Public Service
Electric and Gas
Company

Corbin A. McNeill, Jr.
Vice President -
Nuclear

Public Service Electric and Gas Company P.O. Box 236, Hancocks Bridge, NJ 08038 609 339-4800

DEC 3 1985

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Attention: Ms. Elinor Adensam, Director
Project Directorace 3
Division of BWR Licensing

Dear Ms. Adensam:

CORRECTION OF RUSKIN DAMPER DEFICIENCIES
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

The purpose of this correspondence is to present to the NRC the results of Public Service Electric and Gas Company's (PSE&G) efforts to resolve the Hope Creek Generating Station (HCGS) plant specific implications brought to light as a result of the 10CFR21 report issued on November 6, 1984 by Ruskin Manufacturing Company. In accordance with requirements of 10CFR 50.55(e), PSE&G subsequently filed a potentially significant construction deficiency report concerning the performance of the Ruskin fire dampers under airflow conditions. Verbal notification was made on December 24, 1984, with followup interim reports issued on January 25, April 1, July 23, and October 2, 1985. In addition, resolution of this issue is carried as unresolved item 85-24-08 from the May 1985 Region I fire protection audit.

PSE&G has evaluated numerous methods of qualifying the subject dampers under maximum anticipated airflow conditions. The culmination of this effort is presented in Attachment I which summarizes the results of the Hope Creek Ruskin Damper Testing Program. Attachment II presents effected FSAR pages which will be incorporated into Amendment 14 of the Hope Creek FSAR.

A002
1/1

In the event there are any questions with respect to this correspondence, do not hesitate to contact us.

Sincerely,

Attachments

C D.H. Wagner
USNRC Licensing Project Manager

R.W. Borchardt
USNRC Senior Resident Inspector

ATTACHMENT I

RUSKIN FIRE DAMPERS - RUSKIN MANUFACTURING COMPANY
10CFR21 REPORT - NOVEMBER 6, 1984
10CFR50.55E - DECEMBER 24, 1984

PSE&G has 692 Ruskin fire dampers throughout the Hope Creek Generating Station (HCGS) in various HVAC systems. Upon notification of Ruskin Manufacturing Co's 10CFR21 report, the HCGS fire dampers were reviewed for applicability of the Ruskin failures. The following summary explains how each grouping of dampers was qualified for closure under the air flows experienced in the HCGS applications. All of the vertical dampers have been qualified in their original configuration, in some cases by utilizing listed replacement springs and latches. The only remaining unqualified dampers are horizontal.

Our review of this item was extensive and involved multiple aspects of potential corrective actions. The review included consideration of alternate dampers, damper modifications, replacement springs and latches, HVAC airflow modifications, administrative controls, fire area boundary redefinition, fire rated ductwork wraps, in-place testing programs, additional Ruskin testing programs, the use of coordinated electro-thermal link (ETL) closures on multi-section dampers, independent alarm systems, and automatic HVAC system shutdown. Each individual damper was evaluated against the design airflows, taking all acceptance testing performed by Ruskin into account. The particular solution chosen for each damper reflects the most appropriate resolution while considering the varying designs and operational parameters in each case. Dampers identified below as unqualified will still be left in place to supplement the acceptance of the particular solution for each case. This is based on the potential to at least partially close upon an actual fire initiated release.

An FSAR markup is presented (Attachment II) and reflects the explanations, deviation identification, and additional exemption requests which result from this damper qualification program. PSE&G is confident that the results and resolutions of this program adequately address the doubts raised by the Ruskin 10CFR21 report. Plant fire safety is maintained at an equivalent or better level to that which would be attained with qualified dampers.

This submittal documents the corrective actions taken for each damper. The attached pages expand upon the following summary of dampers.

Item	No. of Dampers	Method
1	456	Acceptable as is.
2	37	Accepted based on in-place testing after spring and latch changes and ETL closure coordination.
3	104	Automatic HVAC shutdown.
4	7	Administrative HVAC shutdown
5	56	Radwaste and Turbine Building Dampers.
6	22	Fire area redefinition and Non-fire barrier dampers.
7	4	Duct Wrap/3 hour barrier (variation of fire area redefinition).
8	6	Exemption Request
	692	

Item No. 1 Dampers Acceptable as is

Six HVAC systems do not have air velocities high enough to exceed the maximum tested velocity as determined by the manufacturer. Twenty-eight (28) dampers are included in these systems. The acceptance is based on a conservative assessment of the Ruskin test data against the Hope Creek duct layout and velocities. No dampers were modified in these groupings.

An additional 428 dampers in 26 other HVAC systems are also acceptable in their present configuration under design airflow. This results in a total of 456 dampers which are qualified to close under the design airflows.

Item No. 2 In-Place Testing

PSE&G implemented an in-place testing program in order to ascertain limiting airflow conditions for specific damper applications. Dampers were grouped according to airflow and size, with the worst damper in each grouping tested in-place under design airflow conditions. Seventeen (17) dampers were tested with all five (5) of the vertical dampers passing. Unfortunately, only three (3) of the twelve (12) horizontal dampers passed the testing. The results are summarized as follows:

Vertical Dampers Tested	5
Vertical Dampers Passed	5
Vertical Dampers Enveloped as Acceptable	31
Horizontal Dampers Tested	12
Horizontal Dampers Passed	3
Horizontal Dampers Enveloped as Acceptable	6
Total Acceptable based on In-place Testing	37

Please note that the strongest listed springs, modified latch mechanisms, and Electro-Thermal Link (ETL) closure coordination (multiple section dampers) were added to all tested. The stronger springs and latches will be retained on the nonqualified dampers, but ETL's will not be installed. Regular fusible links will be retained on unqualified dampers to add to the probability of at least partial closure during an actual fire initiated release.

