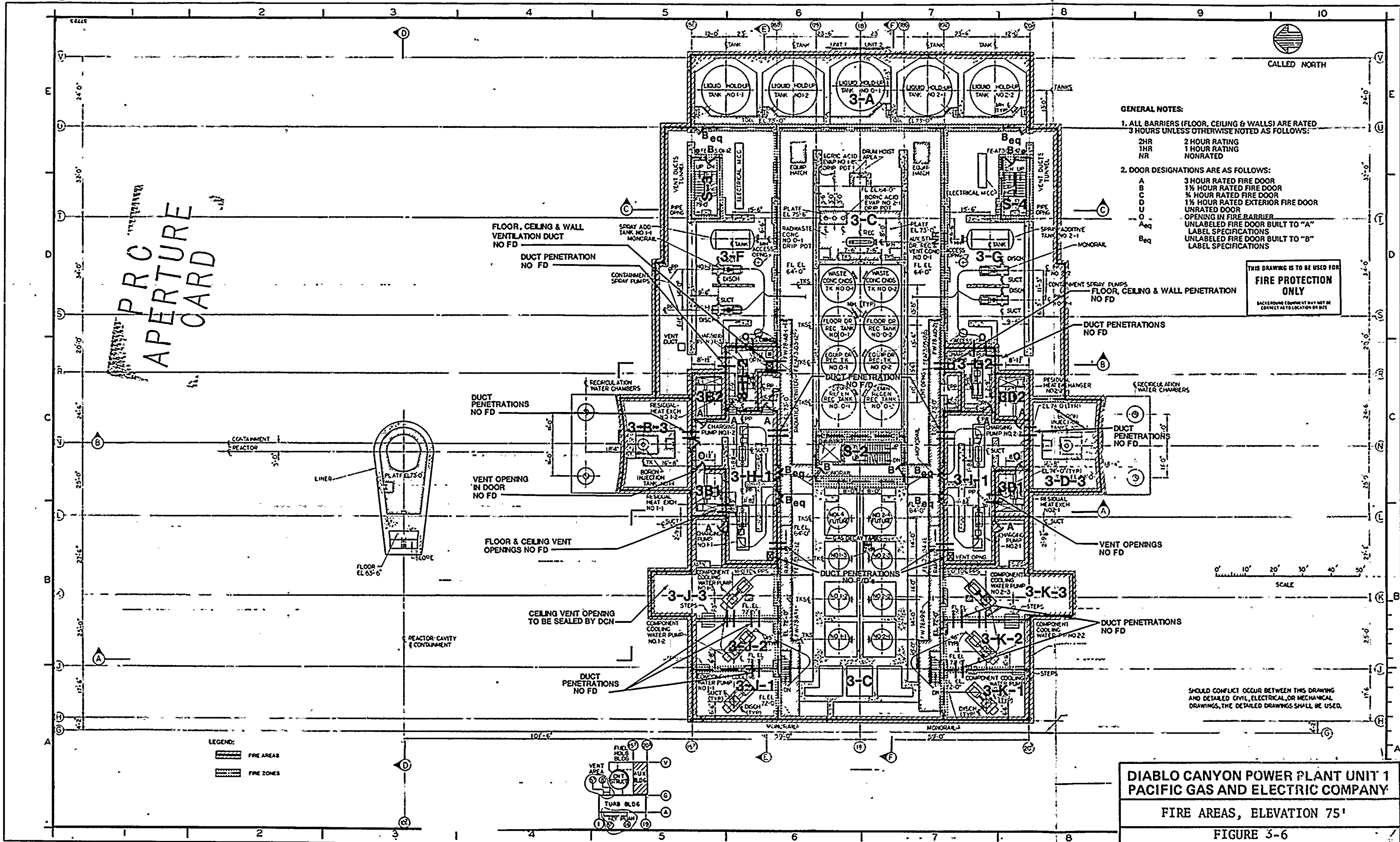


8307280115-08

11408[illegible]

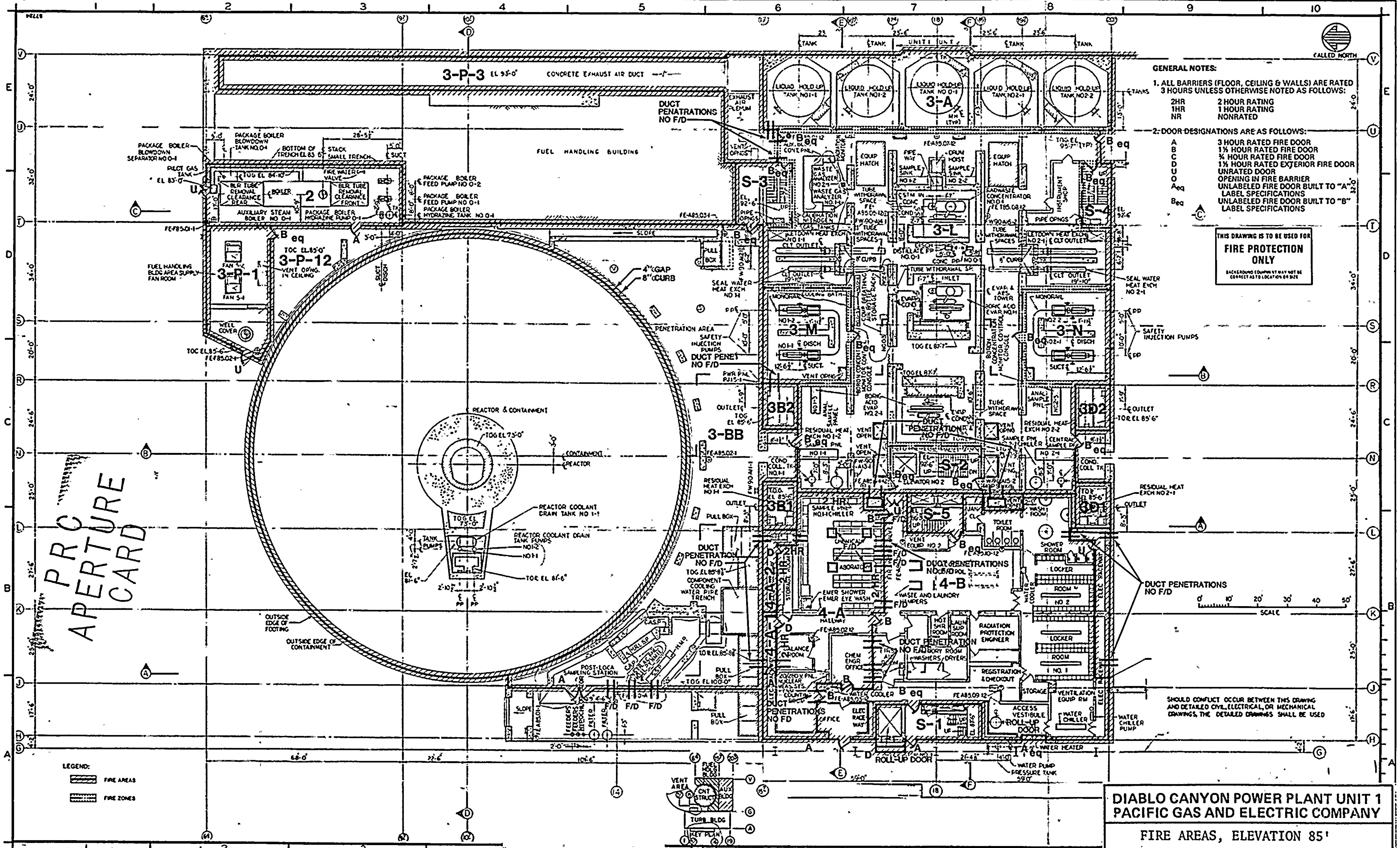
[illegible]

Also Available On
Aperture Card



8307280115-09

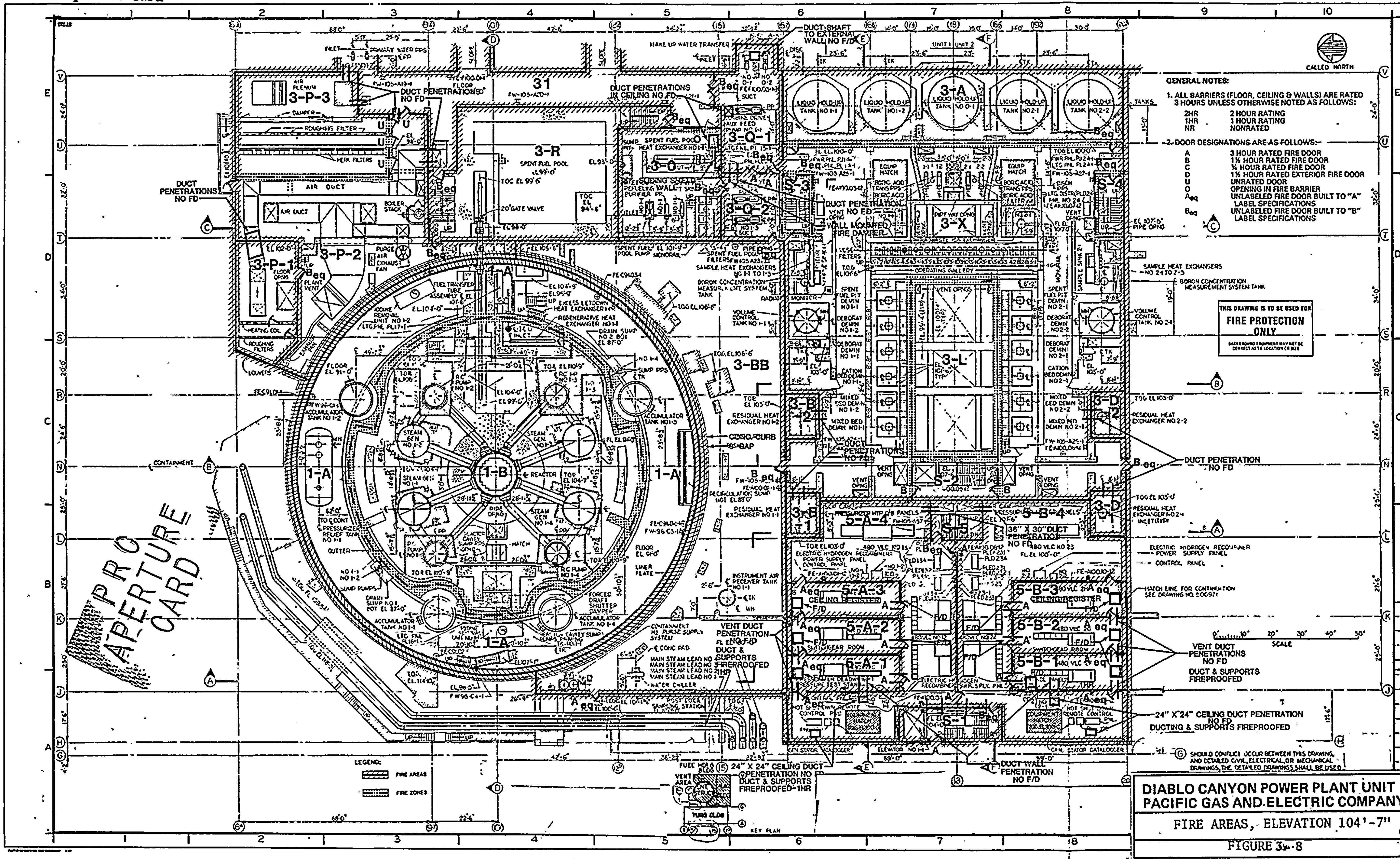
Also Available On
Aperture Card



DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY
FIRE AREAS, ELEVATION 85'
FIGURE 3-7

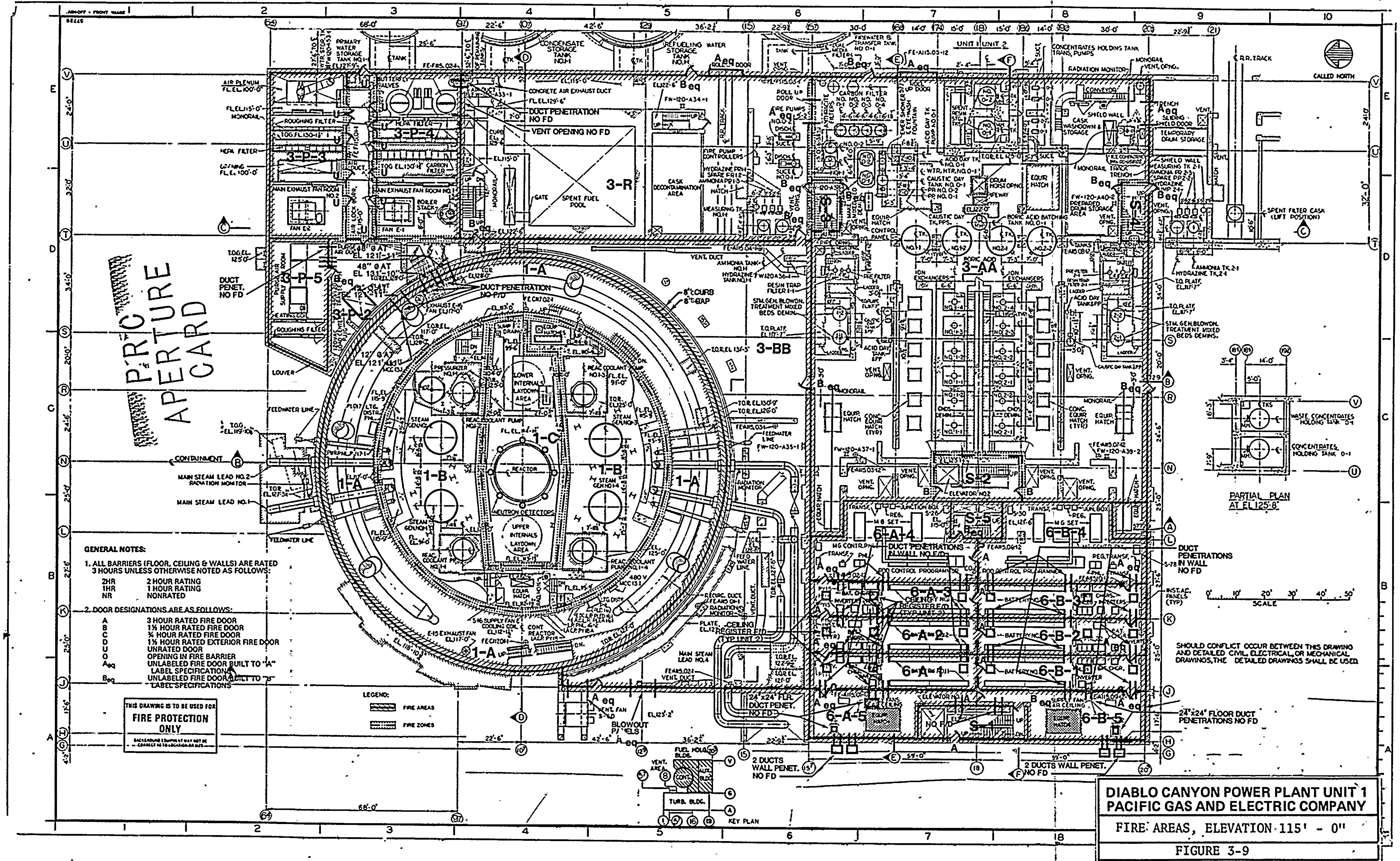
8307280115-10

Also Available On
Aperture Card



8307280115-11

Also Available On
Aperture Card



GENERAL NOTES:

