Duquesne Light

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May 23, 1984

United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. George W. Knighton, Chief
Licensing Branch 3
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No 50-412
Fire Protection - Draft Safety Evaluation Report

Gentlemen:

On April 19, 1984, Duquesne Light Company (DLC) met with the NRC Chemical Engineering Branch (fire protection section) in Bethesda, MD, to discuss the thirteen (13) open items in the Draft Safety Evaluation Report (SER) concerning fire protection. Attachment I contains the status of each open item as agreed upon at the meeting. The status is defined by one of the following four categories:

CLOSED -- No further DLC input or action is needed to resolve the NRC concern.

CONFIRMATORY - DLC must provide the requested information on the BVPS-2 docket, either by a letter or an amendment to licensing documents. Submittal of the information will close out this information.

OPEN - DLC: -- No resolution possible at this time. DLC to address.

OPEN - NRC -- No resolution possible at this time. NRC to address.

The attached responses to the 13 open items (Attachment II) address the concerns raised by the NRC at the April 19 meeting. The responses to the open items statused as confirmatory have been revised to include the information the NRC requested to close out their concern. The Final Safety Analysis Report (FSAR) and/or the Fire Protection Evaluation Report (FPER) will be amended as necessary to incorporate the information as noted in the responses.

Item FP-13 concerns the use of carbon dioxide as a fire suppression system in the cable spreading room. The primary fire suppression system in the BVPS-2 cable spreading room is an automatic, redundant, total flooding

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carbon dioxide system. Backup suppression is provided by permanent plant hose stations. This approach to fire suppression in the cable spreading room was presented to the NRC in the BVPS-2 PSAR and was not identified as an open item in the Construction Permit Stage-Safety Evaluation Report. A similar carbon dioxide system with hose station back-up was acceptable in BVPS-1 for use in spreading room and has been operational for the last seven years without any problems. Instead of the permanent hose stations proposed by BVPS-2, the NRC requested DLC install a fixed water spray suppression system. The BVPS-2 fire suppression system in the cable spreading room meets the intent of the Branch Technical Position CMEB 9.5-1 and complies with the requirements of 10CFR50, Appendix R, Section III.G.3. Further requests by the NRC go beyond what is required to comply with 10CFR50, Appendix A - GDC-3. If it is the NRC's intent to require DLC to install a fixed water suppression system, DLC will request the NRC to address this item as a backfit item under 10CFR109 and the recent NRC Generic Letter 84-08.

NRC action is required on Items FP-4 and FP-5. The review of the safe and alternate shutdown capability involves the NRC's Auxiliary System Branch (ASB) in the addition to the CMEB The open items in the draft SER indicate that the NRC review is in progress, but it is not clear if the ASB has begun their review. The NRC was requested to establish a schedule for this review effort and set a date with the ASB to meet to discuss these open items.

Attachment III contains DLC's position on additional fire protection concerns: fire dampers and wrapping ventilation ductwork. DLC feels that the information in Attachment III meets the intent of the NRC guidelines. A meeting will be arranged with the NRC in the near future to discuss these two items in depth. If you have any questions related to the information contained herein, please contact my licensing personnel.

DUQUESNE LIGHT COMPANY

By E. J. Woolever
E. J. Woolever
Vice President

ETE/wjs

SUBSCRIBED AND SWORN TO BEFORE ME THIS
23rd DAY OF May, 1984.

Anita Elaine Reiter
Notary Public

ANITA ELAINE REITER, NOTARY PUBLIC
ROBINSON TOWNSHIP, ALLEGHENY COUNTY
MY COMMISSION EXPIRES OCTOBER 20, 1986

COMMONWEALTH OF PENNSYLVANIA)
) SS
COUNTY OF ALLEGHENY)

On this 22nd day of May, 1984, before me, a Notary Public in and for said Commonwealth and County, personally appeared E. J. Woolever, who being duly sworn, deposed and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge.

Anita Elaine Reiter
Notary Public

ANITA ELAINE REITER, NOTARY PUBLIC
ROBINSON TOWNSHIP, ALLEGHENY COUNTY
MY COMMISSION EXPIRES OCTOBER 20, 1985

ATTACHMENT I

Status of Fire Protection
Draft SER Open Items

Item No.	Description	Status
FP-1	Fire Hazards Analysis	Confirmatory
FP-2	Fire Brigade	
	a) self-contained breathing units	Closed
	b) spare air bottles	Closed
	c) 6-hour reserve air	Closed
	d) physical examinations	Confirmatory
FP-3	Penetration Seals	Closed
FP-4	Safe Shutdown	Open-NRC
FP-5	Alternate Shutdown	Open-NRC
FP-6	Hydrogen Piping	Open-DLC
FP-7	Cable Tray Suppression	Closed
FP-8	Power Supplies for Control Room Ventilation	Open-DLC
FP-9	Fire Detection	Confirmatory
FP-10	Valve Supervision	Closed
FP-11a	Reactor Coolant Pumps	Confirmatory
FP-11b	Separation of Safety-Related Components	Closed
FP-12	Control Room Complex	Confirmatory
FP-13	Cable Spreading Room	Open-DLC

ATTACHMENT II

RESPONSES TO DRAFT

SAFETY EVALUATION REPORT

FIRE PROTECTION OPEN ITEMS

Fire Hazards Analysis

However, we are concerned that the mechanism by which fire and fire-fighting systems may cause the simultaneous failure of redundant or diverse trains has been adequately considered in the design. We will require that the applicant identify such mechanisms that were considered in his fire hazards analysis and the measures taken to preclude the fire or fire suppressant induced failure of redundant or diverse safety trains.

Response:

The fire hazards analysis is presented as part of the Fire Protection Evaluation Report (FPER). This analysis demonstrates that the plant will maintain the ability to achieve a safe shutdown condition in the event of a fire.

The plant was broken into fire areas and each area is described in detail. A postulated fire was then determined for the area using combustible loading calculations. This was used to determine adequacy of barriers. The combustible loadings are included as part of the FPER. Safety related equipment and cabling was then identified for each area and a safe shutdown analysis was done assuming a total loss of all equipment and cabling within the fire area. For areas where it was not possible to fully separate redundant safe shutdown trains, an alternate shutdown capability was provided.