Item No. 3 Automatic HVAC Shutdown

The following ten (10) HVAC systems have been equipped with automatic HVAC fan shutdown circuitry and in-duct smoke detection or area thermal detection as the initiating signal:

10 Systems to be Automatically Shutdown

SYSTEM	TOTAL UNQUALIFIED DAMPERS	TYPE OF DETECTION
Diesel Generator Room Recirculation (DRR)	16	Area Thermal
Radwaste Supply (RWS)	22	Duct Smoke
Service Area Exhaust (SAE)	2	Duct Smoke
Service Area Supply (SAS)	12	Duct Smoke
Solid Radwaste Exhaust (SRWE)	6	Duct Smoke
Solid Radwaste Supply (SRWS)	2	Duct Smoke
Wing Area Exhaust (WAE)	11	Duct Smoke
Wing Area Supply (WAS)	8	Duct Smoke
Administration Facility (ADM)	11	Duct Smoke
Guardhouse (GRDH)	14	Duct Smoke
TOTAL	104	

By tripping the HVAC fans, the air velocities obviously decrease to zero, enabling the dampers to close upon adequate heat to release their respective fusible links.

The sensitivity of the in-duct ionization detectors to smoke generated in the incipient stages of a fire results in HVAC shutdown before a fire could challenge fire barriers.

As a result, this automatic shutdown eliminates these 104 dampers as concerns.

Item No. 4 Administrative HVAC Shutdown

Administrative (manual) shutdown of HVAC fans was chosen as a last resort option due to the obvious undesirability of tripping HVAC on a regular basis. However, three HVAC systems will require manual fan shutdown, affecting 7 dampers. These systems are:

System	Unqualified Dampers	Shutdown Indication
Control Room Supply	2	Area Smoke Detection
Control Room Exhaust	4	Area Smoke Detection
Control Area Exhaust	1	Area Smoke Detection

The specific detection zones for each area on both sides of unqualified fire dampers will be identified via the alarm response procedures. For systems to be shutdown based on an area smoke detection alarm, Control Room personnel will allow a seven minute response time for a fire brigade assessment of potential barrier challenges. If no response is received within seven minutes, or if the fire brigade indicates a working fire in any area prior to seven minutes after alarm receipt, the HVAC will be manually shutdown. The basis of this delay is the fact that smoke detection will react in the early stages of a fire. In order for a fire to challenge a fire barrier's integrity, it would have to burn through the ductwork and through the barrier within seven minutes of an alarm, an improbable event. As a result, the delay time allows further operator flexibility. Please note that the fire brigades response time is normally considerably less than the seven minutes identified herein. In addition, the PSE&G fire brigade is staffed with full time, professional fire fighters who have no other station operating responsibilities and have been trained to assess the extent of fire risk.

Item No. 5 Radwaste and Turbine Building Dampers

A total of 56 unqualified dampers have been identified as deviations in the attached FSAR markup. The dampers are all located in fire barriers internal to the radwaste and turbine building fire area boundaries and as a result, the deletion of the dampers does not impact safe shutdown divisional separation. In addition, the barriers in which the dampers are located are not a BTP-CMEB 9.5-1 requirement. As a result, we are using these dampers as is. Please note that replacement springs and latches have been installed on some of these dampers.

Item No. 6 Redefinition of Fire Area Boundaries

A total of fifteen (15) unqualified fire dampers have been eliminated from consideration by redefining fire area boundaries. Safe shutdown separation is maintained in all cases and there is no other BTP-CMEB 9.5-1 requirement to retain the dampers.

Additionally, seven dampers have been provided in slabs which are no longer considered as fire barriers due to other design changes which have occurred previously. As a result, they have also been eliminated from consideration.

Item No. 7 Ductwork Wrapped as Three Hour Barrier

Four dampers located in the slab at Elevation 178', Diesel Building, separating fire areas containing redundant safe shutdown equipment cannot be qualified to close under the design airflow conditions. As a result, the ductwork from each nonqualified damper will be wrapped with a mat material from the floor penetration sleeve to the next qualified damper in the area boundary, which in this case is a vertical damper. The total length of duct to be wrapped is approximately 150 linear feet. The wrap material will be the 10 layer 3M E-50A mat system or the five layer 3M E-60A mat system. The E-50A mat has been tested as a three hour cable tray wrap, and an analysis of the fire test indicates that utilization of this wrap system on HVAC ductwork will yield the same acceptable results, considering the lack of combustibles internal to the duct and the zero airflow once the qualified vertical damper has closed. The 3M test report number is R10125-3. The test adequately proves that the 3M E-50A 10 layer mat system will perform as a three hour fire barrier, and limit cold side temperatures to 325°F or less. The E-60A mat system is scheduled to be tested in December, 1985, by 3M. If it passes, the three hour fire test, we may consider using it for this application, pending test results review. This is in compliance with the requirements of BTP-CMEB 9.5-1 for separation of redundant safe shutdown divisions.

The four unacceptable horizontal fire dampers will be left in place since they will partially close and provide some restriction to the passage of fire.

Item No. 8 FSAR Exemptions

The attached FSAR markup identifies the entire Ruskin damper acceptance program. FSAR exemptions and deviations are identified.

Exemptions for five unqualified dampers have been requested based on the fact that the dampers are located between a Unit 1 HVAC room and an unoccupied Unit 2 area. The ductwork is continuous through the unoccupied Unit 2 room to the next qualified vertical fire damper. The exemption is requested due to the lack of combustibles and abandoned status of the room. PSE&G's evaluation has shown that there is no safe shutdown separation concerns. The exemption is based on lack of three hour separation of Unit 1 and Unit 2 areas.

An exemption for one other unqualified damper is requested based on physical separation of safe shutdown divisions. See the FSAR markup, insert B for page 9A-50 (attached).

This results in a total of six dampers for which FSAR exemptions have been requested.

ATTACHMENT II

SYSTEM	FSAR SECTION
Diesel Generator Room Recirculation (DRR) (Shutdown HVAC fins on CO_2 system actuation prior to ETL release)	9.4.6
Radwaste Supply (RWS)	9.4.3
Service Area Exhaust (SAE)	9.4.3
Service Area Supply (SAS)	9.4.3
Solid Radwaste Exhaust (SRWE)	9.4.3
Solid Radwaste Supply (SRWS)	9.4.3
Wing Area Exhaust (WAE)	9.4.1
Wing Area Supply (WAS)	9.4.1
Administration Facility	N/A
Guard house	N/A

In addition to the systems that automatically shut down ~~five~~ three systems are manually shut down based on area smoke detectors ~~or duct high temperature alarms~~. These systems are:

Control Room Return (CRR)
Control Room Supply (CRS)
~~MG Set Ventilation (MGV)~~
~~Radwaste Exhaust (RWE)~~
~~Turbine Building Compartment Exhaust (TBCE)~~
Control Area Exhaust (CAE)

INSERT ©

b. Smoke Removal - The normal building ventilation systems or separate smoke removal systems are provided to remove products of combustion. For areas where smoke can not be removed via the permanent plant ventilation systems as described below, portable blowers for use as smoke ejectors will be provided by the fire brigade. Refer to Section 9.4 for a complete description of the air conditioning, heating, cooling and ventilation systems.