1. ALL BARRIERS (FLOOR, CEILING & WALLS) ARE RATED 3 HOURS UNLESS OTHERWISE NOTED AS FOLLOWS:

2HR	2 HOUR RATING
1HR	1 HOUR RATING
NR	NONRATED

2. DOOR DESIGNATIONS ARE AS FOLLOWS:

A	3 HOUR RATED FIRE DOOR
B	1½ HOUR RATED FIRE DOOR
C	¾ HOUR RATED FIRE DOOR
D	1½ HOUR RATED EXTERIOR FIRE DOOR
U	UNRATED DOOR
O	OPENING IN FIRE BARRIER
A_{eq}	UNLABELED FIRE DOOR BUILT TO "A" LABEL SPECIFICATIONS
B_{eq}	UNLABELED FIRE DOOR BUILT TO "B" LABEL SPECIFICATIONS

THIS DRAWING IS TO BE USED FOR
FIRE PROTECTION ONLY
BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

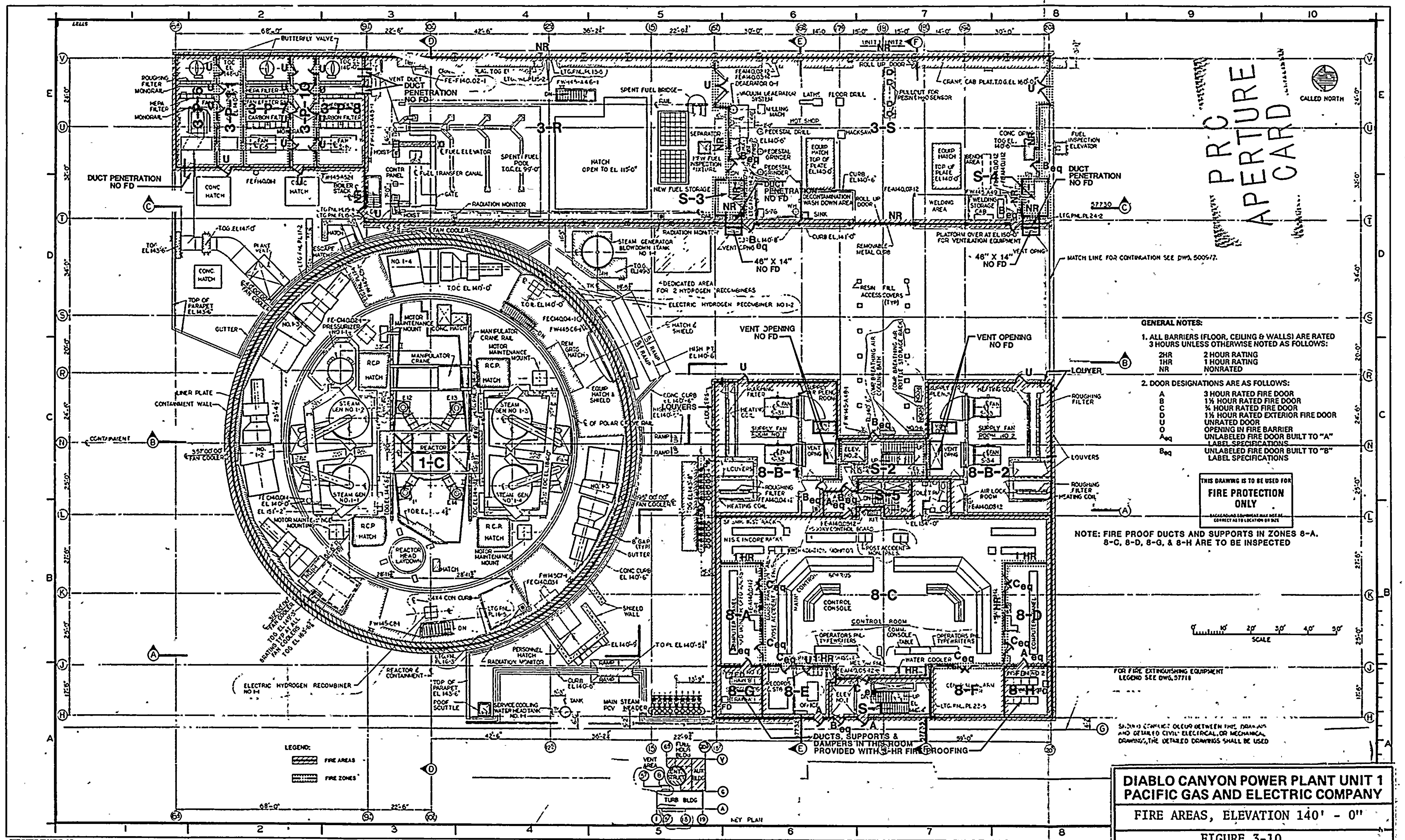
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, ELEVATION 115' - 0"

FIGURE 3-9

8307280115-12

Also Available On
Aperture Card



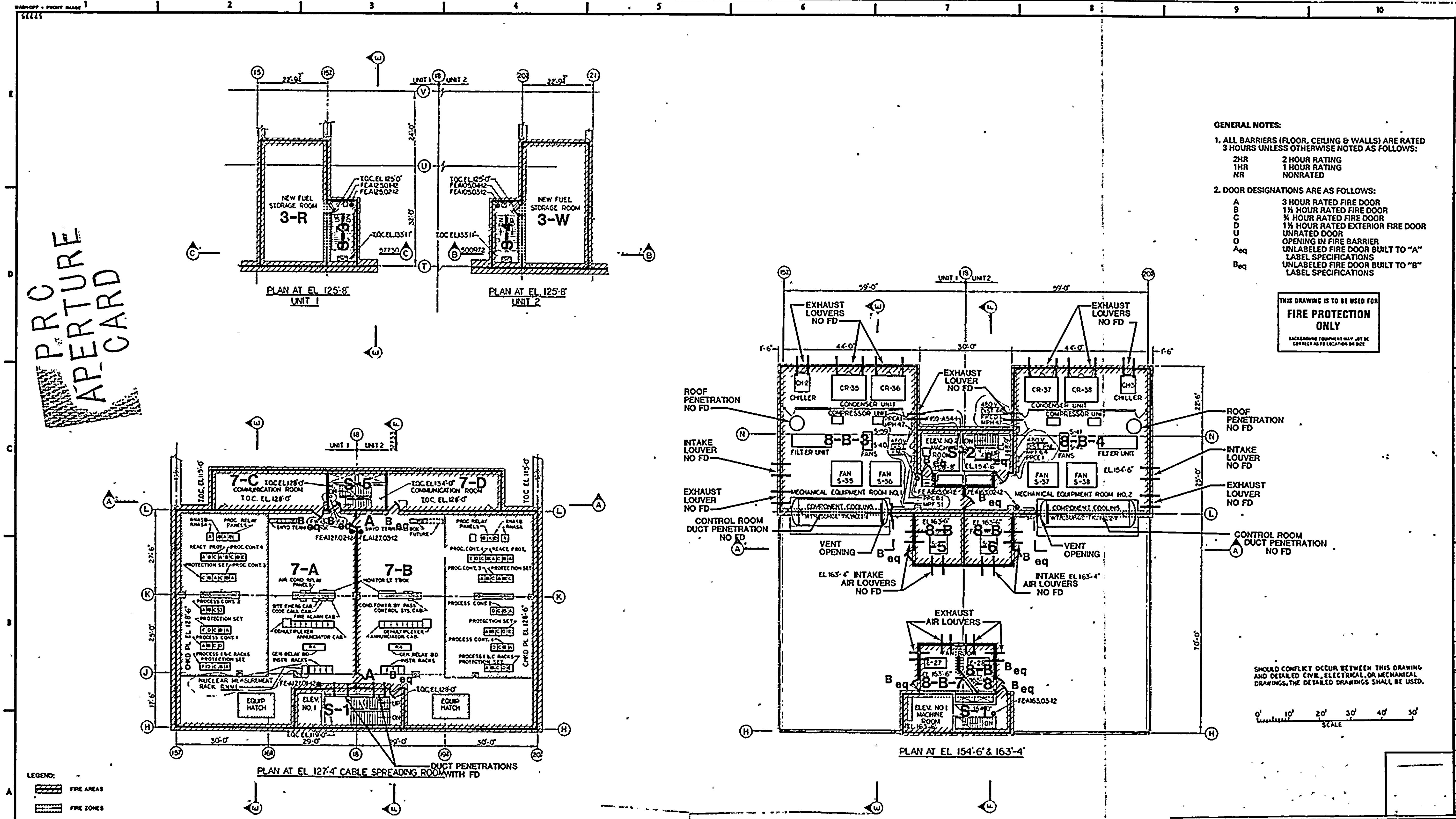
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, ELEVATION 140' - 0"

FIGURE 3-10

8807280115-13

Also Available On
Aperture Card



PRC APERTURE CARD

GENERAL NOTES:

1. ALL BARRIERS (FLOOR, CEILING & WALLS) ARE RATED 3 HOURS UNLESS OTHERWISE NOTED AS FOLLOWS:

2HR	2 HOUR RATING
1HR	1 HOUR RATING
NR	NONRATED

2. DOOR DESIGNATIONS ARE AS FOLLOWS:

A	3 HOUR RATED FIRE DOOR
B	1½ HOUR RATED FIRE DOOR
C	¾ HOUR RATED FIRE DOOR
D	1½ HOUR RATED EXTERIOR FIRE DOOR
U	UNRATED DOOR
O	OPENING IN FIRE BARRIER
A_{eq}	UNLABELED FIRE DOOR BUILT TO "A" LABEL SPECIFICATIONS
B_{eq}	UNLABELED FIRE DOOR BUILT TO "B" LABEL SPECIFICATIONS

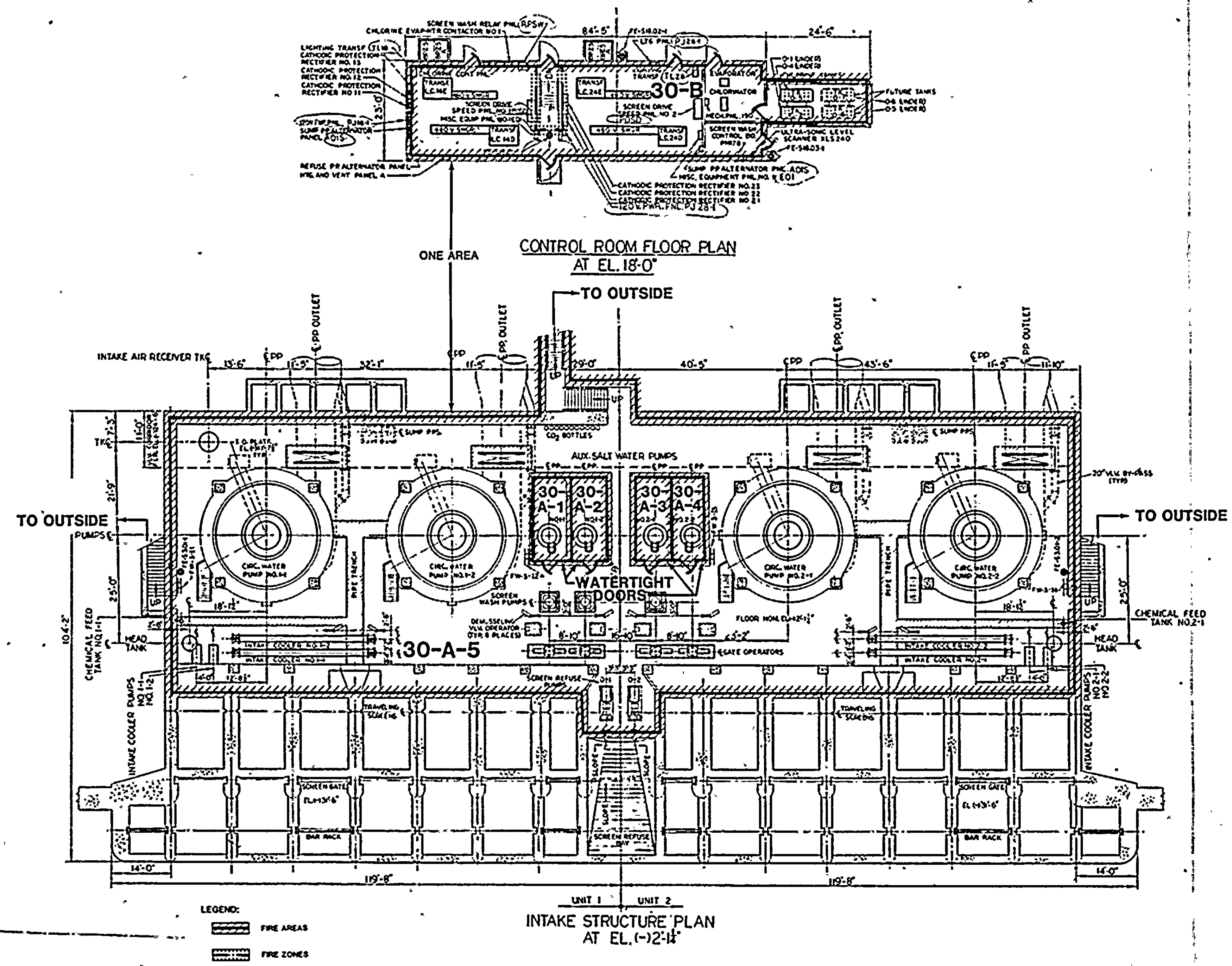
THIS DRAWING IS TO BE USED FOR FIRE PROTECTION ONLY

SHOULD CONFLICT OCCUR BETWEEN THIS DRAWING AND DETAILED CIVIL, ELECTRICAL, OR MECHANICAL DRAWINGS, THE DETAILED DRAWINGS SHALL BE USED.