The FPER, in conjunction with FSAR Section 9.5.1, describes the fire protection systems installed at BVPS-2. These systems provide the ability to detect, confine and extinguish any postulated fire within any fire area.

The analysis of the CO_2 systems revealed two areas where the potential existed for interaction of the CO_2 with redundant safety related trains. In the diesel generator room, a signal from the Category III CO_2 systems caused shutdown of the Category I ventilation systems. This was alleviated by installing Category I heat detectors to control the shutdown of the fans in a fire emergency. The other area was in the cable spreading room where actuation of the CO_2 system controls the ventilation fans. A cross-zoned smoke detection system was supplied for the actuation cycle. In addition, a separate early warning smoke detection system is provided for assurance that any fire will be detected in its incipient stages. These detection systems provide adequate assurance that the ventilation system will not be shut off by inadvertent signals.

As part of a previous analysis, hose rack piping in safety related areas was modified such that there is no flow in piping unless hose racks are required. Inadvertant actuation of water fire suppressant

systems is currently under investigation and includes fire protection system failure resulting in spraying and flooding. This analysis will identify the water fire suppression effects on safety related equipment. This analysis is expected to be completed by June 30, 1984, and any items identified as having effects on safety-related equipment will be addressed.

For each area containing safe shutdown or engineered safety feature components, the location and height above the floor of the affected equipment is analyzed with respect to flood elevation. All piping in the area is listed by size, operating conditions, and frequency of operation. Hydraulic boundaries are then determined to define the extent of flooding. In determining flood levels, consideration is given to the ability of the drainage systems to pass flow and to the effect on areas cross connected by drainage piping. The height above the floor of the lowest safe shutdown or engineered safety features component is determined and compared with the worst flood level. The length of time until this component could be affected by the worst flood if the failure is not isolated is also calculated. Then, based upon the results of the flooding analysis, monitoring requirements are evaluated and implemented.

For fluid spray analysis of the fire protection system, the postulated pipe failures are moderate energy cracks. Moderate energy cracks will result in a nonuniform fluid spray. It is conservatively assumed that the extent of spray wets the entire cubicle. Equipment identified as being within a spray area of fire protection lines is protected from that spray.

Status:

Confirmatory (04/19/84)

Fire Brigade

The applicant has not specified the quantity of self-contained breathing apparatus nor the quantity of extra air cylinders maintained on site. The applicant proposes to give physical examinations to the fire brigade members every 3 years instead of annually as specified in our guidelines. We will require that the applicant provide details showing compliance with the guidelines in BTP CMEB 9.5-1, Item C.3, concerning the quantity of self-contained breathing apparatus, spare cylinders, and physical examination frequency.

Response:

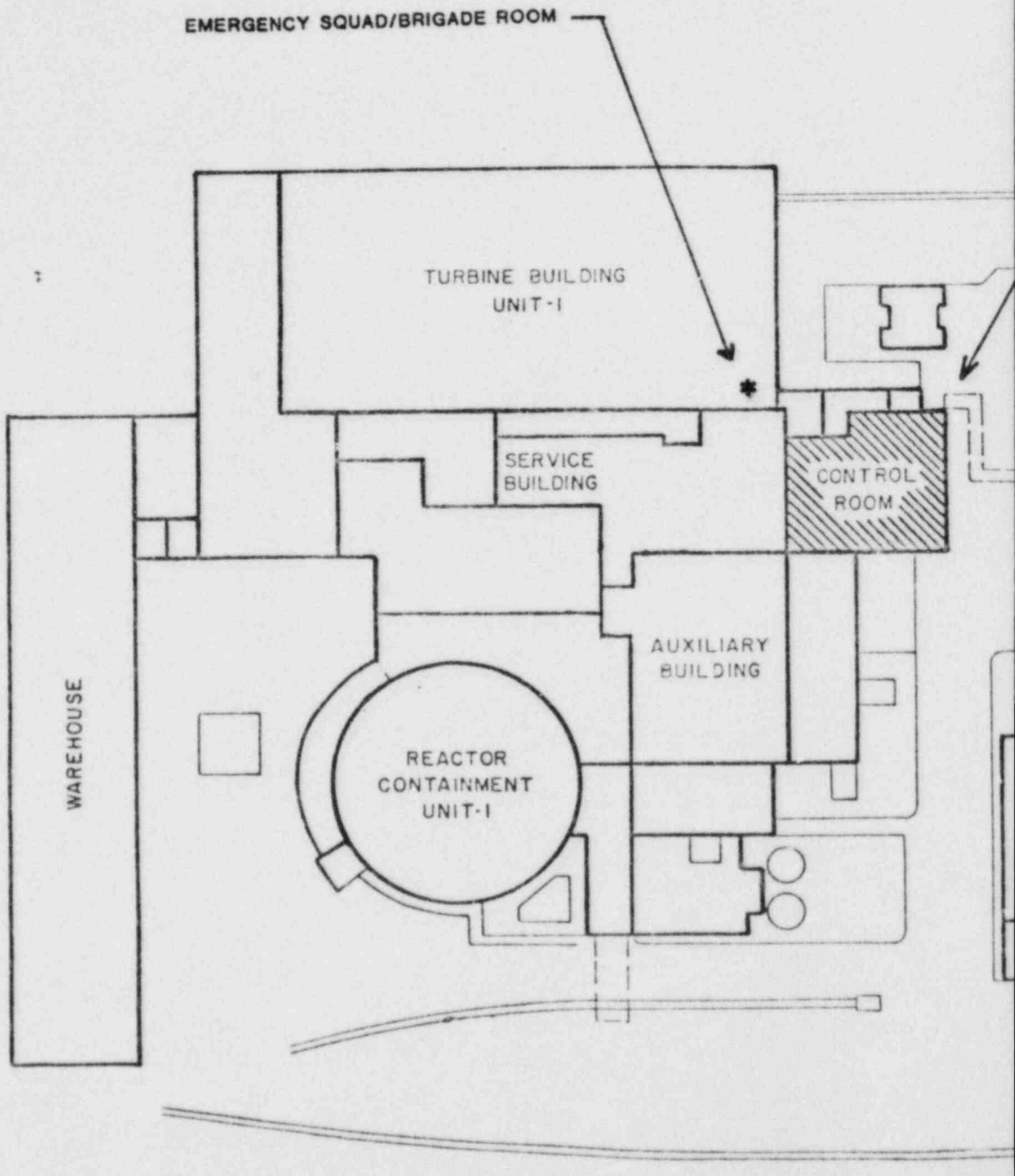
The Emergency Squad/Brigade Room, which contains the fire protection equipment for the fire brigade, is shared by Units 1 and 2. This fire staging area is located directly outside the control room on elevation 735.5 ft in the BVPS-1 turbine building as shown on Figures FP-2A and -2B. This staging area and the equipment will be shared by both Units 1 and 2 fire brigades.