1. Control Area - A separate smoke removal system is provided for the control area to remove the

INSERT © Page 9.5-12 pg 1 of 3

Three systems in the Turbine and Radwaste fire areas have Ruskin fire dampers which have been modified with the maximum listed springs installed yet have not passed a qualifying test These dampers are as follows:

Chem Lab Exhaust (CLE)	OGLD375D10
	OGLD375D7
	OGLD375D9
	OGLD375D8
Turbine Building Supply (TBS)	1GED097D2
	1GED097D4
	1GED097D6
	1GED105D5
	1GED125D10
Turbine Building Oily Exhaust (TBOE)	1GED042D3
	1GED043D3

Since these dampers do not separate safe shutdown equipment and the fire barriers are not otherwise required by BTP CMEB 9.5-1 (C.7.h, C.7.n, etc) no further fixes are postulated.

Two systems in the diesel area penetrate into the unoccupied (formally Unit 2) area and an exemption is requested in Appendix 9A.6.5.1.h, to accept these five Ruskin dampers as is. An additional exemption is requested in Appendix 9A.6.5.1.g, for one damper in the Diesel Area Supply system.

INSERT © Page 9.5-12 Pg 2 of 3

- Some Ruskin fire dampers were installed in non fire rated slabs. No further actions to fix these dampers is postulated. These dampers are as follows:

Diesel Area Supply (DAS)	1GMD283 D7
	1GMD284 D3
	1GMD285 D1
	1GMD286 D1
Diesel Area Exhaust (DAE)	1GMD274 D1
	1GMD275 D1
	1GMD276 D1

- Some fire areas of the same shutdown division were combined to eliminate the requirement for a fire barrier between them. Ruskin fire dampers in those newly created ~~fire~~ interior fire walls, which are not part of a fire area boundy, are left as is. No further actions to fix these dampers is postulated. These dampers are as follows:

Switchgear room cooling (SRC)	1GMD264 A, B, C & D
	1GMD269 A, B, C & D
Diesel Area Supply (DAS)	1GMD26702
	1GMD960
Diesel Area Exhaust (DAE)	1GMD266D1
	1GMD267D1
Control Area Battery Exhaust (CABE)	1GKD418
Control Equipment Room Supply (CERS)	1GKD419
	1GKD420

INSERT © page 9.5-12 page 343

Some HVAC duct were externally wrapped with a qualified fire barrier to extend the fire area past a Ruskin fire damper to the first qualified fire barrier. The dampers involved are as follows:

Diesel Area Panel Supply (DAPS) 1GMD174
1GMD177
1GMD497
1GMD993

9.5.1.6.3.2 Paragraph C.5.a.(4)

Paragraph C.5.a.(4) states that penetration openings for ventilation systems should be protected by fire dampers having a rating equivalent to that required of the barrier.

At HCGS, fire barriers that separate safe shutdown areas are provided with fire dampers of equivalent fire rating in penetration openings for ventilation systems, except as noted in Appendix 9A.

Miscellaneous fire barriers in the turbine building, auxiliary building-radwaste service area, and yard buildings that do not separate safe shutdown areas are provided with fire dampers of equivalent fire rating in penetration openings for ventilation systems, except as noted below.

a. Turbine building

INSERT (D)

1. Two openings through 3 hour rated floor of steam seal evaporator room 1508 at elevation 137 feet.

b. Auxiliary building-radwaste service area

1. Two openings through 2 hour rated floor of elevator machine room 3701 at elevation 174 feet.

2. One opening through 2 hour wall between janitor's room 3304 and men's toilet room 3303 at elevation 102 feet.

INSERT (E)

Since the openings listed above are not in fire barriers that separate safe shutdown areas, fire involving areas located on either side of the fire barriers will not affect safe shutdown of the plant.

9.5.1.6.4 Paragraph C.5.a.(5)

Paragraph C.5.a.(5) require door openings in fire barriers be protected with equivalently rated doors, frame, and hardware that

INSERT (D) page 9.5-42

2. Five openings in the Turbine Building Supply (TBS) have Ruskin fire dampers with maximum listed springs which have not been qualified to fully close against the design air flowrates.
3. Two openings in the Turbine Building Oily Exhaust (TBOE) have Ruskin fire dampers with maximum listed springs which have not been qualified to fully close against the design air flowrates.

INSERT (E) page 9.5-42

3. Four openings in the Chem Lab Exhaust (CLE) have Ruskin fire dampers with maximum listed springs which have not been qualified to fully close against the design flowrates.

HCGS design for fire detection and fire suppression capability in the fuel oil storage tank rooms will ensure that a fire in one of the four will not prevent a safe shutdown of the plant from being achieved.

9.5.1.6.32 Paragraph C.7.k

Paragraph C.7.k requires that pump housing and rooms housing redundant safety-related pump trains be separated from each other and from other areas of the plant by a 3-hour fire barrier.

At HCGS, 3-hour fire barriers are provided to separate redundant safety-related pump trains to the extent noted in Appendix 9A. Separation of safety-related pumps from other areas of the plant was done only if the fire hazard analysis indicated that it was required to ensure safe shutdown of the plant. See Appendix 9A for details of the HCGS fire hazard analysis. HCGS's design of fire barriers and fire suppression provides a reasonable assurance that a fire in any one safety-related pump area will not prevent safe shutdown of the plant.

9.5.1.6.33 Paragraph C.7.n

Paragraph C.7.n requires that fire barriers, automatic fire suppression and detection be provided for the radwaste and decontamination areas.

In general, HCGS radwaste and decontamination areas are provided with fire barriers, as indicated by the fire hazard analysis, to separate them from other areas of the plant. See Figures 9.5-1 through 9.5-5 and 9.5-8. In addition, fire barriers are provided between floor elevations in the radwaste area and between the solid radwaste areas and other areas within the radwaste area.