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY
FIRE AREAS, ELEVATION 125' - 8 AND 163' - 4"
FIGURE 3-11

8307280115-14

Also Available On
Aperture Card



CONTROL ROOM FLOOR PLAN
AT EL. 18'-0"

INTAKE STRUCTURE PLAN
AT EL. (-)2'-1½"

GENERAL NOTES:

1. ALL BARRIERS (FLOOR, CEILING & WALLS) ARE RATED 3 HOURS UNLESS OTHERWISE NOTED AS FOLLOWS:

2HR	2 HOUR RATING
1HR	1 HOUR RATING
NR	NONRATED

2. DOOR DESIGNATIONS ARE AS FOLLOWS:

A	3 HOUR RATED FIRE DOOR
B	1½ HOUR RATED FIRE DOOR
C	¾ HOUR RATED FIRE DOOR
D	1½ HOUR RATED EXTERIOR FIRE DOOR
U	UNRATED DOOR
O	OPENING IN FIRE BARRIER
A_{eq}	UNLABELED FIRE DOOR BUILT TO "A" LABEL SPECIFICATIONS
B_{eq}	UNLABELED FIRE DOOR BUILT TO "B" LABEL SPECIFICATIONS

THIS DRAWING IS TO BE USED FOR
FIRE PROTECTION ONLY
BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

SHOULD CONFLICT OCCUR BETWEEN THIS DRAWING AND DETAILED CIVIL, ELECTRICAL, OR MECHANICAL DRAWINGS, THE DETAILED DRAWINGS SHALL BE USED.

0' 10' 20' 30' 40' 50'
SCALE

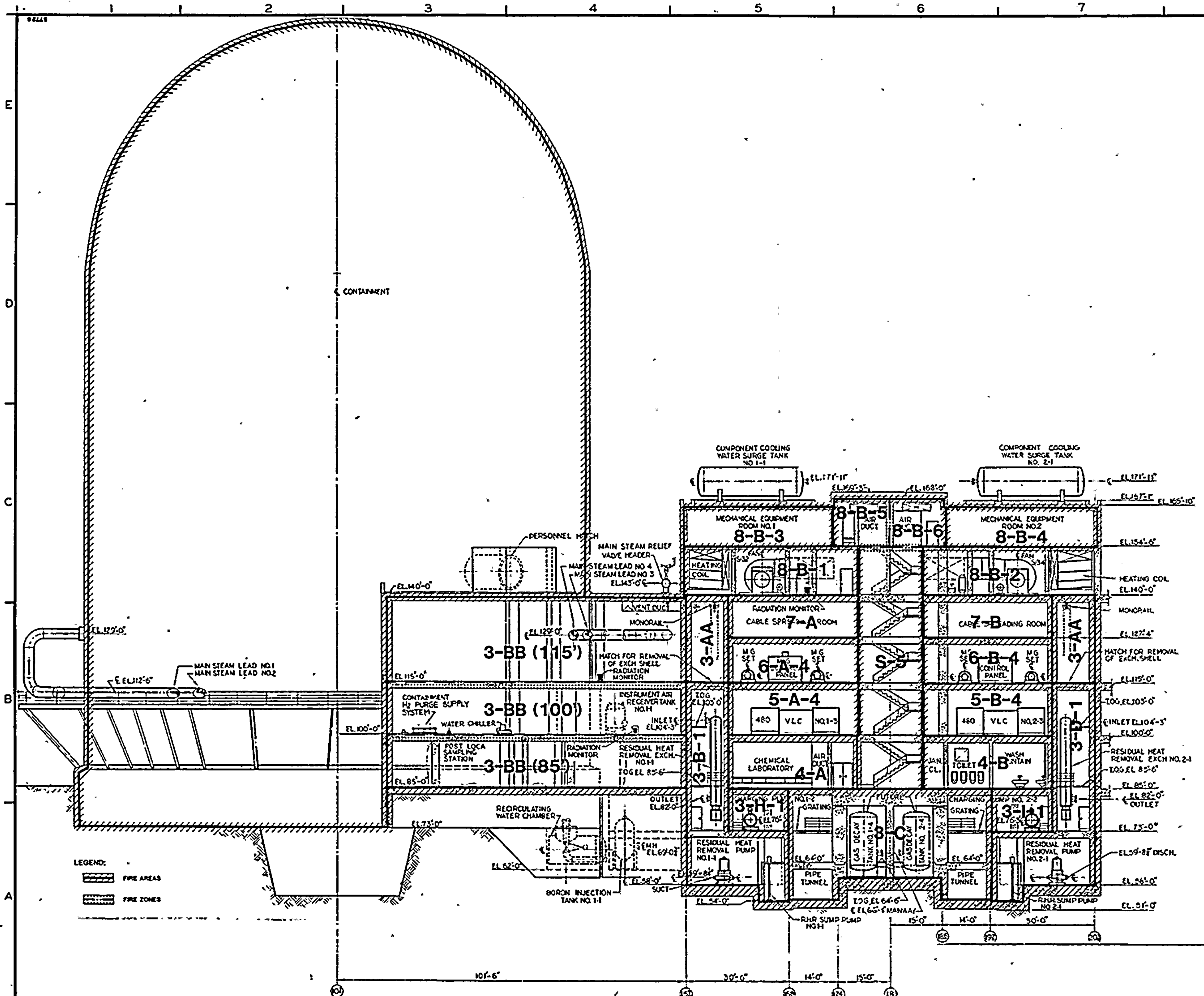
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

FIRE AREAS, INTAKE STRUCTURE

FIGURE 3-12

8307280115-15

Also Available On
Aperture Card



PRC APERTURE CARD

THIS DRAWING IS TO BE USED FOR FIRE PROTECTION ONLY

0' 10' 20' 30' 40' 50'
SCALE

SHOULD CONFLICT OCCUR BETWEEN THIS DRAWING AND DETAILED CIVIL, ELECTRICAL, OR MECHANICAL DRAWINGS, THE DETAILED DRAWINGS SHALL BE USED.

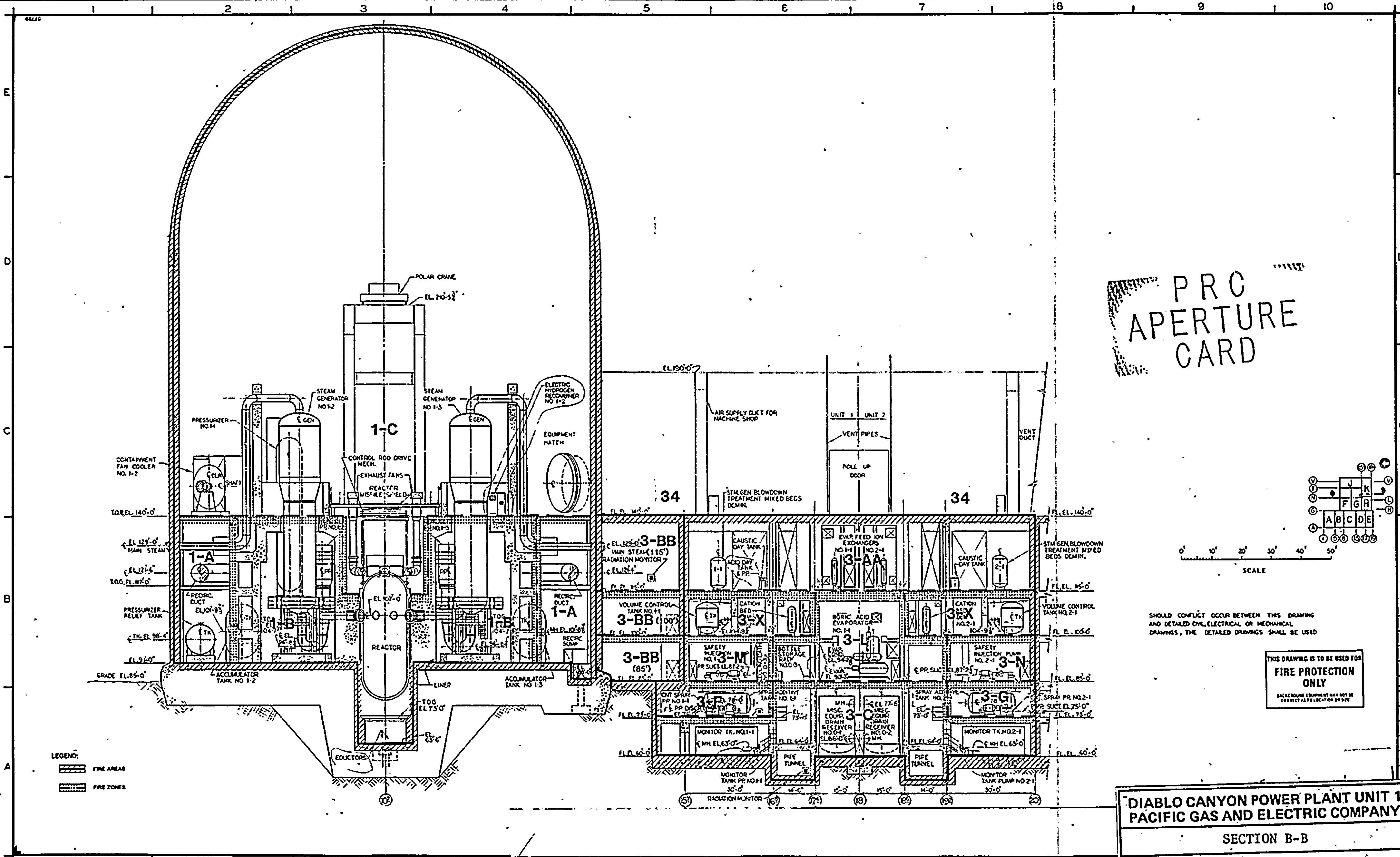
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION A-A

FIGURE 3-13

8307280115-16

Also Available On
Aperture Card



PRC APERTURE CARD

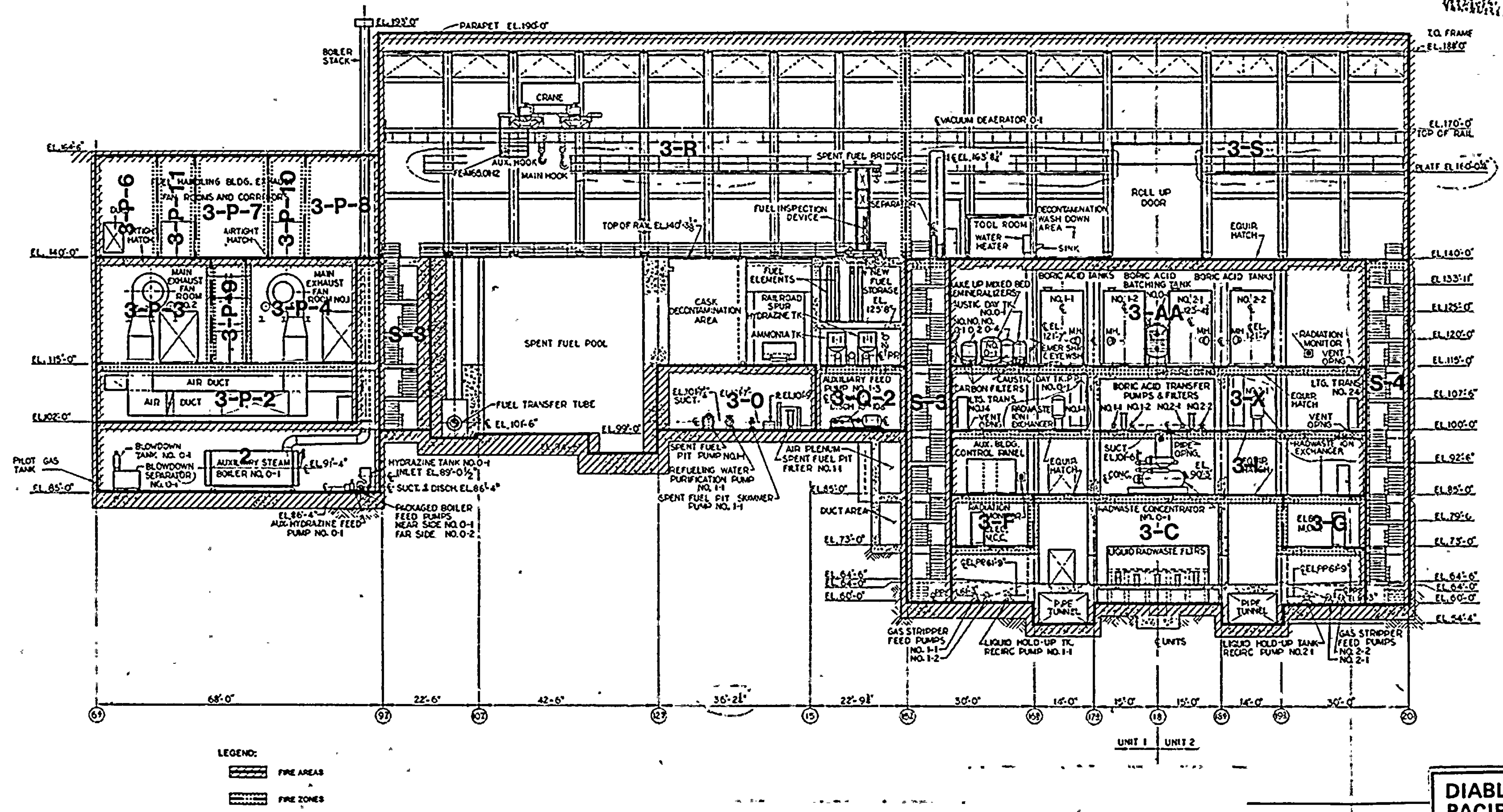
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION B-B

FIGURE 3-14

8307280115-17

Also Available On
Aperture Card



THIS DRAWING IS TO BE USED FOR FIRE PROTECTION ONLY

SHOULD CONFLICT OCCUR BETWEEN THIS DRAWING AND DETAILED CIVIL, ELECTRICAL, OR MECHANICAL DWGS, THE DETAILED DRAWINGS SHALL BE USED.