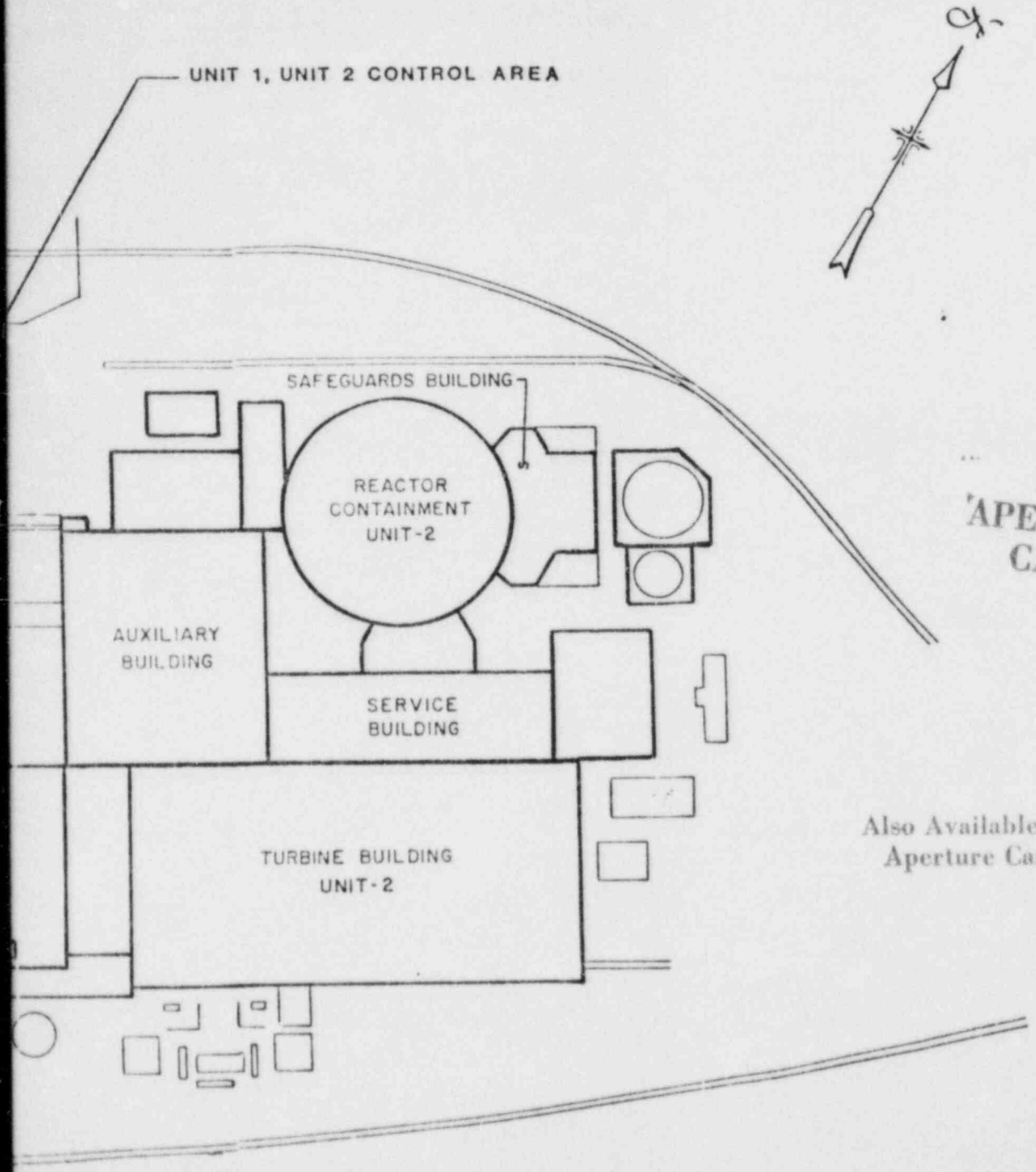
BVPS-2 complies with BTP CMEB 9.5-1, Item C.3, concerning the quantity of self-contained breathing apparatus and spare cylinders. At least ten self-contained breathing apparatus are available for fire brigade personnel on BVPS-2, with at least two extra air bottles for each self-contained breathing unit. At least five of these breathing apparatuses are located in the brigade room with five additional units at a strategic location within the plant. An air compressor dedicated to supplying breathable air for replenishing exhausted air bottles is located in the BVPS-1 turbine building. The air compressor satisfies the requirement for an onsite 6-hour supply of reserve air.

As a minimum, physical examinations will be conducted for the fire brigade every 3 years, and each member's records will be reviewed annually by the Duquesne Light Company Medical Department. This procedure was established and approved for BVPS-1 and has been in effect since 1976 without any problems. The physical examination (nuclear physical) given to the fire brigade members is the same examination given to all workers involved in radiological work at the site. This examination is far more extensive than the examination required for nonradiological workers. Fire brigade members who become physically unfit to perform their function on the fire brigade are reviewed at the time their physical inability occurs, in accordance with company policy, and corrective action is taken. The annual review is merely a confirmation that no physical problems relating to a fire brigade member have been overlooked. If the latter occurs, immediate corrective action is taken.