INSERT (F) →

Automatic fire water suppression and detection systems are provided for the clean storage room at floor elevation 87 feet, the restricted and unrestricted machine shop areas at floor elevation 102 feet, the solid radwaste areas at floor elevations 102, 124 and 137 feet and the controlled and uncontrolled locker areas and decontamination areas at floor elevation 137 feet of the radwaste area. An automatic water spray system has been provided for the two radwaste tank vent charcoal filters at elevation 54 feet. Also fire detection has been provided for most areas in the radwaste area. See Figures 9.5-1 through 9.5-5

INSERT (F) page 9.5-62

Four Ruskin fire dampers in the Chem Lab Exhaust (CLE) have not been qualified to fully close against the design air flowrates. These fire barriers do not separate decontamination or radwaste processing areas.

The alternate shutdown capability provides assurance that one train of equipment necessary to achieve hot and subsequent cold shutdown is free of fire damage. There are negligable combustibles in this area. Therefore, the addition of a fixed fire suppression system required by III.G.3 will not enhance fire protection safety above that prov'ded by the existing configuration.

d. An exemption from the requirements of Appendix R, Section III.G.3 for a fixed suppression system or Section III.G.2 for separation plus suppression is requested for the HVAC equipment rooms and corridors fire area CD60. This area, room 5620, 5611, 5702 and 5706 ~~and 5604~~, is at elevation 163 ft-6 in. and 178 ft of the auxiliary building diesel area. This fire area is defined by 3-hour fire barrier walls, floor and ceiling and an unrated exterior wall in 5620 and 3-hour walls and unrated floor and ceiling in the corridors.

This area contains both divisions of air handling units for the equipment on elevation 163 ft-6 in. and their associated control panels (AVH408, BVH408, AC486 and BC486). The corridors also include cable for the chiller pumps which cool these air handling units. The only 1E equipment required for safe shutdown located on elevation 163 ft-6 in. are the switchgear room unit coolers (rooms 5606 and 5629) and the 1E panels in room 5605. The switchgear room unit coolers do not rely on AVH408 or BVH408 for cooling. Loss of the 1E panel room is backed up by use of the remote shutdown panel. See deviation 9A.6.5.1.c.

The air handling units are approximately 14 feet apart and are metal construction. The in situ combustibles are contained in two Division II cable trays. These could contain a maximum of 2257 lbs of insulation or less than 3 minutes of equivalent burn time. The corridors could contain a maximum of 12,240 lbs. of insulation or less than 25 minutes of equivalent burn time. Both ionization and photoelectric detection is used in this area and suppression can be by water hose or portable extinguishers. The congestion is light and the addition of a fixed suppression system will not enchance fire fighting capabilities.

If loss of both air handling units is assumed due to a transient fire in this area, it will not have an immediate effect on safe shutdown logic or instrumentation in the 1E panel room. If the 1E panel logic is eventually affected by high ambient temperatures, the unaffected instrumentation and/or controls on the RSP can be utilized. Temperature indication is provided in the 1E panel room in order to monitor room ambient temperature.

The RSP provides assurance that one train of equipment necessary to achieve hot and subsequent cold shutdown is free of fire damage. There are very few combustibles in this area. Therefore, separation of the equipment or addition of a fixed fire suppression system will not enchance fire protection safety above that provided by the existing configuration.

e. An exemption from the requirements of Appendix R, Section III.G.2 for separation plus suppression and Section III.G.3 for fixed suppression is requested for the diesel area HVAC equipment room, fire area CD84, elevation 178 ft-0 in. This fire area encompasses rooms 5703, ~~and~~ 5704, 5705 and 5617. This fire area is defined by a 3-hour fire barrier wall, floor and ceiling and unrated exterior walls. Refer to Figures 9.5-1, 9.5-6 and 9.5-7.

The Air Handling Units AVH407 and BVH407 are enclosed in metal casing, are connected by both HVAC supply and return duct, and are physically separated by 6 ft. Loss of these VH407 units would cause a loss of air conditioning to the Control Room HVAC rooms 5602 and 5630, electrical access area 5501, control equipment mezz. 5403, control equipment room 5302, cable spread room 5202, battery and equipment rooms 5105, 5128, 5102, 5103, 5104, 5126, and corridors 5525, 5404, 5303.

The Diesel Generator HVAC panels provide control and instrumentation for the D-G air handling units at elevation 77 ft of the diesel area and the switchgear room coolers. There are 20 ft of separation between the divisionalized DG HVAC panels B&DC483 and A&CC483 and their associated conduit with negligable intervening combustibles. In addition, a partial height wall of 1-hour fire barrier construction is installed with a wing section. This barrier is

installed as a radiation shield to protect at least one Division of panels from a single fire.

The chillers (K403) supply chilled water to the air handling units in room 5620, the Technical Support Center (TSC) air handling unit and the Remote Shutdown Panel (RSP) room air handling unit. There is 4 ft between chiller skids.

defined mostly by 5703 & 5704

Fire area CD84 is a very large room, 8300 ft², with very low congestion. The maximum in situ cable loading could be 2580 lbs in two non-1E cable trays with an equivalent fire burn time of 1.0 minute. The area is monitored by both ionization and photoelectric detection. Suppression can be by water hose or portable extinguishers. All walls, floor or ceiling are either 3-hour fire barriers or adjacent to the outside. All cables are routed in conduit, except for the non-1E cable trays as stated above. There are no other combustibles on this floor. Transient combustibles are administratively controlled to limit access to this area. There are no maintenance activities which involve more than small quantities of hand held grease or oil lubrication in this area. There are no oil bath lubrication systems which would require transit of oil changes at this elevation.

INSERT (A) attached →

Conservative assumptions were used in analyzing the effects of a postulated fire on safe shutdown and/or radioactive release.

1. Transient combustibles of sufficient quantity are temporarily stationed there which when ignited could affect equipment on this floor.