PRC APERTURE CARD

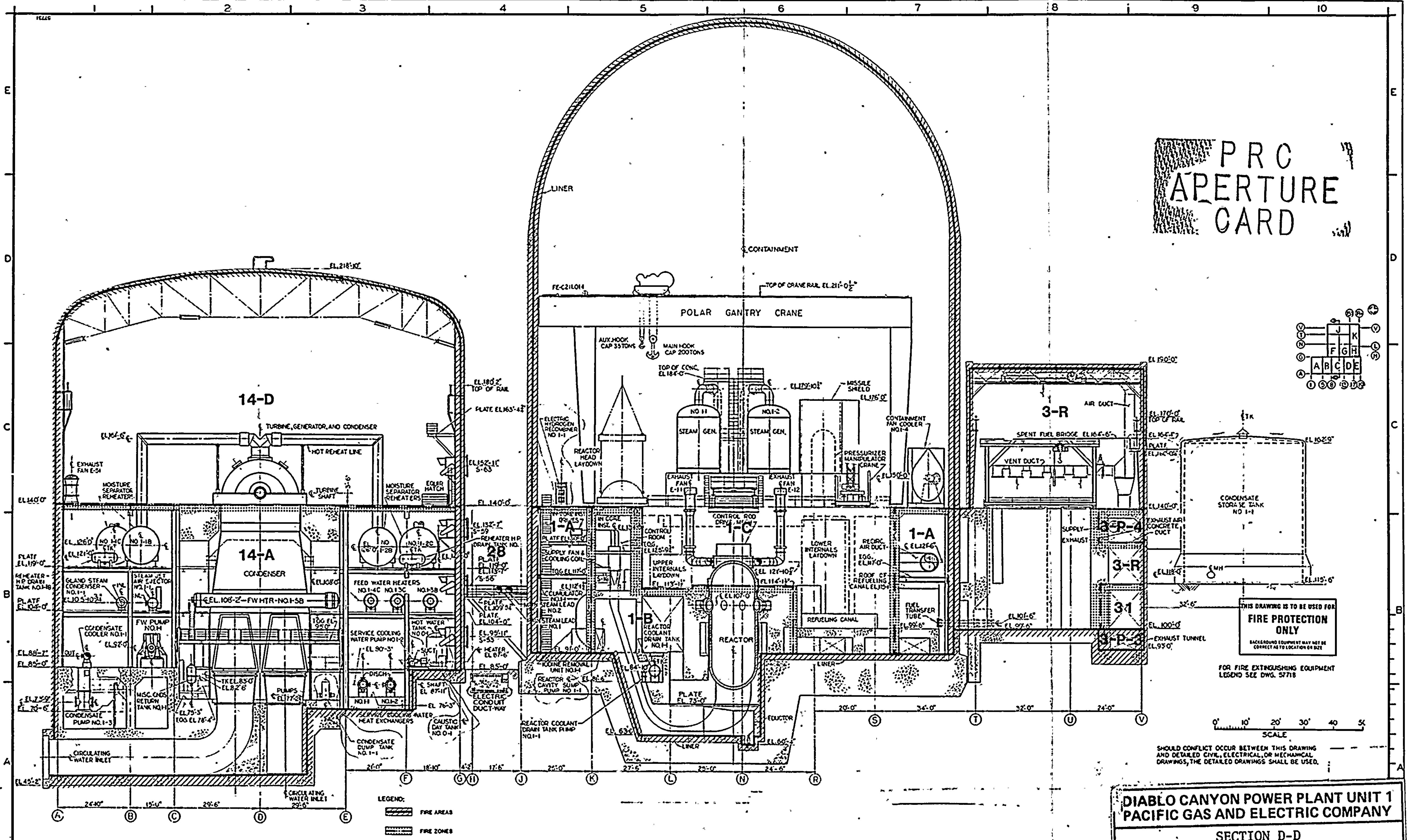
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION C-C

FIGURE 3-15

8307280115-18

Also Available On
Aperture Card



DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION D-D

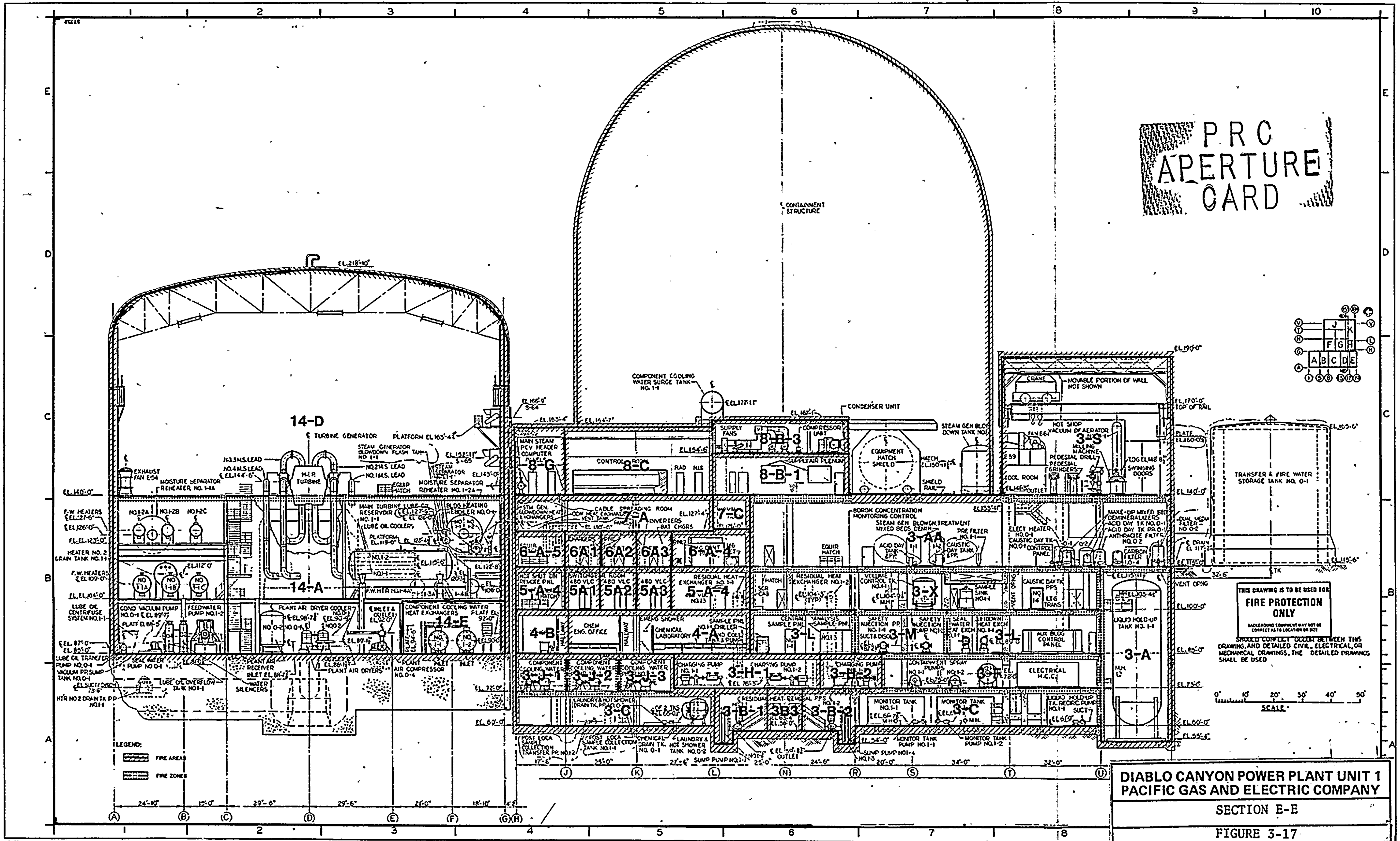
FIGURE 3-16

8307280115 -19

[illegible]

[illegible]

Also Available On
Aperture Card



PRC APERTURE CARD

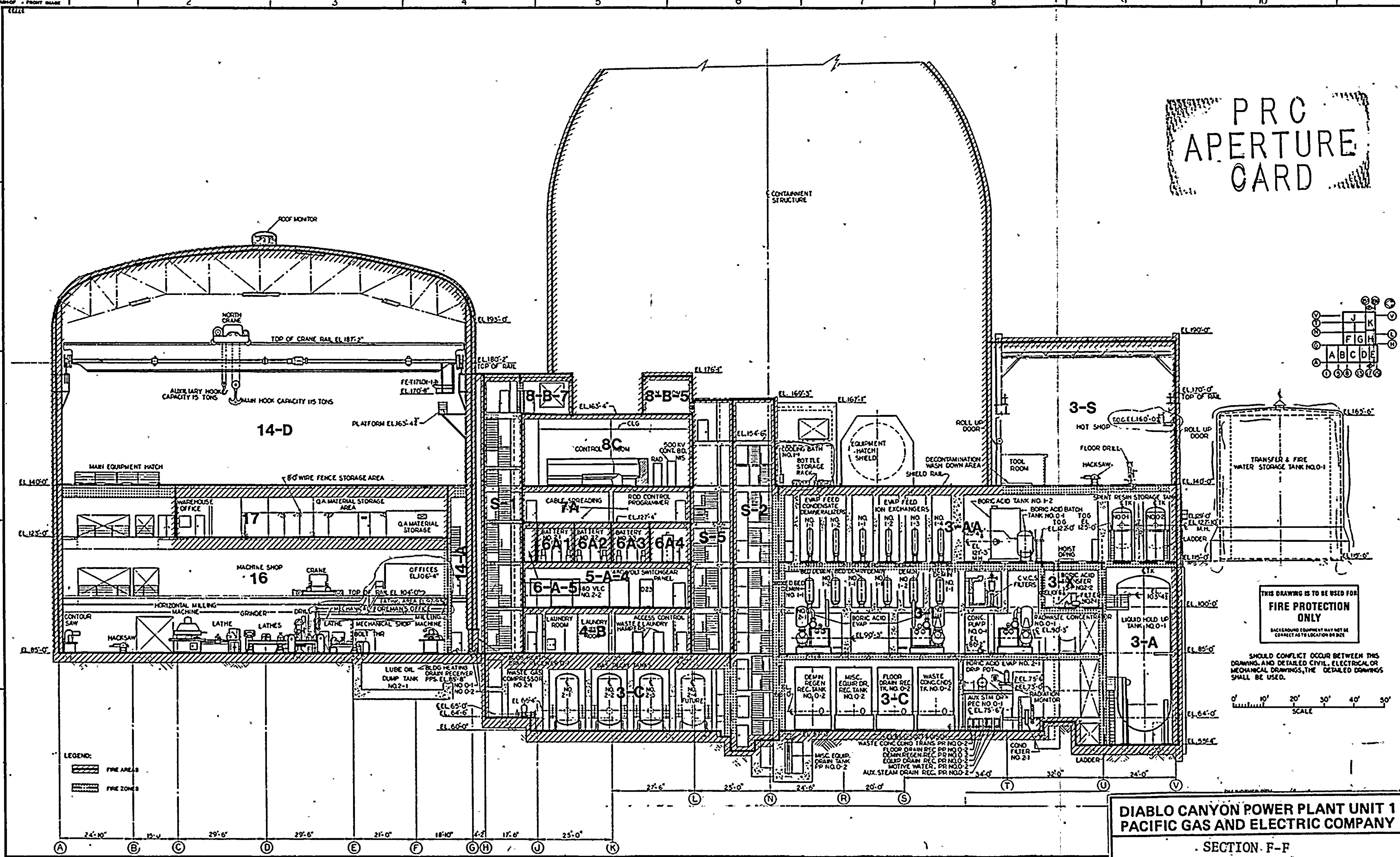
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION E-E