Status:

Closed (physical examinations - confirmatory) (04/19/84)


EMERGENCY SQUAD/BRIGADE ROOM
TURBINE BUILDING
UNIT-1
SERVICE
BUILDING
CONTROL
ROOM
AUXILIARY
BUILDING
WAREHOUSE
REACTOR
CONTAINMENT
UNIT-1



TITLE		
FIGURE FP-2a PLANT ARRANGEMENT	Duquesne Light Company	
FOR BEAVER VALLEY POWER STA	SCALE — / DRAWING NO	SHEET 1 OF 4 / REV 0

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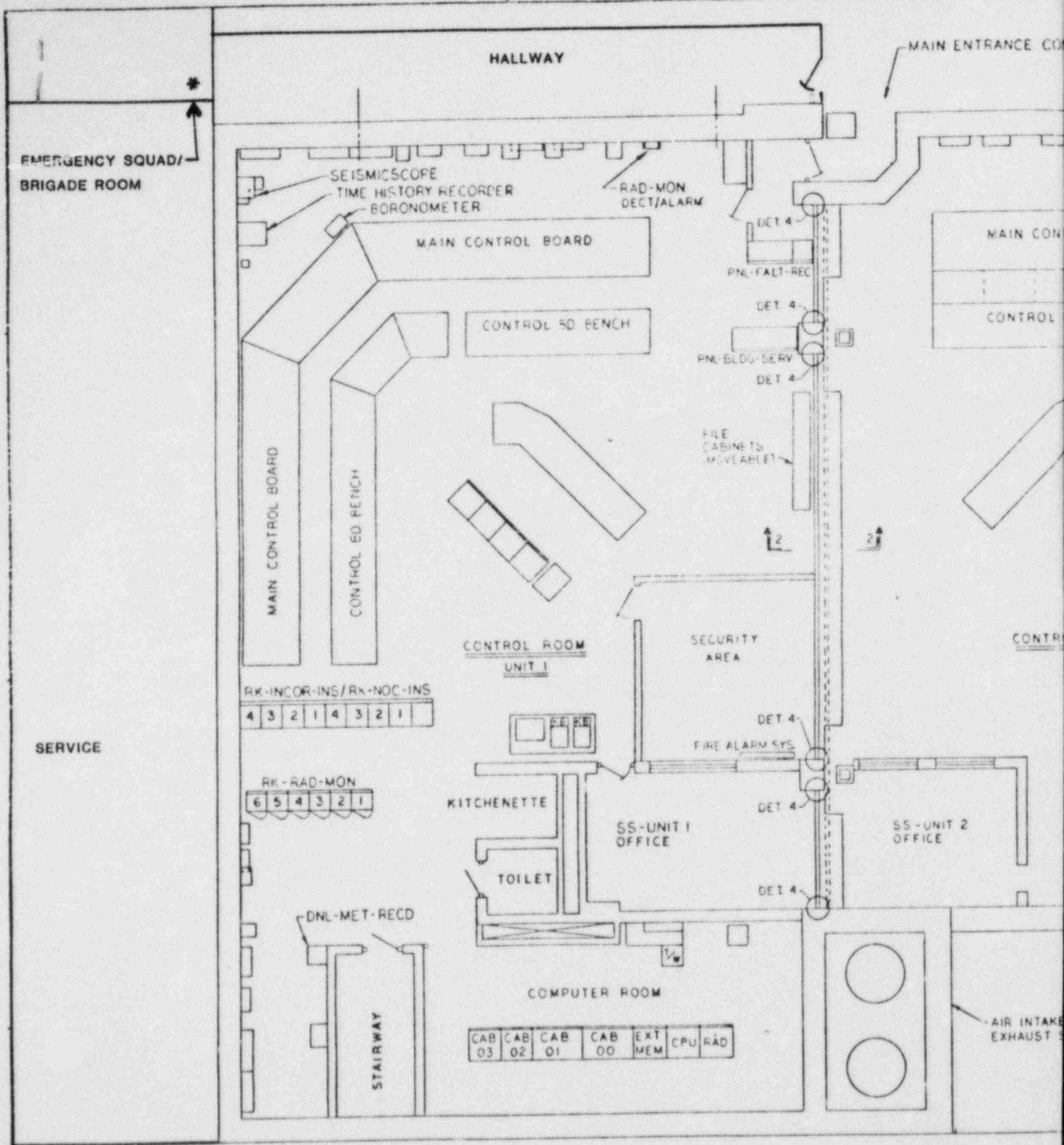
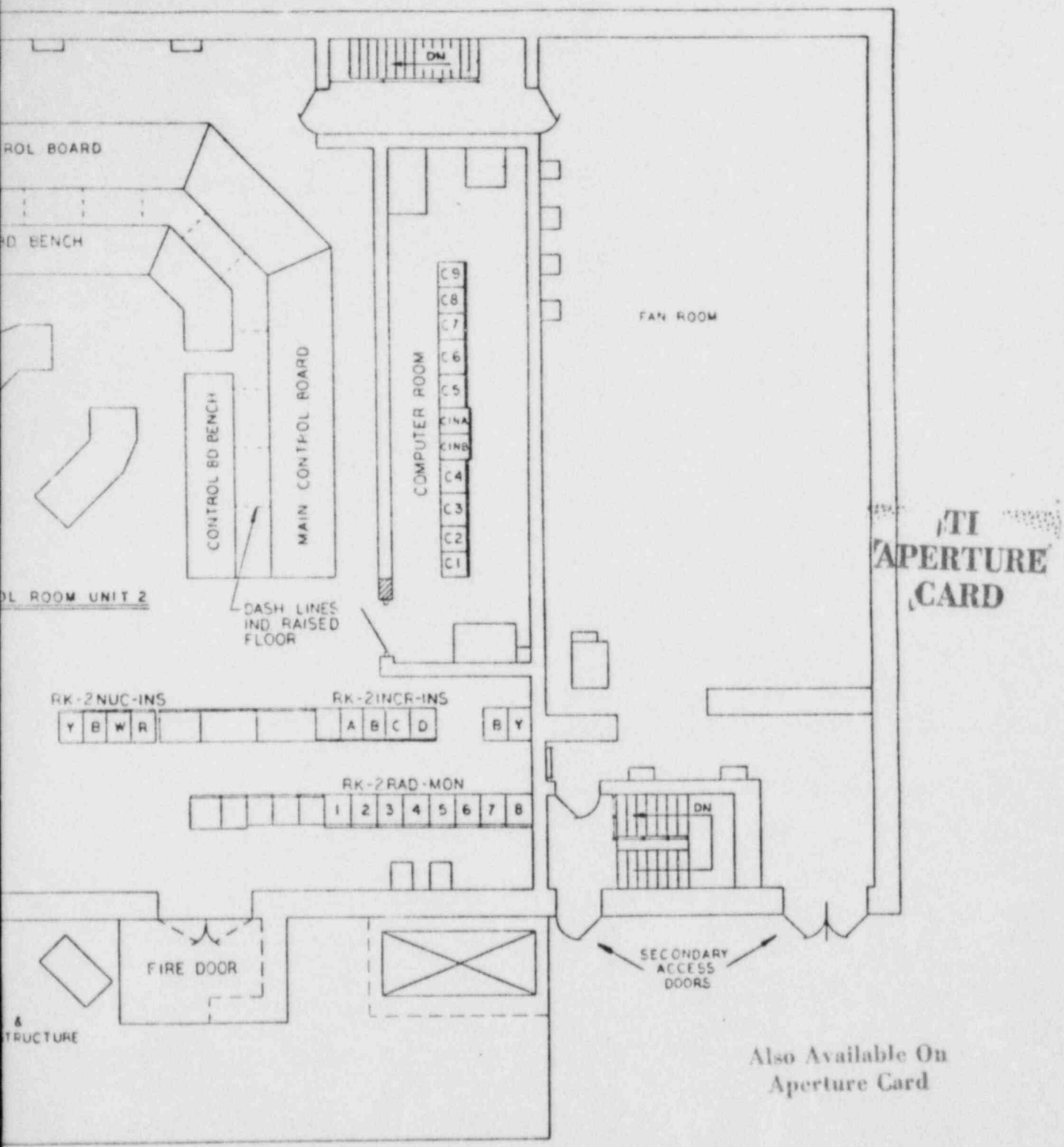