2. No fire watch.

3. Off-site power lost or available, whichever is worse.

4. High outside ambient air temperature.

INSERT (A) page 9A-47

Rooms 5105 and 5617 are connected to 5703 with duct. The Ruskin 3 hour fire dampers in the ducts have been shown to be not qualified to fully close against the design air flowrate, even with the maximum listed springs installed. Room 5105 contains the RPS M-G sets and failure of this equipment is fail safe (causes a SCRAM). Room 5617 contains channel A & C cable in conduit from equipment located in 5703. Therefore by combining these rooms into one fire area the 3 hour fire barrier and the dampers between the rooms are not required. The concequences of a fire in 5105 or 5617 is bounded by the concequences of a fire in 5703/5704.

There are no combustibles present in the zone where the temperature exceeds 325°F. In addition, if the duct collapsed into the diesel generator room proper, the sealant will not pull out. There is a structural support plate imbedded in the wall which holds the bus bars and the sealant in place.

INSERT (B)

9A.6.5.2 Shutdown Method

The shutdown method used for each of the fire areas in the auxiliary control and diesel area is listed in Table 9A-254.

9A.6.6 REACTOR BUILDING DRYWELL, FIRE AREA RB7

The drywell and wetwell together form one fire area. The boundaries of this fire area are defined by the drywell wall and the torus and connecting piping. These walls are not rated by UL as a fire barrier. The drywell boundary is sealed, however, to maintain the primary pressure boundary in case of accidents. Since the drywell is inerted, a fire in the drywell is not postulated.

9A.6.6.1 Exemption Request

An exemption from Appendix R, Section III.G.2. is requested for drywell penetrations. Drywell penetrations are sealed for containment of radiation and pressure but not fire. Since the containment is inerted during normal operation, a fire is not postulated to spread to the containment or start inside containment.

9A.6.6.2 Shutdown Method

No fires are postulated during normal operation in the drywell. Therefore, both Shutdown Method I or II can be used.

9A.6.7 REACTOR BUILDING ELEVATION 132 AND ABOVE, FIRE AREA RB5

The reactor building, all rooms at elevation 132 and above, are considered as one fire area RB5, except the stairwells. This fire area is defined by the drywell wall on the inside, the

INSERT (B) Page 9A-50

f. An exemption is requested from Appendix R section III.G.2.a for the Ruskin 3 hour fire damper, IGMD27906 which is part of the fire area boundary between the duct chase (part of CD84) and corridor 5111 (part of CD10) at elevation 54. This fire damper has been shown to be not qualified to fully close against the design air flowrates, even with the maximum listed springs installed. Fire area CD10 contains channel B&D cable from the service water at elevation 77. Fire area CD84 contains all four channels of diesel generator emergency HVAC as discussed in 9A.6.5.1.e.

A second unqualified Ruskin fire damper is installed at elevation 178 where the HVAC penetrates the floor slab into the HVAC chase. There are no combustibles in 5111. Both Ionization and Photoelectric detection and two water hose stations serve this area. The combination of ~~...~~ distance, partially effective fire dampers, detection, suppression and lack of combustibles provides a level

INSERT (B) Page 9A-50

of protection equivalent to that specified in Section III. b. 2. Additional fire protection features will not enhance fire protection safety above that provided by the existing configuration.

INSERT (B) page 9A-50

g. An exemption is requested from Appendix R section III.G.2.a for the Ruskin 3 hour fire dampers which penetrate between the unoccupied areas (formally, unit 2) and unit 1 fire areas. These dampers are 1GMD140, 1GMD459, 1GMD178, 1GMD172 and 1GMD68603. These dampers are horizontal Ruskin fire dampers which have been shown to be not qualified to fully close against the design air flowrates. There are no combustibles or transient combustible material in the unoccupied areas of the former Unit 2 diesel areas. The Vertical dampers which penetrate from the ~~Unit 2~~ unoccupied area back to Unit 1 ~~fire~~ areas are qualified fire dampers. The horizontal fire dampers are in the slab between rooms at 163'-6" and elevation 178'. Since there are no combustibles in the unoccupied areas and the vertical dampers in the same HVAC duct run are qualified then additional fire protection features will not enhance fire protection above that provided by the existing configuration.

TABLE 9A-5

CONTROL AND DIESEL FIRE AREAS
AND ASSOCIATED SHUTDOWN METHODS

Area No.	Aux. Bldg Control and Diesel Area Fire Areas by Room Number	Shutdown Method
CD 1	5101	I
2	5102	I
3	5103	I or II
4	5104	II
5	~~5105~~ N/A	~~II~~
6	5107	I
7	5108	I
8	5109	II
9	5110	II
10	5111, 5112, 5121, 5215, 5217, 5233, 5308, 5315, 5316, 5409, 5536, 5537	I
11	5126	I or II
12	5128	I
13	5129	II
14	5130	I
15	5201	I
16	5202	RSP
17	5203, 5323, 5331, 5405, 5419, 5531	I
18	5204, 5324, 5332, 5406, 5420, 5532	I
19	5205, 5325, 5333, 5407, 5421, 5533	II
20	5206, 5326, 5334, 5408, 5422, 5534	II
21	5208	I
22	5209	I
23	5210	II
24	5211	II
25	5216	I or II
26	5302	RSP
27	5303, 5316	I or II
28	5304	I
29	5305	I
30	5306	II
31	5307	II
32	5335	I or II
33	5336	I
34	5402	I or II
35	5403, 5449	RSP
36	5404	I or II
37	~~5410, 5411~~ N/A	~~I~~
38	~~5412, 5413~~ N/A	~~I~~
39	~~5414, 5415~~ N/A	~~II~~
40	~~5416, 5417~~ N/A	~~II~~
41	5418	I or II
v 42	5447	I

TABLE 9A-5

CONTROL AND DIESEL FIRE AREAS
AND ASSOCIATED SHUTDOWN METHODS

Aux. Bldg Control and Diesel Area Fire Areas	Area No.	Room No(s)	Shutdown Method
CD	43	5448	I
|	44	5502	II
|	45	5503, 5504, 5505, 5507, 5508, 5512, 5513, 5514, 5515, 5520, 5521, 5522, 5523	I or II
|	46	5509, 5510, 5511	RSP
|	47	5525	~~II~~ I
|	48	5535	II
|	49	5538	I
|	50	5539	I
|	51	5540	I
|	52	5541	I
|	53	5542	II
|	54	5543	II
|	55	5544	II
|	56	5545	II
|	57	5546	I or II
|	58	5601	I or II
|	59	5602	II
|	60	5604, 5611, 5620, 5702, 5706	RSP
|	61	5605	RSP
|	62	5606, 5410, 5411, 5412, 5413	I
|	63	5607	I
|	64	5608	I or II
|	65	5609	I
|	66	5610	I or II
|	67	5612	II
|	68	5613	II
|	69	5614	II
|	70	5615	I
|	71	5616	II
|	72	~~5617~~ N/A	II
|	73	5618	I
|	74	5621	I
|	75	5622	I
|	76	5623	I
|	77	5624	I or II
|	78	5625	I or II
|	79	5626	I or II
|	80	5627	I or II
|	81	5628	I or II
|	82	5629, 5414, 5415, 5416, 5417	II
|	83	5630	I
|	84	~~5702~~, 5703, 5704, ~~5706~~, 5105, 5617	RSP
v	85	5705	I or II