FIGURE 3-17

8307280115-20

Also Available On Aperture Card



DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

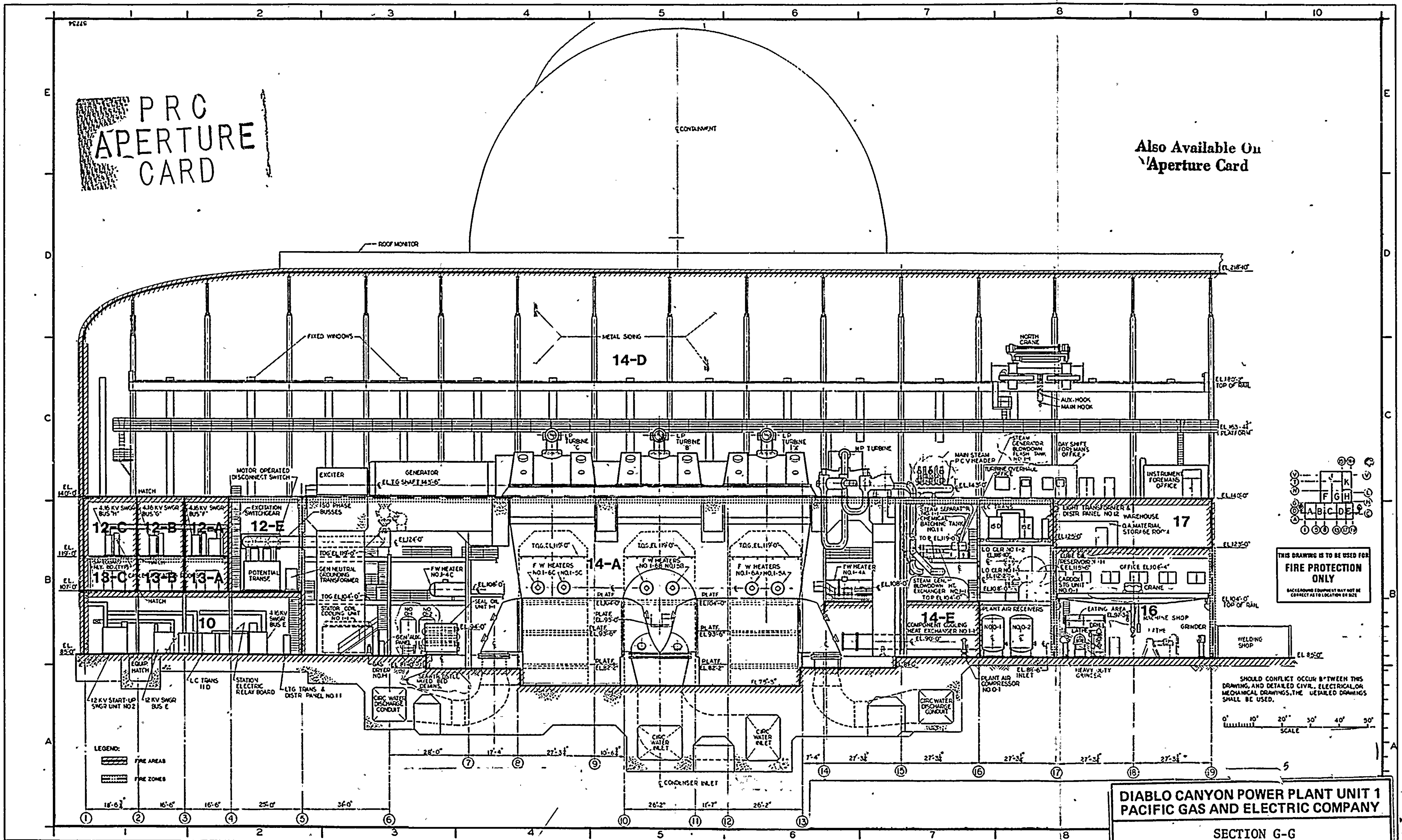
SECTION F-F

FIGURE 3-18

8307280115-21

PRC APERTURE CARD

Also Available On Aperture Card

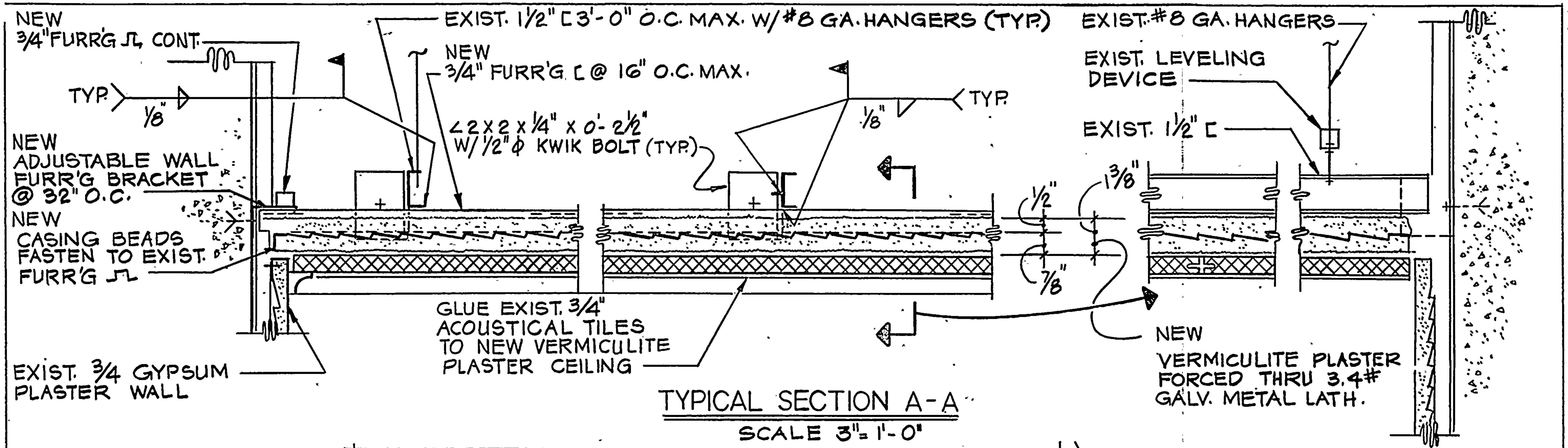


DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

SECTION G-G

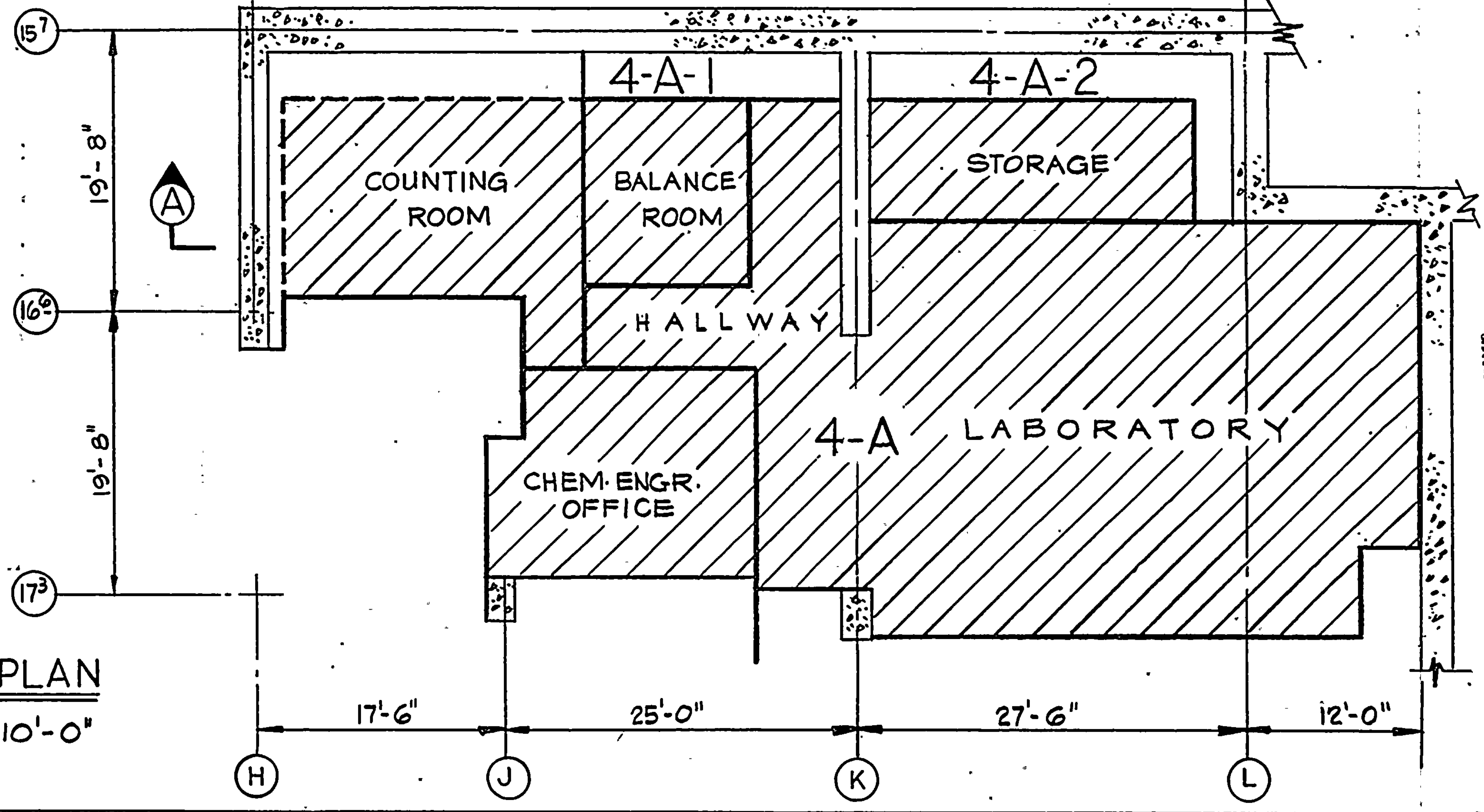
FIGURE 3-19

8307280115-22



TYPICAL SECTION A-A

SCALE 3" = 1'-0"



CEILING PLAN

SCALE 1" = 10'-0"

~~THIS DRAWING IS TO BE USED FOR~~

FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

Also Available On Aperture Card

PRC APERTURE CARD

LEGEND:

1 HOUR EQUIVALENT RATED CONTINUOUS MEMBRANE CEILING

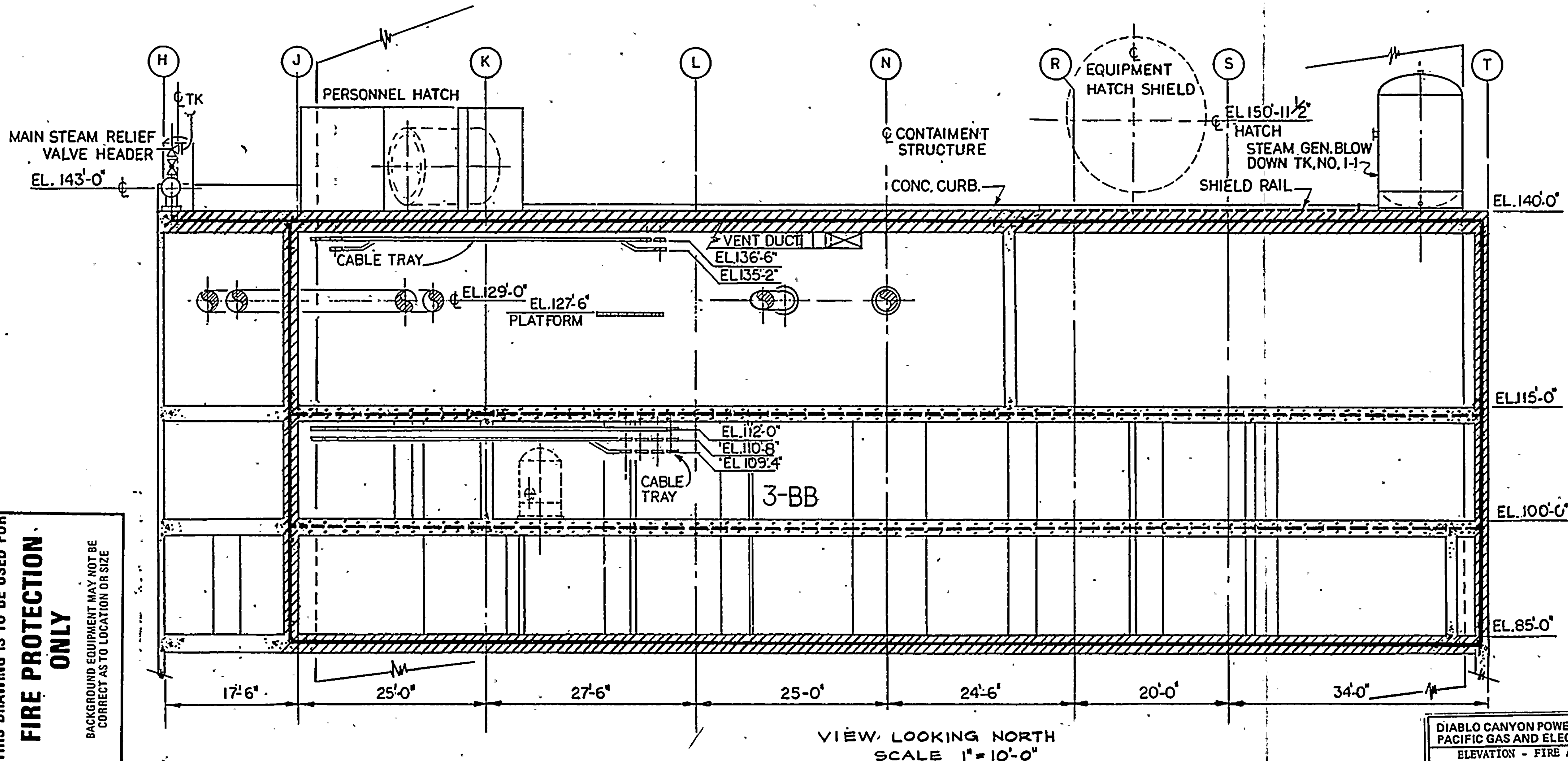
DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

PLAN - FIRE AREA 4-A

FIGURE 3-20

8307280115-23

PRC APERTURE CARD



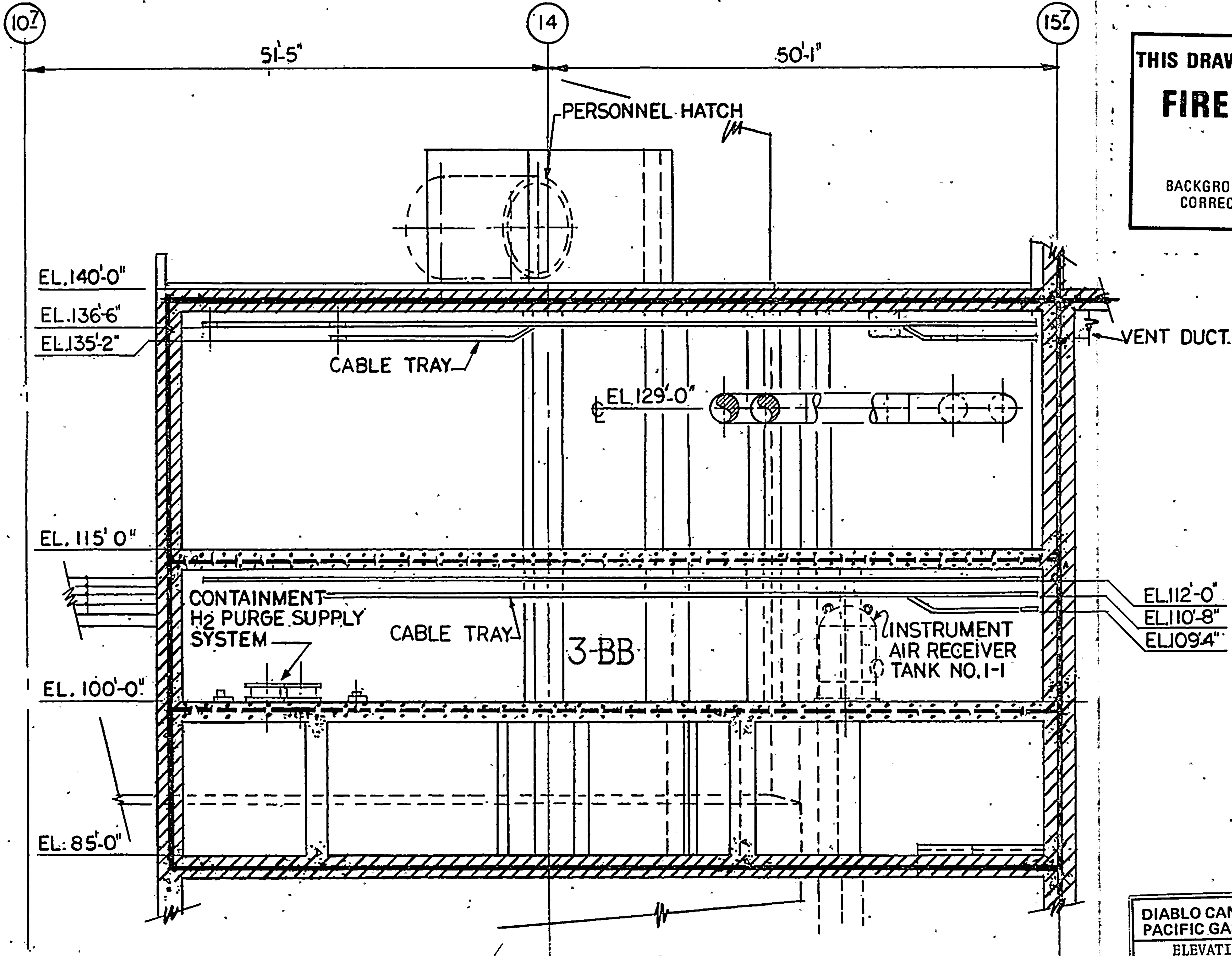
VIEW LOOKING NORTH
SCALE 1" = 10'-0"