NOTES 1) BV-1 DWG 8700-RA-20A-6 SHOW
WITH 2'-0" WIDE VIEWING WINDOW
BETWEEN SHIFT SUPVS OFF
WALL IS REMOVED.
2) THE FIRE & SECONDARY ACCESS
TO BE PERMENTANTLY CLOSED
OPERATION.
3) 1" CLEARANCE BETWEEN PNL-FALT
GYP. BD. TEMP. WALL.
4) SECURITY AREA (UNIT 1) TO BE RE
UNIT OPPERATION.

TROL ROOM



S A PERMANENT WALL
TO BE INSTALLED
AFTER TEMP

DOORS (UNIT-2 AREA)
RIOR TO DUAL UNIT

REC AND FACE OF

MOVED FOR DUAL

TITLE: FIGURE FF-2b EXISTING ARRANGEMENT	Duquesne Light Company			
FOR: BEAVER VALLEY CONTROL RM.	SCALE 3/16=1-0"	DRAWING NO.	SHEET 2 of 4	REV. 0

8405300260-02

Penetration Seals

The applicant did not specify the test acceptance criteria. Our guidelines recommend that a maximum temperature of 325°F be used as the acceptable level.

We will require the applicant to verify that none of the penetration seals used will permit a temperature rise in excess of 325°F on the unexposed side of the test assembly as recommended by BTP CMEB 9.5-1, Section C.5.a.3, or to justify the deviation from our guidelines.

Response:

Fire Protection Evaluation Report (FPER), Amendment 1, Section 1.4.1.10, titled "Fire Barriers," delineates the technical requirements of the penetration seals. The seals are fully qualified to ensure that the maximum temperature of 325°F is not exceeded per ASTM-E119.

Status:

Closed (04/19/84)

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-4

Safe Shutdown

Our review of safe shutdown capability is ongoing and will be addressed in a supplement to this SER.

Status:

Open (04/19/84)

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-5

Alternate Shutdown

Our review of alternate or dedicated shutdown capability is ongoing and will be addressed in a supplement to this SER.

Status:

Open (04/19/84)

Hydrogen Piping

Hydrogen piping, however, passes through safety related areas. This does not meet our guidelines. We will require the applicant to comply with our guidelines in Section C.5.d of BTP CMEB 9.5-1.

Response:

BTP CMEB Section C.5.d, paragraph 5, allows for hydrogen piping in safety-related areas provided certain provisions are met. To meet these provisions, BVPS-2 has seismically designed all hydrogen piping in safety related areas to Seismic Category II requirements, as defined in FSAR Section 3.2.1.2. This piping is seismically designed and supported to withstand SSE inertia loading, and the integrity of pressure boundary is maintained in accordance with Appendix F of the 1972 ASME Code Winter Edition which states that the faulted condition design procedures contained in subparagraph F-1300 are provided for limiting the consequences of the specified event. They are intended (See NA-1130) to assure that violation of the pressure retaining boundary will not occur in components or supports which are in compliance with these procedures. Therefore, the pressure boundary of piping designed in accordance with these criteria will remain intact during a seismic event and no leakage will result.

Status:

Open (4/19/84)

Cable Tray Suppression

Automatic sprinklers are not provided for the protection of cable trays in accordance with Section C.5.e of BTP CMEB 9.5-1. It is our concern that the applicant has not provided an adequate level of protection for areas containing concentrations of cable trays. We will require the applicant to provide protection in accordance with Section C.5.e of BTP CMEB 9.5-1.

Response:

All areas containing cable trays are provided with an early warning smoke detection system. In general, areas containing high concentrations of cable trays are provided with an automatic total flood CO_2 system controlled from an independent cross-zoned smoke detection system.

The CO_2 supply capacity is sufficient for two applications. Hose racks have been located throughout the plant to assure that all cable trays can be reached by at least one hose stream. Only IEEE Standard-383 qualified cables are used in cable trays. Use of cable trays is limited to cables. Separation and protection of redundant cables for safe shutdown function is outlined in the FPER.

BVPS-2 has three fire areas where the requirements of Section C.5.e of BTP CMEB 9.5-1 are exceeded and automatic fire suppression is not provided. The reactor containment (Fire Area RC-1) contains some trays in high concentration with no automatic fire suppression. (See RE drawings 34AL, 34AM, 34AN, 34AP, 34AS, 34CH, 34CG, 34AY, 34AQ, and 34AR.) Each of two areas in the auxiliary building (Fire Areas PA-3 and PA-4) contains four 30-inch wide cable trays or the equivalent of eight 24-inch wide trays. (See RE drawings 34AC and 34AD.) This exceeds the limit of six 24-inch wide trays as defined in BTP CMEB 9-5-1. These areas that contain slightly higher than recommended cable tray concentration have been laid out such that all trays can be effectively reached by a hose stream. Safe shutdown analysis is provided for all these areas in the FPER. Early warning smoke detectors in the auxiliary building assure that the fire brigade has sufficient time to respond.