HCGS FSAR

TABLE 9A-77 sheet 1 of 4

FIRE HAZARD ANALYSIS TABULATION SUMMARY

SUMMARY FOR FIRE AREA: CD 62

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division I equipment with III. 6.2.a separation would be used for shutdown.

Total BTU combustibles : 102×10^6 BTU

Total floor area : 4550 ft^2

Average BTU/ft^2 : 22400

Average Equivalent Fire Severity : 17 min

Automatic Suppression Coverage: None

Automatic Detection Coverage: Full

ROOM: SDG Control Room/Class 1E SWGR Room Fire Area: ~~CD37~~ CD62

ROOM NO. 5410 & 5411 BLDG. Auxiliary Diesel Area ELEV. 130

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
II	1. 4.16 KV SWGR 10A404
	2. 480 V Unit Substations 10B440 and 10B480
	3. MCCs 10B441 and 10B481
	4. 125 Vdc Load Ctr 10D440
	5. 125 Vdc Distribution Panel 1DD417
	6. Diesel Control Panel 1DC423
	7. Generator Control Panel 1DC422
	8. SDG Load Sequencer Panel 1DC428
	9. Cable (CH. D)

EFFECTS OF FIRE ON SAFE SHUTDOWN AND OR RADIOACTIVE RELEASE:

None. Redundant Division I equipment with III.G.2.a separation would be used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:
5410 - Yes
5411 - Yes

FIRE SUPPRESSION TYPE:

CO_2 hose OHO404
H_2O hose 1CHR401
Portable Extinguisher

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	v
East	
South	
West	
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1675-1

Fire Drawings - Figures 9.5-4 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	10,204 lbs	21.8
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,455 + 300 = 1,755 ft^2	TOTAL	22 min.

ROOM: SDG Control Room/Class 1E SWGR Room Fire Area: ~~CD38~~ CD62

ROOM NOS. 5412 & 5413 BLDG. Auxiliary Diesel Area ELEV. 130

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
II	1. 4.16 KV SWGR 10A402
	2. 480 V Unit Substations 10B420 and 10B460
	3. MCCs 10B421 and 10B461
	4. 125 Vdc Load Ctr 10D420
	5. 125 Vdc Distribution Panel 1BD417
	6. Diesel Control Panel 1BC423
	7. Generator Control Panel 1BC422
	8. SDG Load Sequencer Panel 1BC428
	9. Cable (CH. B)

EFFECTS OF FIRE ON SAFE SHUTDOWN AND OR RADIOACTIVE RELEASE:

None. Redundant Division I equipment with III.G.2.a separation would be used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:
5412 - Yes
5413 - Yes

FIRE SUPPRESSION TYPE:

CO_2 hose OHO404
H_2O hose 1THR401 & 1CHR401
Portable Extinguisher

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	v
East	
South	
West	
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1675-1

Fire Drawings - Figures 9.5-4 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	10,204 lbs	21.8
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,775 ft^2	TOTAL	22 min.

ROOM: HVAC Equip. Room Fire Area: CD62

ROOM NO. 5606 BLDG. Auxiliary/Diesel ELEV. 163'-6"

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
II	1. SDG Area battery rm exhaust fans 1BV406 and 1DV406 2. SWGR room unit coolers 1BVH401 and 1DVH401. 3. Power cables for: a. 1BVH401 and 1DVH401 b. 1BV406 and 1DV406 c. Channel B and D uninterruptible power supply inverters for BOP computer d. Channel D uninterruptible power supply inverters for NSSS computer.

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. An exposure fire in this area would not prevent safe shutdown of the plant. If the B and D switchgear room cooling and B and D battery room exhaust are lost, the redundant Division I equipment is protected by III.G.2.a separation, shutdown would be accomplished using HPCI and main control room.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Photoelectric

EMERG. LIGHTS:

Yes

FIRE SUPPRESSION TYPE:

H_2O hose 1XHR400 and 1KHR401
Portable ext.

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	
East	
South	
West	
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1677-1

Fire Drawings - Fig. 9.5-6 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation		0
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1020 ft^2	TOTAL	0

HCGS FSAR

TABLE 9A-52

Table Not Used

(Refer to table 9A-77)

HCGS FSAR

TABLE 9A-53

Table Not Used

(Refer to table 9A-77)

HCGS FSAR

TABLE 9A-97 sheet 1 of 4

FIRE HAZARD ANALYSIS TABULATION SUMMARY

SUMMARY FOR FIRE AREA: CD82

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment with III.G.2a separation would be used for shutdown.

Total BTU combustibles : 104×10^6 BTU

Total floor area. 4759 ft^2

Average BTU/ft^2 : 22,000

Average Equivalent Fire Severity: 16.4 min

Automatic Suppression Coverage: None

Automatic Detection Coverage: Full

ROOM: SDG Control Room/Class 1E SWGR Room Fire Area: ~~CD39~~ CD82

ROOM NOS. 5414 & 5415 BLDG. Auxiliary Diesel Area ELEV. 130

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	1. 4.16 KV SWGR 10A403
	2. 480 V Unit Substations 10B430 and 10B470
	3. MCCs 10B431 and 10B471
	4. 125 Vdc Load Ctr 10D430
	5. 125 Vdc Distribution Panel 1CD417
	6. Diesel Control Panel 1CC423
	7. Generator Control Panel 1CC422
	8. SDG Load Sequencer Panel 1CC428
	9. Cable (CH. C)

EFFECTS OF FIRE ON SAFE SHUTDOWN AND OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment with III.G.2.a separation would be used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:
5414 - Yes
5415 - Yes

FIRE SUPPRESSION TYPE:

CO_2 hose OHO403
H_2O hose 1THR401 & 1SHR400
Portable Extinguisher

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	↓
East	↓
South	↓
West	↓
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1685-1

Fire Drawings - Figures 9.5-4 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	10,204 lbs	21.8
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,755 ft^2	TOTAL	22 min.