THIS DRAWING IS TO BE USED FOR
FIRE PROTECTION ONLY
BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY
ELEVATION - FIRE AREA 3-BB
FIGURE 3-21

Also Available On Aperture Card

8307280115 - 24

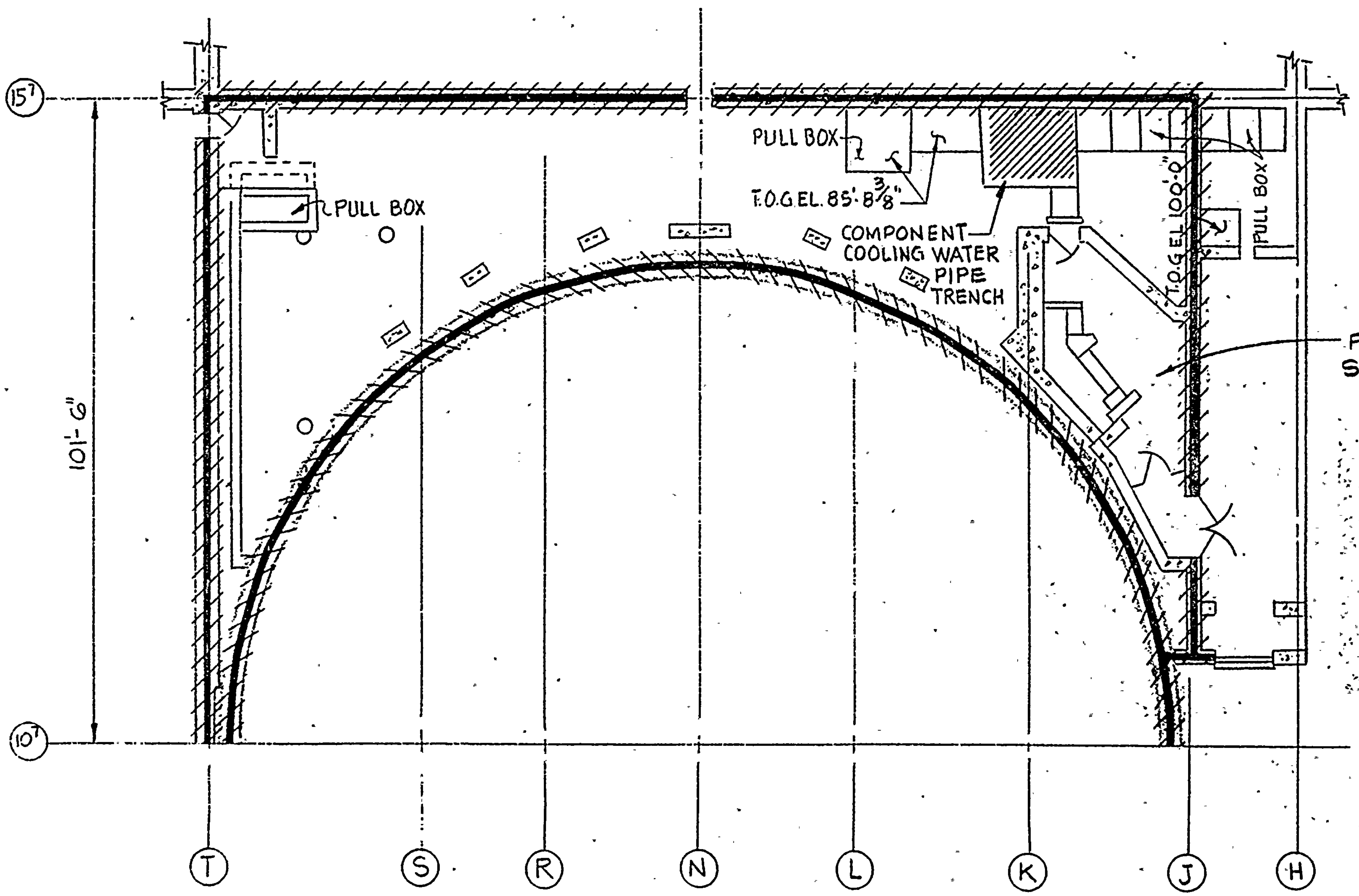


VIEW LOOKING NORTH
SCALE 1"=10'-0"

THIS DRAWING IS TO BE USED FOR
FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY
ELEVATION - FIRE AREA 3-BB
FIGURE 3-22



PRC APERTURE CARD

THIS DRAWING IS TO BE USED FOR

FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

LEGEND:

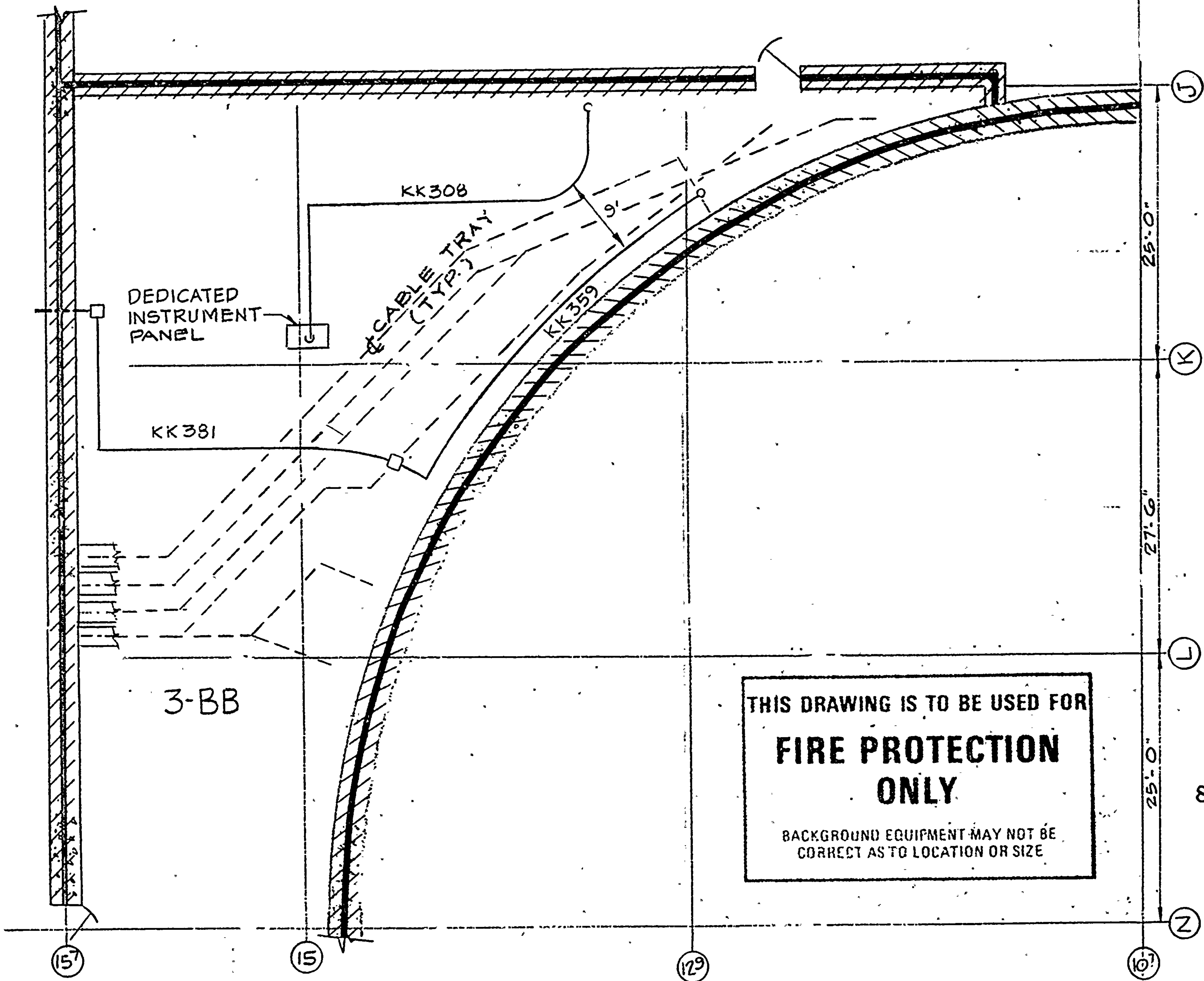
FIRE AREAS

Also Available On Aperture Card

ELEV. 85'-0"
NTS

DIABLO CANYON POWER PLANT UNIT 1 PACIFIC GAS AND ELECTRIC COMPANY
PLAN - FIRE AREA 3-BB (85')
FIGURE 3-23

8307280115-26



LEGEND:

FIRE AREAS

8307280115-27

ELEV. 104'-7"
NTS

THIS DRAWING IS TO BE USED FOR

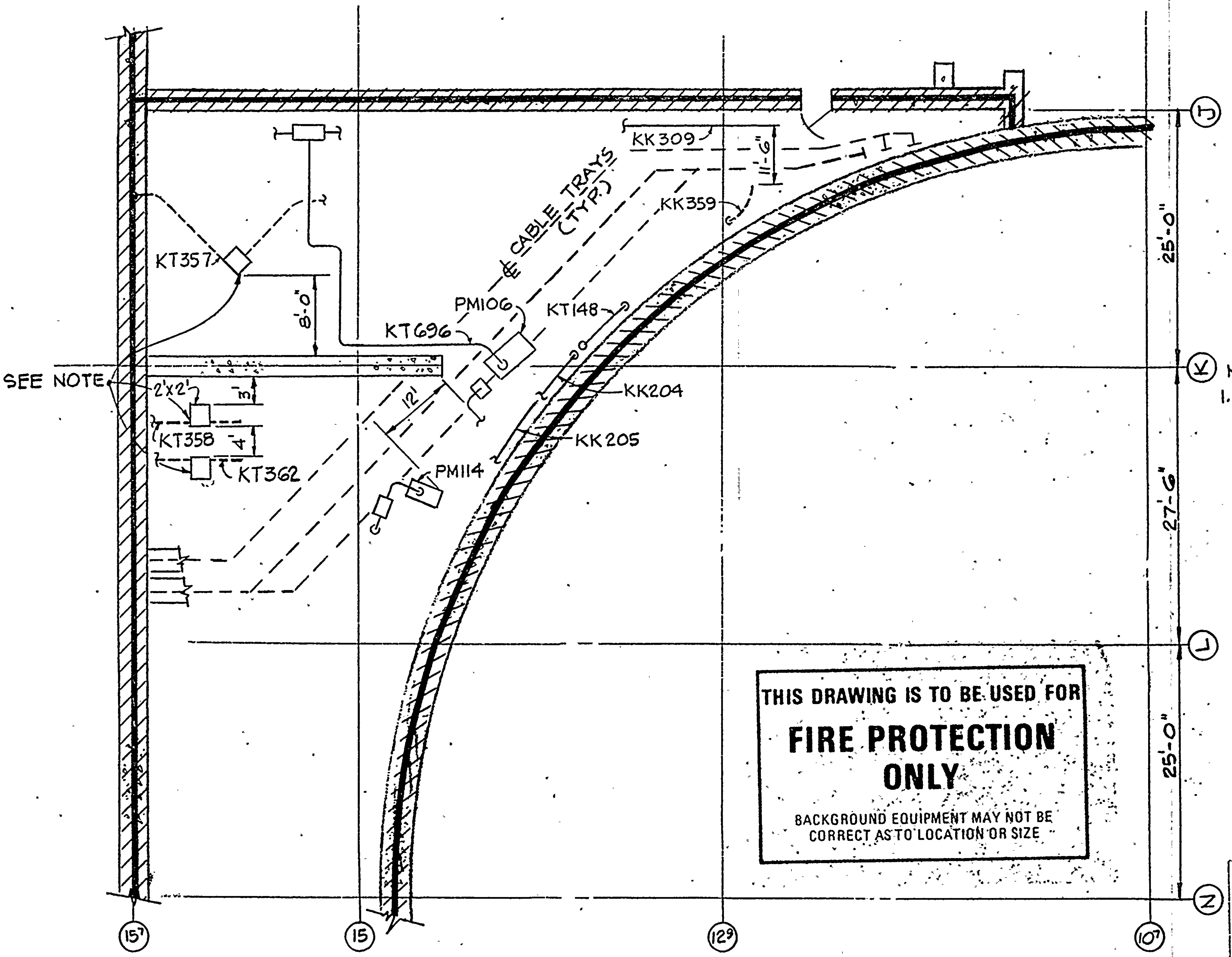
FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

PLAN - FIRE AREA 3-BB (104')

FIGURE 3-24



N

ELEV. 100'

NOTE:

1. PULLBOXES & CONDUITS EMBEDDED IN CEILING OF EL. 100'.

LEGEND:

FIRE AREAS

ELEV. 115'-0"
NTS

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

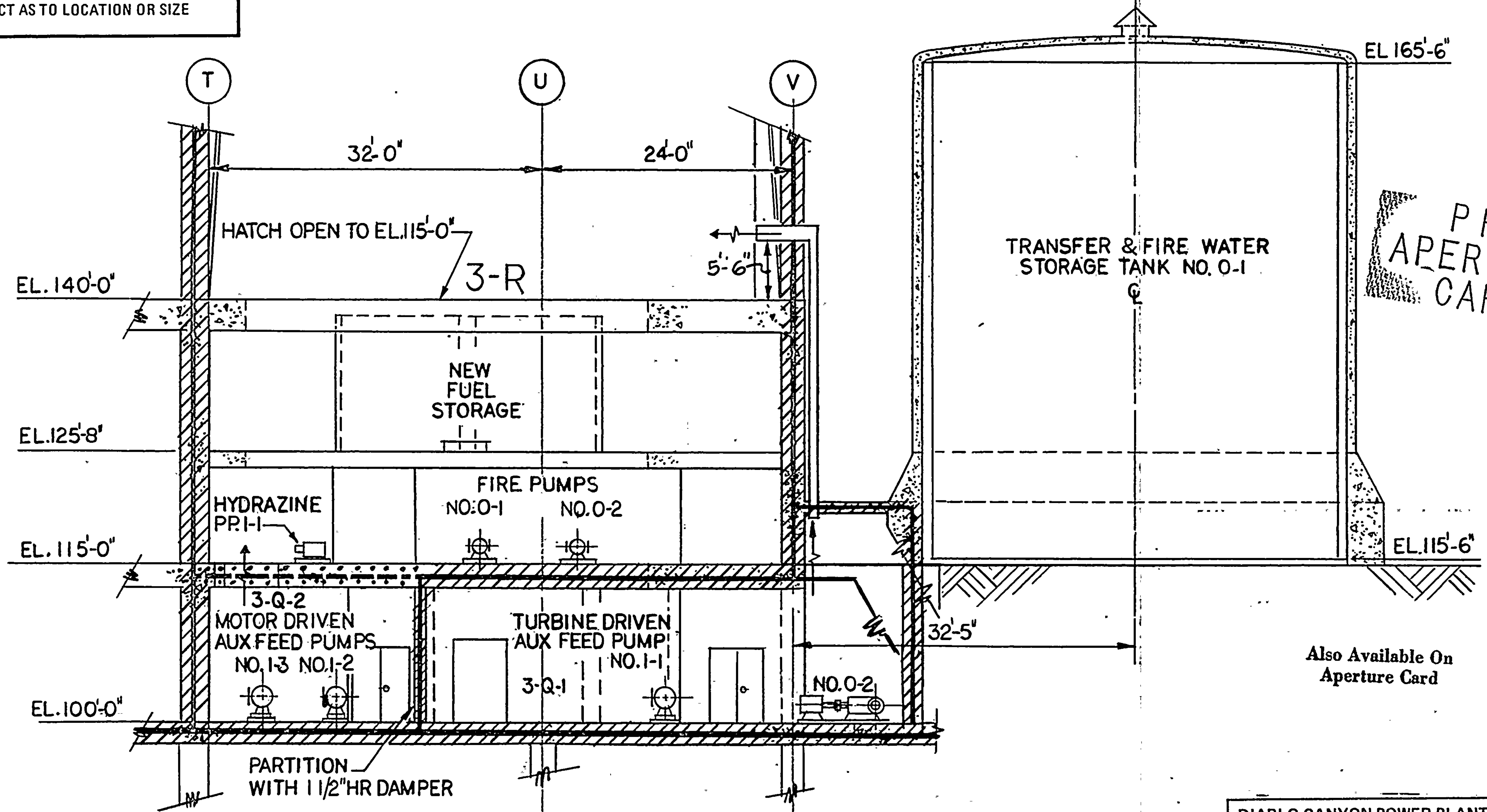
PLAN - FIRE AREA 3-BB (115')

FIGURE 3-25

THIS DRAWING IS TO BE USED FOR

FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE



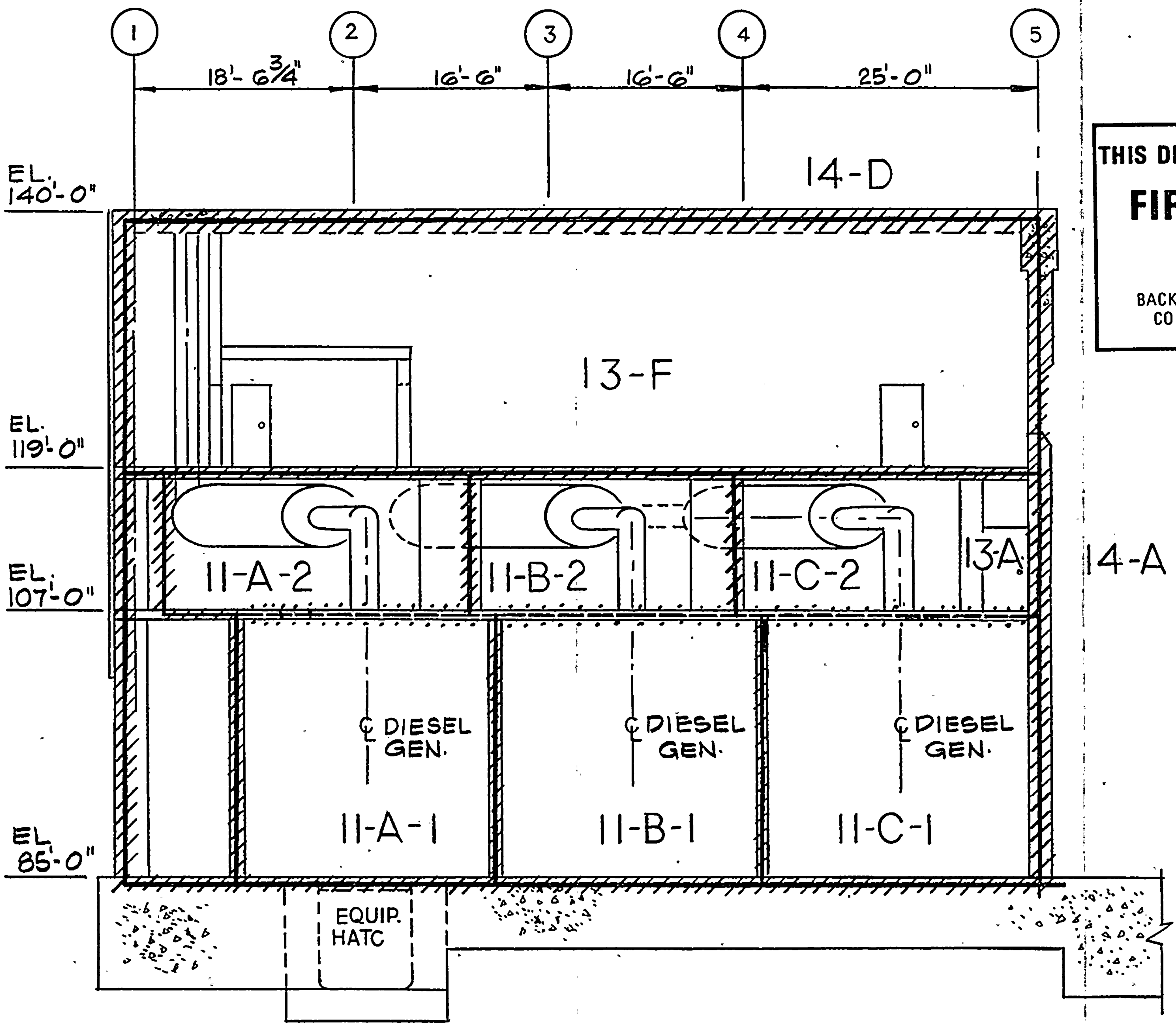
VIEW LOOKING NORTH
SCALE 1" = 10'-0"

PRC APERTURE CARD

Also Available On Aperture Card

DIABLO CANYON POWER PLANT UNIT 1 PACIFIC GAS AND ELECTRIC COMPANY
ELEVATION - FIRE AREA AB-1
FIGURE 3-26

8307280115 - 29



VIEW LOOKING EAST
SCALE 1" = 10'-0"

THIS DRAWING IS TO BE USED FOR

FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

PRC APERTURE CARD

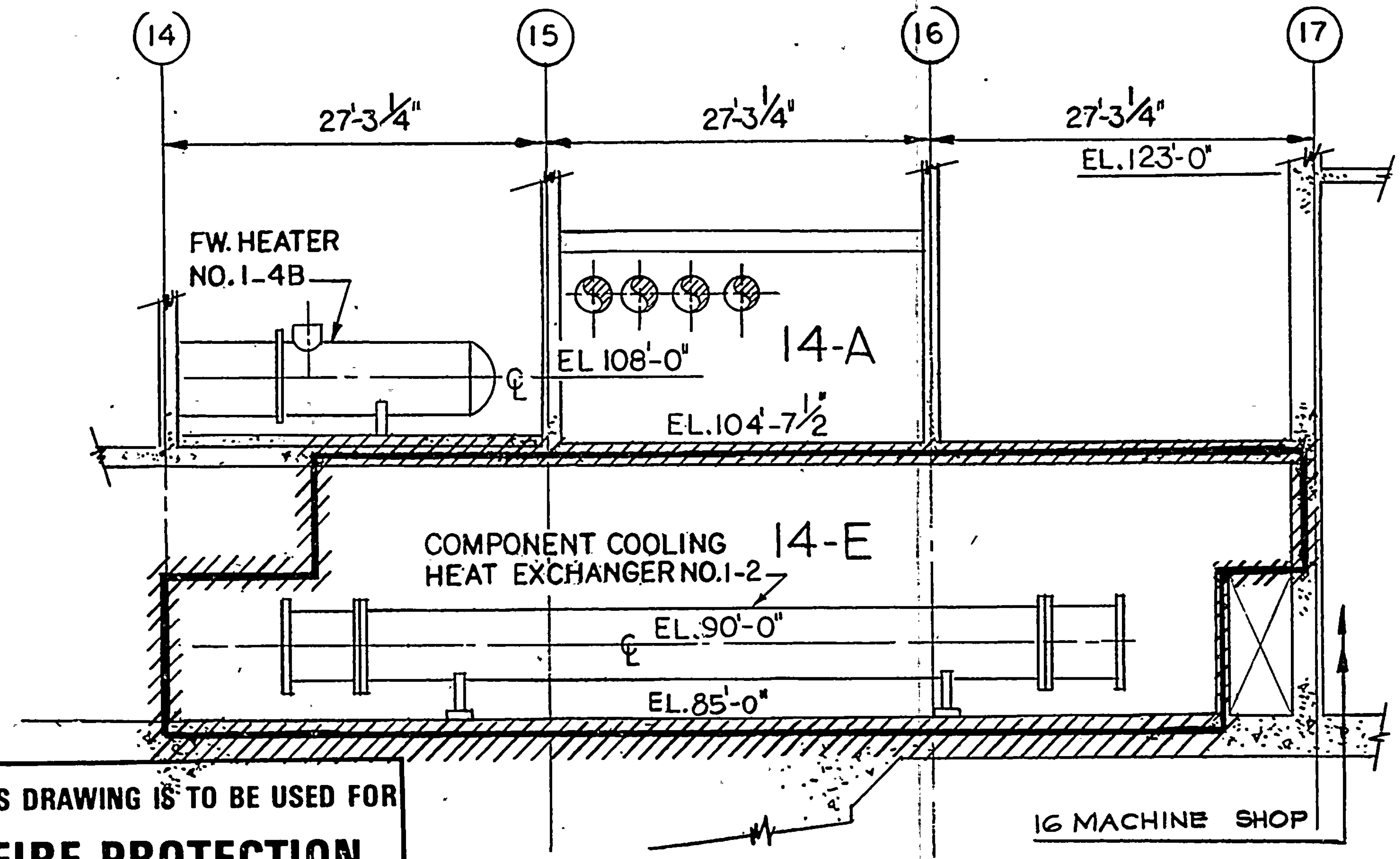
Also Available On Aperture Card

8307280115-3D

DIABLO CANYON POWER PLANT UNIT 1
PACIFIC GAS AND ELECTRIC COMPANY

ELEVATION-FIRE AREAS TB-1,TB-2,TB-3

FIGURE 3-27



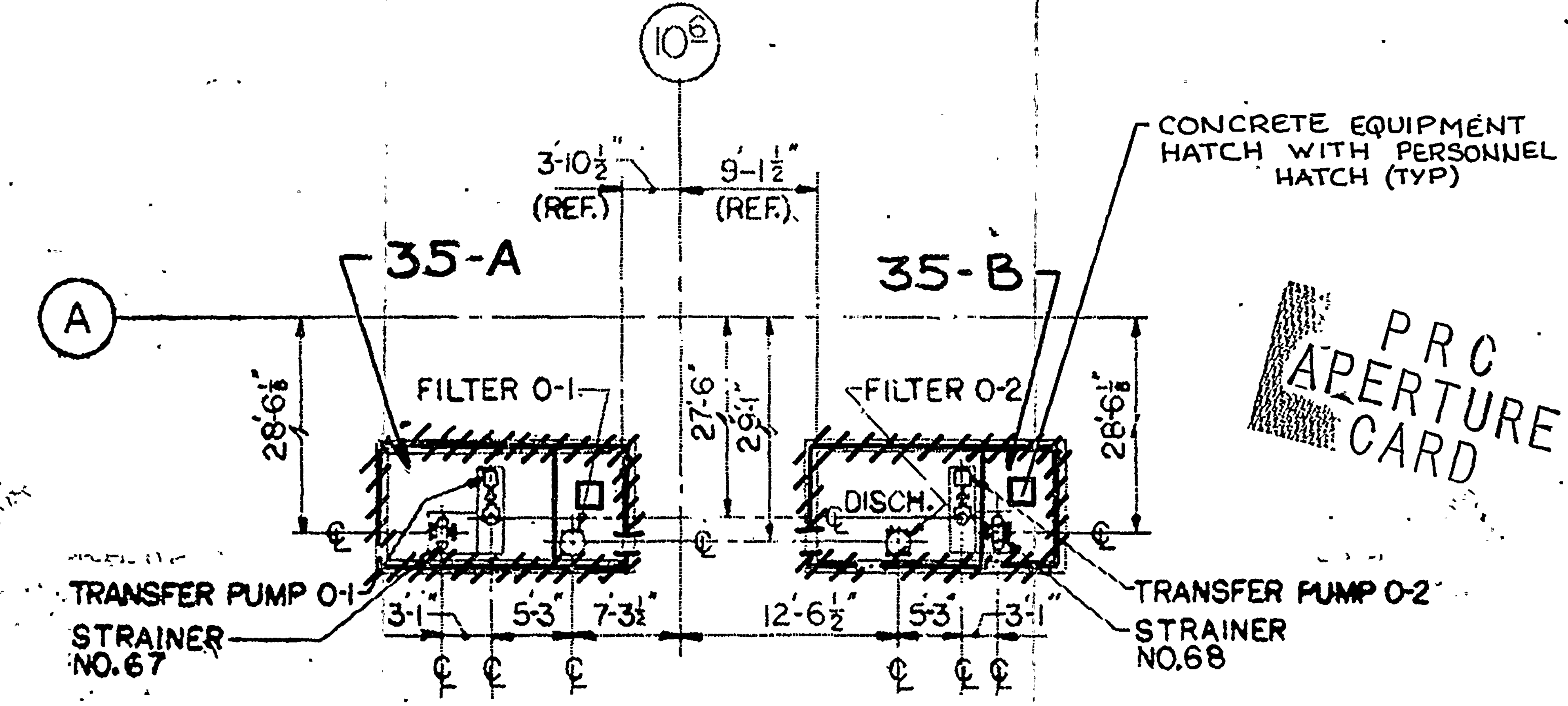
THIS DRAWING IS TO BE USED FOR

FIRE PROTECTION ONLY

BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

VIEW LOOKING EAST
SCALE 1" = 10'-0"

DIABLO CANYON POWER PLANT UNIT 1 PACIFIC GAS AND ELECTRIC COMPANY
ELEVATION - FIRE AREA 14-E
FIGURE 3-28



DIESEL FUEL OIL TRANSFER PUMPS
DETAIL 1
DWG. 513171
COORD. D-5&6

PRC APERTURE CARD

THIS DRAWING IS TO BE USED FOR
FIRE PROTECTION ONLY
BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

DIABLO CANYON POWER PLANT UNIT 1 PACIFIC GAS AND ELECTRIC COMPANY
DIESEL FUEL OIL TRANSFER PUMP VAULTS
FIGURE 3-29

Also Available On Aperture Card

8307280115-32

4.0 Emergency Lighting Capability and Evaluation to Appendix R, Section III.J

4.1 Emergency Lighting System Description

The emergency lighting system at DCPP consists of three independent systems:

- Emergency AC Lighting System, 120V AC

  The emergency AC lighting system is continuously energized. Upon loss of normal power supply to the vital "G" and "H" buses the emergency diesel generators will start and pick up load in ten seconds. The emergency AC lighting system will then be powered continuously by the emergency diesels.