The two independent smoke detection systems, the automatic total flood CO_2 systems in high cable concentration areas, and the accessibility of all cables to hose streams provide adequate assurance that any postulated fire can be readily contained and that safe shutdown function is protected.

FPER Table 1 presents a listing of plant fire areas and associated combustible loadings. This table shows combustible loadings in BTU/sq ft and equates these to the fire barrier rating required to contain a postulated total burnout of a fire area. Transient combustibles are administratively controlled and are therefore not

included in this table. (Refer to FSAR Section 9.5.1.3 for administrative controls.) Equivalent wall ratings are based on NFPA Fire Protection Handbook, 15th Edition, Page 5-90. As can be seen from the table, fire barriers surrounding all safety-related areas are rated in excess of the combustible loadings for that area. This analysis, which assumes no fire brigade action, demonstrates the ability of the BVPS-2 fire protection systems to protect safety related cables.

Status:

Closed (4/19/84)

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-8

Power Supply for Control Room Ventilation

The power supply and controls for the ventilation systems for the control room are not run outside the fire area served by the system. The applicant has not provided sufficient details for us to independently verify compliance with our guidelines in Section C.5.f of BTP CMEB 9.5-1. We will require the applicant to demonstrate that a single fire will not disable both trains of ventilation needed for safety-related areas in the control room.

Response:

The power supply and control for the redundant ventilation systems in the control room are located in the equipment room without required separation.

The primary smoke removal for the BVPS-2 control room is provided by one of the two 100-percent capacity fans of the control room air conditioning system. If a single fire renders both fans inoperable, other methods of smoke removal are available. Since this is a common control room for both Units 1 and 2, some benefit can be obtained from the Unit 1 ventilation system which is completely separated from the Unit 2 system. If additional smoke removal is required, the double doors to the outside can be opened for natural ventilation. If further ventilation is necessary, two portable gasoline driven emergency exhaust fans can be utilized. These fans are part of the fire brigade equipment inventory located in the brigade staging area.

Postulating a loss of habitability of the control room, shutdown equipment can be controlled from the emergency shutdown panel. Additionally, a remote alternate shutdown panel is provided for attaining safe shutdown. Equipment controlled from this panel can be electrically isolated from the control board by transfer switches located on the panel. Based on the above, adequate ventilation is provided to meet the intent of Section C.5.f of BTP CMEB 9.5-1.

Status:

Open (4/19/84)

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-9

Fire Detection

The licensee has not provided information on whether they meet Section 2220 of NFPA Std. 72D. We will require the applicant to verify that reliable power supplies, as recommended by Section C.6.b of BTP CMEB 9.5-1, will be provided. This can be accomplished by using normal offsite power as the primary supply with a 4-hour battery supply as secondary supply, and by providing capability for manual connection to the Class 1E emergency power bus within 4 hours of loss of offsite power. Such connection should follow the applicable guidelines in Regulatory Guides 1.6, 1.32, and 1.75.

Response:

BVPS-2 meets the intent of Section 2220 of NFPA Standard 72D in the following manner:

The primary supply for the early warning fire detection system and the independent fire detection and suppression systems is the normal offsite power supply system.

The secondary supply for the fire detection systems is the ERF nonsafety diesel generator. The switchover capability is an automatic function. The ERF diesel generator supplies the 120-V ac uninterrruptible power supply system required for the early warning detection system and the 125-V dc panels for the fire detection and suppression systems.

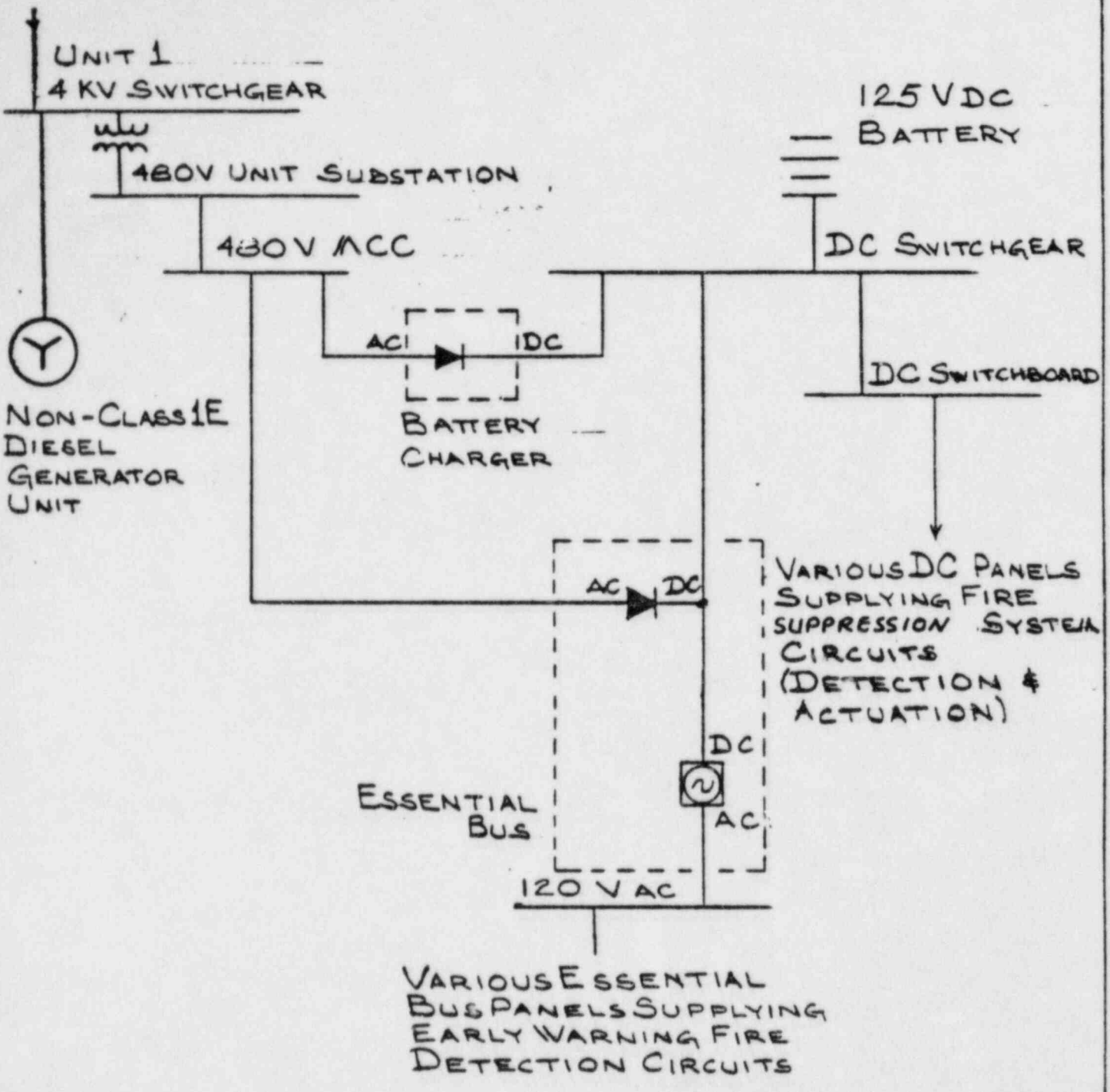
A battery backup system with a 2-hour rated capability is provided as a backup to the 125-V dc systems.