HCGS FSAR

TABLE 9A-53

Table Not Used

(Refer to table 9A-77)

HCGS FSAR

TABLE 9A-97 sheet 1 of 4

FIRE HAZARD ANALYSIS TABULATION SUMMARY

SUMMARY FOR FIRE AREA: CD82

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment with III.G.2a separation would be used for shutdown.

Total BTU combustibles : 104×10^6 BTU

Total floor area. 4759 ft^2

Average BTU/ft^2 : 22,000

Average Equivalent Fire Severity : 16.4 min

Automatic Suppression Coverage: None

Automatic Detection Coverage: Full

ROOM: SDG Control Room/Class 1E SWGR Room Fire Area: ~~CD39~~ CD82

ROOM NOS. 5414 & 5415 BLDG. Auxiliary Diesel Area ELEV. 130

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	1. 4.16 KV SWGR 10A403
	2. 480 V Unit Substations 10B430 and 10B470
	3. MCCs 10B431 and 10B471
	4. 125 Vdc Load Ctr 10D430
	5. 125 Vdc Distribution Panel 1CD417
	6. Diesel Control Panel 1CC423
	7. Generator Control Panel 1CC422
	8. SDG Load Sequencer Panel 1CC428
	9. Cable (CH. C)

EFFECTS OF FIRE ON SAFE SHUTDOWN AND OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment with III.G.2.a separation would be used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:
5414 - Yes
5415 - Yes

FIRE SUPPRESSION TYPE:

CO_2 hose OHO403
H_2O hose 1THR401 & 1SHR400
Portable Extinguisher

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	v
East	
South	
West	
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1685-1

Fire Drawings - Figures 9.5-4 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	10,204 lbs	21.8
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,755 ft^2	TOTAL	22 min.

ROOM: SDG Control Room/Class 1E SWGR Room Fire Area: ~~CD40~~ CD82

ROOM NOS. 5416 & 5417 BLDG. Auxiliary Diesel Area ELEV. 130

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	1. 4.16 KV SWGR 10A401
	2. 480 V Unit Substations 10B410 and 10B450
	3. MCCs 10B411 and 10B451
	4. 125 Vdc Load Ctr 10D410
	5. 125 Vdc Distribution Panel 1AD417
	6. Diesel Control Panel 1AC423
	7. Generator Control Panel 1AC422
	8. SDG Load Sequencer Panel 1AC428
	9. Cable (CH. A)

EFFECTS OF FIRE ON SAFE SHUTDOWN AND OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment with III.G.2.a separation is used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:
5416 - Yes
5417 - Yes

FIRE SUPPRESSION TYPE:

CO_2 hose OHO403
H_2O hose 1THR401 & 1SHR400
Portable Extinguisher

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	|
East	|
South	|
West	v
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1685-1

Fire Drawings - Figure 9.5-4 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	10,204 lbs	21.8
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,775 ft^2	TOTAL	22 min.

ROOM: HVAC Equipment Room Fire Area: CD82

ROOM NO. 5629 BLDG. Auxiliary/Diesel ELEV. 163

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	1. SDG Area Battery Room Exhaust Fans 1AV406 and 1CV406 2. SWR Room Unit Coolers 1AVH401 and 1CVH401 3. Power Cables for: a. 1AVH401 and 1CVH401 b. 1AV406 and 1CV406

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division II equipment which has III.G.2.a separation could be used for safe shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:

Yes

FIRE SUPPRESSION TYPE:

H_2O hose 1WHR400
Portable Extinguishers

CONSTRUCTION:	FIRE RATING:
Walls:	3 hour
North	
East	
South	
West	
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1687-1

Fire Drawings - Figures 9.5-6 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	423 lbs	1.3
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 1,229 ft^2	TOTAL	1 min.

HCGS FSAR

TABLE 9A-54

Table Not Used

(Refer to table 9A-97)

HCGS FSAR

TABLE 9A-55

Table Not Used

(Refer to table 9A-97)

HCGS FSAR
TABLE 9A-99

FIRE HAZARD ANALYSIS TABULATION SUMMARY

SUMMARY FOR FIRE AREA: CD84, Elev 178 HVAC

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:
None. 5105 contains the RPS mg set. 5617 contains Div I cable for equipment in 5703/4. 5703/4 may use the RSP on postulated loss of HVAC. See a more comprehensive discussion on sheet 2 and 3.

Total BTU Combustibles: 18.9×10^6 BTU.

Total floor Area: 10,220 ft^2

Average BTU/ft^2: 1850

Average Equivalent Fire Severity: 1.4 min.

Automatic Suppression Coverage: Alone

Automatic Detection Coverage: Full

ROOM: Diesel Area HVAC Equipment Room Fire Area: CD84

ROOM NOS. 5704 & 5703 BLDG. Auxiliary/Diesel ELEV. 178

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	1A & CC483 D-G Area HVAC Panel 1AK403 Control Area Water Chiller 1AVH407 Control Equipment Room Supply Unit 1AP414 Class 1E Panel Room Chilled Water Pump 1AV410 Control Area Battery Room Exhaust Fan
II	1B & DC 483 D-G Area HVAC Panel 1BK403 Control Area Water Chiller 1BVH407 Control Equipment Room Supply Unit 1BP414 Class 1E panel Room Chilled Water Pump 1BV410 Control Area Battery Room Exhaust Fan

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE: None

The Air Handling Units AVH407 and BVH407 are enclosed in metal casings, are connected by an HVAC duct, and are physically separated by 6 ft. Loss of these VH407 units would cause a loss of air conditioning to the Control Room HVAC rooms 5602 and 5630, Electrical Access Areas 5501, control equipment mezz. 5403, Control Equipment room 5302, cable spread room 5202, Battery and Equipment rooms 5105, 5128, 5102, 5103, 5104, 5126, and Corridors 5525, 5404, 5303.