- Emergency DC Lighting System, 125V DC

  The emergency lighting system is energized instantly upon loss of the emergency AC lighting system and is de-energized, after a five-second time delay, upon return of power supply to the emergency AC lighting system. These lights are powered from the non-vital station batteries and will provide sufficient emergency lighting for at least one hour.

- Emergency Self Contained Lighting, Sealed Beam Lights with 8-hour Battery Supply

  The emergency self-contained lighting units are located in various strategic areas of the plant which require lighting during safe shutdown. This lighting is supplemental to the emergency lighting system in order that light would still be available should damage occur to the emergency lighting circuits serving a particular area. The emergency self-contained lights are energized upon failure of the

emergency AC lighting system and subsequently de-energized when the emergency AC lighting system is returned to service.

The fire areas/zones required for safe shutdown served by the emergency self contained light units are:

	Fire Area/Zone
Control Room	CR-1
Fuel Storage & Preparation Area	3-R
Containment Escape Hatch	1
Battery Rooms	6-A-1, 6-A-2, 6-A-3
Cable Spreading Rooms	7-A
Hot Shut Down Panel	5-A-4, Elevation 104
Vital Switchgear Rooms	TB-4, TB-5, TB-6
Auxiliary Feedwater Pump Rooms	3-Q-1, 3-Q-2
Diesel Generator Rooms	TB-1, TB-2, TB-3
Dedicated Shutdown Instrument Panel	3-BB, Elevation 100
480V Vital Switchgear Rooms	5-A-1, 5-A-2, 5-A-3

4.2 Method of Evaluation

In addition to those fire areas/zones described in section 4.1 above as having 8-hour battery pack lights other fire areas/zones throughout DCPP were evaluated to determine where manual operation of equipment has been taken credit for to achieve hot shutdown. These fire areas were evaluated for potential loss of the emergency AC lighting system to determine if 8-hour battery pack lights were required or a modification of the emergency AC lighting system was necessary.

An analysis of the effects of a fire in the following fire areas/zones where manual action of equipment may be required has been provided to demonstrate that adequate lighting for access and egress to safe shutdown components is provided.

The fire areas/zones evaluated were:

CR-1
3-H-1
3-J-2, 3-J-3 (fire area AB-1)
3-L, 3-X, 3-AA (fire area AB-1)
4-B
5-A-4
6-A-5
7-A
14-E

4.3 Description of Deviation

STATEMENT OF PROBLEM

Section III.J of Appendix R requires that "emergency lighting units with at least an 8-hour battery power supply be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto."

Based on the foregoing system description, the emergency lighting system at DCPP is not in strict compliance with Section III.J.

BASIS FOR EXEMPTION

1. Three independent emeregency lighting systems have been provided consisting of: AC lighting from the G and H bus of the emergency diesels, DC lighting for at least one hour from the non-vital station batteries and self contained sealed beam lights with 8-hour battery packs in selected key locations throughout DCPP.

2. Where manual operation of certain safe shutdown equipment is taken credit for, as discussed in section 3.4 of this

report, the emergency lighting systems that provide for light along the access and egress routes to this equipment have been evaluated to ensure a reliable source of light is available.

3. Two light units with an eight hour battery supply will be provided in fire area 14-E to provide sufficient light to allow for manual operations if necessary of the ASW supply valves FCV-602 and FCV-603. An additional light unit with an eight hour battery supply will be located in the corridor area of fire zone 14-A (elevation 85 feet) to provide adequate lighting to get to fire area 14-E from the stairwell (S-1).

4. A light unit with an eight hour battery supply will be provided in the stairway S-1 at elevation 140 feet. This will provide a completely lighted access/egress route from the control room to the emergency diesels in the event of a postulated fire in fire area CR-1 and 7-A.

5. In fire area 5-A-4 (hot shutdown panel area) a new branch circuit from lighting panel PLEA131 will be connected to the existing stairway (S-5) lighting fixture. The existing circuit (131EA6) to this fixture will be removed. This will ensure that emergency lighting in the stairway (S-5) will not be affected by a fire in fire area 5-A-4.

6. A postulated fire in fire zone 3-L could affect the emergency AC lighting feeder circuitry to panel PLEA151 which provides lighting for the auxiliary building and fuel handling building. In addition, emergency AC lighting may be lost to valves 8805A and 8805B (supply from refueling water storage tank) located in fire area 3-BB at elevation 85 feet. These valves may require manual operation in the event of a postulated fire in fire zone 3-L.

To preclude the above, junction box BJK53 and conduit K9137 containing emergency AC lighting feeder circuit for the auxiliary and fuel handling buildings will be protected by a 1-hour fire barrier commensurate with the fire loading in fire zone 3-L. Further, a new branch circuit will be connected from the emergency AC panel (PLEA131) to the emergency AC lighting fixture in fire area 3-BB elevation 85 feet serving valves 8805A andd 8805B. This circuit will be routed through fire areas 5-A-4 and 3-BB only to ensure it will not be affected by a postulated fire in fire zone 3-L.

5.0 RCP OIL COLLECTION SYSTEM AND EVALUATION TO APPENDIX R, SECTION III.O.

5.1 Background

In 1975, Pacific Gas and Electric Company provided a system to collect and contain a potential oil leak from the Westinghouse reactor coolant pump (RCP) CS VSS motors. This system was provided in response to concern over industry experience with RCP lube oil fires in operating plants. The four RCPs were considered as two sets, two RCPs per set. A separate oil collection system was provided for each set. Each collection system was designed to collect and contain a potential oil spill of up to 50 gallons. Automatic smoke detection and wet pipe automatic sprinkler systems were installed to provide active fire protection for each RCP. NRC review and acceptance of the fire protection provisions for the reactor coolant pumps is contained within Supplement 8 to the Safety Evaluation Report, page 9-13.

In March 1981, PGandE committed to provide a lube oil collection system consistent with the requirements of Appendix R, Section III.O. A review was made of the existing collection system and several modifications were made. The major modifiction involved replacing the two oil collection systems with one, and increasing the capacity of the collection tank to accommodate the lube oil inventory of one RCP motor plus a margin.

5.2 RCP Area Description

The RCPs are located in two areas within fire zone 1-B (fire area 1). Fire zone 1-B is separated from fire zone 1-A (containment penetration area) by a reinforced concrete shield wall which also serves as a support structure for the polar crane. This wall has numerous openings. Zone 1-B is separated from fire zone 1-C

(control rod drive area) by the elevation 140 feet floor slab and the reinforced concrete biological shield wall from elevation 140 feet to approximately 110 feet. (See Figures 3 -10 and 3-14). The biological shield wall separates zone 1-B into two areas (north and south) above elevation 110 feet. Each RCP is above this elevation, and therefore the biological shield serves as a barrier between the north area in which RCP 1-1 and 1-2 are located and the south area in which RCPs 1-3 and 1-4 are located. The north and south areas communicate through open areas from approximately elevation 110 feet to the containment floor slab at elevation 91 feet and through open ventilation gratings above each RCP at elevation 140 feet. Each RCP is separated from the others by a minimum of approximately 45 feet.

5.3 RCP Lubricating Oil System Description

The lubricating oil system for the RCP motor consists of two parts, the upper oil pot and the lower oil pot (240 gallons) and oil pan (25 gallons). This system has two modes of operation - lifting of the thrust bearing just prior to RCP start-up and normal lubrication of the upper and lower bearing assemblies.

The thrust bearing oil lift system consists of a motor, an oil pump, pressure gage, pressure switch, selector valves, check valves, filter, relief valve and orifice blocks mounted externally on the upper part of the motor casing.

An oil lift pressure of at least 500 psig is required to lubricate the thrust bearing during startup. The RCP startup procedure requires the oil lift pump to be run for at least 2 minutes prior to startup of the RCP itself. The operation of the oil lift pump is continued for appoximately 1 minute after the RCP is started. The oil lift pump is then shut down. RCP shutdown does not require oil lift pump operation.

After RCP startup, the thrust runner acts as an impeller and circulates oil in the upper bearing assembly and through an externally mounted vertical oil-to-water heat exchanger and oil pot. Circulating oil in the lower bearing assembly passes through an externally mounted oil pot and an internally mounted oil-to-water heat exchanger. The upper and lower oil pots are each equipped with a sight glass and a level switch. The level switch provides high and low oil level alarms in the continuously manned control room.

5.4 RCP Oil Collection System

Each RCP is equipped with an oil collection system to collect and contain any reasonable oil leak. The oil collection system consists of a series of collection pans surrounding each pump draining to a lube oil collection tank.

The collection pans surrounding each pump consist of 18 gage sheet metal fastened to the platform grating at elevation 110 feet. Each pan has a minimum 1-7/8 inch rim and an approximate collection area of 10 to 30 square feet. Each pan is connected to the adjacent pan by an overlapping joint and a mechanical fastener. All openings through and between the collection pans for conduit, pipes, etc., are surrounded by drip shields draining to the collection pans. A skirt is installed around the pump motor coupling to direct leaks on the outside of the motor casing (upper lube oil cooler, level instrumentation, etc.) to the collection pans below. The oil lift pump and piping is enclosed by a sheet metal shield and spray from a potential oil lift pump leak would be confined to within the shield and the oil directed to the collection pans. Leaks internal to the motor casing are diverted to the collection pans below by a gutter inside the coupling area or collected above the main pump flange. The main pump flange is surrounded by a 2-inch rim with an overflow drain to the collection pans. All joints are caulked to prevent leakage.

Each collection pan is equipped with a 1-1/2 inch drain pipe connected to a 2-inch drain line. The drain lines for each pump connect to a 2-inch common header, and enter the containment annulus through penetrations in the shield wall. The common header drain line is routed to an oil collection tank located under the fuel transfer canal in the containment annulus at elevation 91 feet.

The RCP oil collection tank has a 300 gallon capacity and is equipped with a valved drain, a 2 inch overflow, and a 2 inch vent. The vent is equipped with a flame arrester. The tank is designed to contain the oil inventory of one RCP motor plus a margin of 35 gallons.

5.5 Active Fire Protection Capability

DETECTION

A smoke detector is provided between each RCP and the corresponding steam generator. Each detector is situated considering the ventilation flow path around the RCP. Additional detectors are provided in the containment annulus in the exhaust air flow path for zone 1-B. These detectors annunciate in the continually manned control room.

SUPPRESSION

A wet pipe automatic sprinkler system is provided for each RCP. The water flow alarm annunciates in the continuous manned control room. The sprinkler system piping is designed such that a seismic event would not impact safety related equipment due to system failure.

Manual fire suppression capability in the form of portable fire extinguishers and fire hose stations is available for use in the RCP areas.

5.6 Combustibles

The combustible loading for the RCP areas are included in the discussion of fire area 1 (Section 3.4).

5.7 Description of Deviation

STATEMENT OF PROBLEM

The above described RCP oil collection system is in compliance with Appendix R, Section III.O, and Item 2 of the NRC staff position Paper,[1] except for drainage of any overflow "....to a safe location where the lube oil will not present an exposure fire hazard to or otherwise endanger safety related equipment." In the unlikely event of an overflow from a multiple RCP lube oil spill, RCP oil would be discharged from the RCP oil collection tank into the containment annulus floor at elevation 91 feet.

BASIS FOR EXEMPTION REQUEST

1. The RCP lube oil collection tank overflow pipe discharges downward to a recessed trench in the elevation 91 feet floor, along the outside of the shield wall. This trench is sloped so an RCP lube oil overflow would flow to the containment drain sump.

2. The overflow pipe of the oil collection tank has pickup from 3 inches above the tank bottom. Thus, in the remote likelihood of a multiple RCP motor lube oil spill and fire propagation to the oil collection tank, such a fire would not be extended to the oil discharges to the floor trench.

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1 Presented in RH Vollmers' April 1, 1983 memorandum to D.G. Eisenhut concerning the oil collection system reactor coolant pumps, Florida Power and Light Company, St. Lucie 2-Docket No. 50-389 from J. Olshinski to D. Eisenhut.

3. The Westinghouse RCP CS VSS motor currently utilizes a high flashpoint (480°) lubricating oil. The fire point of this oil is 520°F. Therefore, a high energy ignition source would be necessary to sustain combustion in the unlikely event a multiple RCP lube oil spill (greater than 300 gallons) occurs and oil is discharged through the overflow pipe.

4. Due to an oil-to-water heat exchanger serving each bearing assembly, and that the heat exchanger discharge water and bearing temperatures are monitored and alarm in the continuously manned control room, it is not deemed credible for the RCP lube oil to reach temperatures within 50% of its flash point.

5. There are various components and circuits necessary for safe shutdown in the vicinity of this floor trench. Power cable is routed in conduit. Other circuits are not considered to present high energy ignition source.

6. Upgrading of the RCP lube oil collection tank overflow would not enhance to a significant degree the protection provided to the existing configuration.