A battery backup system with a 30-minute capability is provided as a backup to the 120-V ac systems. This is to provide electrical power continuity for the 10 seconds required to start the ERF diesel and achieve rated voltage and frequency. See attached Figure FP-9.

The central processing unit for the early warning fire detection system, which is shared by both BVPS-2 and BVPS-1, is powered by BVPS-1 and has the capability of being supplied from either normal station power or a BVPS-1 Class 1E safety related diesel generator.

Status:

Confirmatory (4/19/84)



DATE	5-8-84											TITLE: FIRE PROTECTION DETECTION AND SUPPRESSION POWER SUPPLY	REF:
PREP.		DH											
CHECK	5		4		3		2		1				SKETCH FP-9
APPR.													

A 5215.9

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-10

Valve Supervision

Supervision has not been provided for all valves in the fire protection water supply system in accordance with NFPA 26. We will require the applicant to meet our guidelines in Section C.6.c of BTP CMEB 9.5-1.

Response:

Supervision has been provided for all valves in the fire protection water supply system in accordance with NFPA 26. All sectionalizing valves located within BVPS-2 structures are provided with limit switches which will cause an alarm in the main control room when the valves are taken out of their normal position. All sectionalizing valves located exterior to buildings are buried and provided with post indicators and sealed. To conform with the BVPS-1 operating surveillance procedures, monthly inspections are performed to verify that the noted valves are in their normal system arrangement and are properly sealed as required.

Status:

Closed (04/19/84)

FIRE PROTECTION DRAFT SER OPEN ITEM NO. FP-11A

Reactor Coolant Pumps

The applicant has not stated the capacity of the oil collection system drain tank. We will verify that the capacity of the tank is consistent with our guidelines in Section C.7.a of BTP CMEB 9.5-1.

Response:

The reactor coolant pump oil collection system is being designed in accordance with the requirements of BTP CMEB 9.5-1. The oil collection system will have spray shields to catch any oil leakage that may be sprayed from all potential pressurized and unpressurized points of oil discharge. The associated drain lines are large enough to accomodate the largest anticipated oil leakage. A 300-gallon collection tank is provided for each pump and will contain the entire inventory of oil in its associated pump (approximately 240 gallons). A flame arrestor/vent assembly will continuously vent each oil collection tank to containment. The reactor coolant pump oil collection system will be seismically supported and designed to accomodate the differential movement of the reactor coolant loops. The design of the oil collection system is scheduled to be completed August 18, 1984.

Status:

Confirmatory (04/19/84)

Separation of Safety-Related Components

Sufficient information has not been provided to enable us to determine if the separation of redundant cables inside containment meets our guidelines. We will require the applicant to provide separation of redundant cables in accordance with our guidelines in Section C.7a of BTP CMEB 9.5-1.

Response:

Protection for redundant safe shutdown cables inside containment from their redundant or duplicate counterparts will be provided by placing cable in conduit and by a separation of 20-feet minimum horizontal distance where possible. The rigid conduits act as a radiant energy shield. There is one cable tray which contains safe shutdown cables. This cable tray will have top and bottom raised, ventilated covers which also act as a radiant energy shield. Safe shutdown cables are within 20 feet of each other at the containment penetration area and at equipment terminations. In addition to the conduit and tray covers at the penetration area, a deluge water spray protection system is provided. A deluge water spray system is also provided for the RHR pumps. Heat detectors activate a deluge valve. Operator action in the control room is required to open the containment isolation valve that pressurizes fire protection headers in the containment.

Status:

Closed (04/19/84)

Control Room Complex

The control room complex is separated from all other areas of the plant by 3-hour rated assemblies. The applicant has not provided sufficient information to enable us to determine if the control room complex peripheral rooms meet our guidelines. We will require these rooms to be separated from the main control room by 1-hour rated barriers and provided with automatic suppression and detection in accordance with Section C.7.b of BTP CMEB 9.5-1.

Response:

The control room complex is separated from other BVPS-2 areas by 3-hour barriers. All penetrations in these barriers are provided with seals that have an equivalent fire rating to the barrier. The BVPS-2 control room complex consists of the control room, the ventilation room (fan room), and the computer room. (See FPER Figure A1-45).

The control room and the control room ventilation room are separated from each other by a 3-hour fire rated barrier. The computer room is within a 3-hour fire rated barrier and provided with an automatic total flooding halon system. The shift supervisor's office is partitioned from the main control room by low hazard material, which includes glass windows, and is occupied 24 hours a day.

All structural materials, interior finishes, and miscellaneous architectural items used in construction are noncombustible. All cabinets and furniture within the control room, including the shift supervisor's office, are of all-metal construction.

General area smoke detection is provided throughout the control room complex and alarms at the early-warning fire detection panel in the control room. In addition, smoke detectors are provided in the vertical control board. Portable fire extinguishers are located throughout the control room complex and hose racks are located in stairwells outside the control room entrances. Portable fire extinguishers are rated according to the hazard protected including the use of type A extinguishers for the shift supervisor's office.

Based on the above and the capability to shut down the plant from the emergency shutdown panel or the alternate shutdown panel locations, adequate assurance is provided that a fire in the control room complex will not inhibit the ability of the plant to achieve a safe shutdown condition.

Status:

Confirmatory (04/19/84)

Cable Spreading Room

The primary fire suppression system in the cable spreading room is an automatic redundant total flooding carbon dioxide system. Backup suppression capability for the cable spreading room is provided by the plant fire brigade. This does not meet our guidelines. We will require the applicant to provide protection of the cable spreading room in accordance with Section C.7c of BTP CMEB 9.5-1.

Response:

Two potential fires are postulated for the cable spreading areas: a short-circuit-induced cable fire and a fire involving transient combustible. Hazardous quantities of transient combustible are not expected in these areas for several reasons. First, the areas are not near any major plant traffic route. Second, maintenance and operations in these areas do not involve the use of combustible material. Third, accessibility to these areas is restricted to personnel performing essential duties. The potential for a cable fire is limited by the use of IEEE 383 qualified cable throughout. Additionally, all power cable in these areas is run in conduits; only low power control or instrumentation cabling is run in trays. The cable trays are provided with cable tray covers and/or bottoms to conform with Regulatory Guide 1.75.

Two independent smoke detection systems are provided to adequately assure that a fire can be detected. An early-warning smoke detection provides an alarm indication and fire location directly to the control room. A cross-zoned smoke detection system is provided for the automatic actuation cycle of the CO_2 system. Upon detection of smoke by a single detector in this system, an alarm indicating a potential fire in a given area is indicated at the control room. A second smoke detector actuation in the same area will cause the automatic actuation of the fire suppression system. A timed delay is provided in the CO_2 initiation cycle to provide for personnel evacuation. CO_2 supply capacity is available for a second manual application. CO_2 will penetrate to the source of the fire and is less likely to cause damage to electrical equipment. Hose racks are provided at the entrance to the cable spreading room, and all trays can be reached by hose streams.

Penetrations to the control room complex are sealed to prevent leakage of CO_2 to occupied spaces. Operating personnel of Unit 1 have had several years of experience with total flood CO_2 systems. All personnel are trained in alarm recognition and evacuation procedures. The systems are generally disarmed only during an outage for major maintenance functions, and a fire watch is posted during the disarmed period. The system is not disarmed during daily operational activities in the area. In the unlikely event of a fire

in this area, the fire crew would be required to have breathing apparatus.

The cable trays located in this area are utilized largely for instrumentation and control cables. These trays will be provided with flat, unventilated covers and/or bottoms. Power cables are run in rigid conduit. The presence of tray covers inhibits the ability of water to reach potential tray fires. CO_2, by virtue of its gaseous state, will penetrate into the cable trays and provide fire suppression to the fire in its incipient stage and will prevent a deep-seated fire from occurring. Due to the stack arrangements of the cable trays and the fact that the trays are provided with covers and/or bottoms, DLC contends that a ceiling-mounted automatic water suppression system would not provide adequate assurance that a fire will be extinguished. DLC's position is that the automatic, two-application CO_2 system, in conjunction with the two independent smoke detection systems and the manual hose stations, provides adequate protection to extinguish fires and ensure the safety the safety of the area. Finally, in the unlikely event of a total fire area burnout, BVPS-2 has alternate shutdown capability.

Status:

Open (4/19/84)

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APERTURE CARD NO# 8405300264

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APERTURE CARD NO: 8405300328

AVAILABILITY PDR CF HOLD

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APERTURE CARD NO# 8405300330

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AVAILIBILITY PDR CF HOLD

NUMBERS OF PAGES. 1

ATTACHMENT III

CONCERN:

Section 9.5.1.4 of the Draft Safety Evaluation Report (SER) states that fire dampers will be U.L. labeled and installed according to the manufacturer's directions. The Draft SER further states that 3-hour fire dampers will be provided in all 3-hour fire rated barriers.

POSITION:

Fire Damper - U.L. Labels

BVPS-2 meets the requirements of BTP CMEB 9.5-1, Section C.5a, regarding the 3-hour fire-rated dampers by using two 1 1/2-hour fire dampers placed in series. These dampers were all purchased as U.L.-rated dampers and placed in series in common sleeves to provide the equivalent 3-hour rated damper. In all cases, the U.L. label was removed due to the two dampers being in series because this was not the configuration in which the dampers were U.L. tested.

Combustible loadings were calculated for all fire areas within the plant. The loadings are presented in Table 1 of the Fire Protection Evaluation Report. Only six fire areas that have fire loadings in excess of 1 1/2 hours have ventilation penetrations. These zones are listed below and have fire loadings of less than 2 1/2 hours.

1. Control Building Instrumentation and Relay Room (CB-1)
2. Control Building Cable Spreading Area (CB-2)
3. Cable Tunnel (CT-1)
4. Cable Vault and Rod Control Areas (CV-1, 2, and 3)

Due to the low fire loadings, DLC feels the two 1 1/2-hour fire dampers in series adequately assures that the fire barriers will be maintained for the specific fire areas.

Additionally, the U.L. label was voided for other reasons such as the addition of CO_2 release devices, damper sleeves extending beyond the tested configuration, and oversized wall openings. These reasons for voidance of the U.L. label were due to inconsistencies with the manner in which the fire dampers were U.L tested. However, these problems are minor in nature and do not present a concern for maintaining the fire barrier required to control the low fire loadings in the specific fire areas.

Wrapping Ventilation Ductwork

Due to recent changes in boundaries of a portion of the plant's fire areas, it became necessary to install fire dampers into completed HVAC systems. Extensive redesign and field modifications would have been encountered to locate the fire dampers inside of the fire barriers. Therefore, these fire dampers were located as close to the fire barrier as possible. By locating these dampers exterior to the fire barrier, the U.L. labels were voided. To compensate for the damper location, the ductwork from the wall to the fire dampers, including the dampers themselves, will be wrapped with an approved 3-hour fire proofing material. This essentially extends the fire barrier's fire rating to include the fire dampers. DLC contends that this method meets the intent of the NRC guidelines.