There is more than 20 ft separation between the DG HVAC panels B&DC483 and A&CC483 and their associated conduit with negligible intervening combustibles. Therefore, a transient fire in this area would not jeopordize both divisions of DG-HVAC. One division of DG is therefore assured for shutdown and the other division DGs may operate for sometime without HVAC, since jacket water cooling is still available

The chillers (K403) supply chilled water to the air handling units in 5620, the TSC Air handling unit, and the RSP air handling unit. There is 4 ft between chiller skids.

There are negligible combustibles on this floor, since all cable is routed in conduit with the exception of short lengths of non-1E cable trays. Administrative controls will be used to prevent transient combustibles in this area.

In addition a partial height barrier of 1 hour construction is installed with a wing section to protect at least one division of panels from a single fire. (cont'd on next page)

DEVIATION REQUEST: III.G.2 separation requirements

FIRE DETECTION TYPE:

Ionization
Photoelectric

EMERG. LIGHTS:

Yes

FIRE SUPPRESSION TYPE:

H_2O hose 1RHR401 and 1QHR401
Portable Extinguishers

CONSTRUCTION:	FIRE RATING:
Walls:	
North	3 hour
East	3 hour
South	Unrated (outside)
West	Unrated (outside)
Floor:	3 hour
Ceiling:	Unrated (outside)

Doors and Hatches:

Doors: 3 hour, North wall
Opening in floor for HVAC duct (Eastwall) extends down to el. 54, the RPS MG sets room 5105

Reference Drawings:

Elec. Drawings - E-1680-1 and E-1690-1

Fire Drawings - Figures 9.5-7 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation (in metal covered tray)	2,508 lbs	1.0
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 9,300 ft^2	TOTAL	1 min.

Effects of fire (cont'd)

Assuming a fire did start in this room however:

1. If the fire took out both air handling units power cable, temperature would start to rise and may eventually affect the control equipment room panels at elevation 102. No effect on cabling or use of batteries is postulated since the cable is not temperature sensitive and the batteries will cease to be required after the Diesel Generators start (assuming LOP). The heat load into 5630 is very small and therefore loss of Control Room use is not postulated. The option also exists for control and instrumentation from the remote shutdown facilities to aid the main control room operators.

2. A fire which takes out both chillers will affect cooling to el 163'-6" HVAC, TSC HVAC and the RSP HVC. The most sensitive equipment on 163 ft-6 in. is the 1E panel room, 5605. Temperature may rise to the point where MCR instrumentation logic is affected. The instrumentation and controls in the RSP can be used. The RSP HVAC utilizes 20% outside air and maintains the RSP room at less than 76°F. The RSP and equipment is qualified to 104°F. Calculations predict that with no HVAC at all, greater than 24 hours will elapse before the qualification limit is reached on the highest outside ambient temperature day. With ventilation this qualification limit may never be reached.

3. Loss of two DG HVAC panels C483 due to 20-ft diameter fire. HVAC panels for alternate Division have III.G.2.b separation; however, no automatic sprinkler exists.

4. The two worst 20 ft diameter transient fires which were analyzed could effect:

   a. cabling to both air handling units, and both chillers or
   b. cabling to the "A" chillers, both air handling units and the "D" DG HVAC panel

5. Based on:

   a. zero in situ fire loading, i.e., all cable in conduit and enclosed trays,
   b. administrative controls to limit transient combustibles in this area,
   c. physical separation between backup equipment with metal enclosures on HVAC units and chillers, and
   d. Use of RSF equipment as backup.

   There will be time for fire brigade action following detection and therefore, there will be no effect on safe shutdown or radiation release due to a fire in this area.

ROOM: RPS MG Set Room Fire Area: ~~CD5~~ CD84

ROOM NO. 5105 BLDG. Auxiliary/Control ELEV. 54

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
I	Division I Cabling

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division II cabling, which has III.G.2.a separation, will be used for shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Photoelectric
Ionization

EMERG. LIGHTS:

Yes

FIRE SUPPRESSION TYPE:

H_2O hose 1EHR400
Portable Ext.

CONSTRUCTION:	FIRE RATING:
Walls:	All walls are 3-hour rated except for 2-hour rated stairwell enclosure.
North	
East	
South	
West	
Floor:	Unrated (basemat)
Ceiling:	3 hour
Doors and Hatches:	3 hour

Reference Drawings:

Elec. Drawings - E-1661-1

Fire Drawings - Figure 9.5-1
Figure 9.5.9

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation	1,275 lbs	10.4
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = 460 ft^2	TOTAL	10 min.

ROOM: Electrical Access Area Fire Area: ~~CB72~~ CD84

ROOM NO. 5617 BLDG. Auxiliary/Diesel ELEV. 163'-6"

MECH SHUTDOWN DIVISION	SAFE SHUTDOWN EQUIPMENT AND CABLE:
II	Power to 1BK403 chiller (room 5704) and control and instrumentation to chiller. Cable from GK-FSL-9600 B1 and B2.

EFFECTS OF FIRE ON SAFE SHUTDOWN AND/OR RADIOACTIVE RELEASE:

None. Redundant Division I equipment has III.G.2.a separation and will be used for safe shutdown.

DEVIATION REQUEST: None

FIRE DETECTION TYPE:

Ionization
Photoelectric

FIRE SUPPRESSION TYPE:

H_2O hose 1XFR400
Portable Extinguishers

EMERG. LIGHTS:

No

CONSTRUCTION:	FIRE RATING:
Walls:	
North	2 hour
East	3 hour
South	2 hour
West	3 hour
Floor:	3 hour
Ceiling:	3 hour
Doors and Hatches:	

Reference Drawings:

Elec. Drawings - E-1677

Fire Drawings - Figures 9.5-6 and 9.5-10

COMBUSTIBLES: MATERIAL:	QUANTITY	EQUIV. FIRE SEVERITY (MIN.)
a. Cable insulation		0
b. Lube oil		0
c. Other		0
d. Transient		0
AREA = NS	TOTAL	0 min.

HCGS FSAR

TABLE 9A-87

Table Not Used

(Refer to Table 9A-99)

HCGS FSAR

TABLE 9A-20

Table Not Used

(Refer to Table 9A-99)

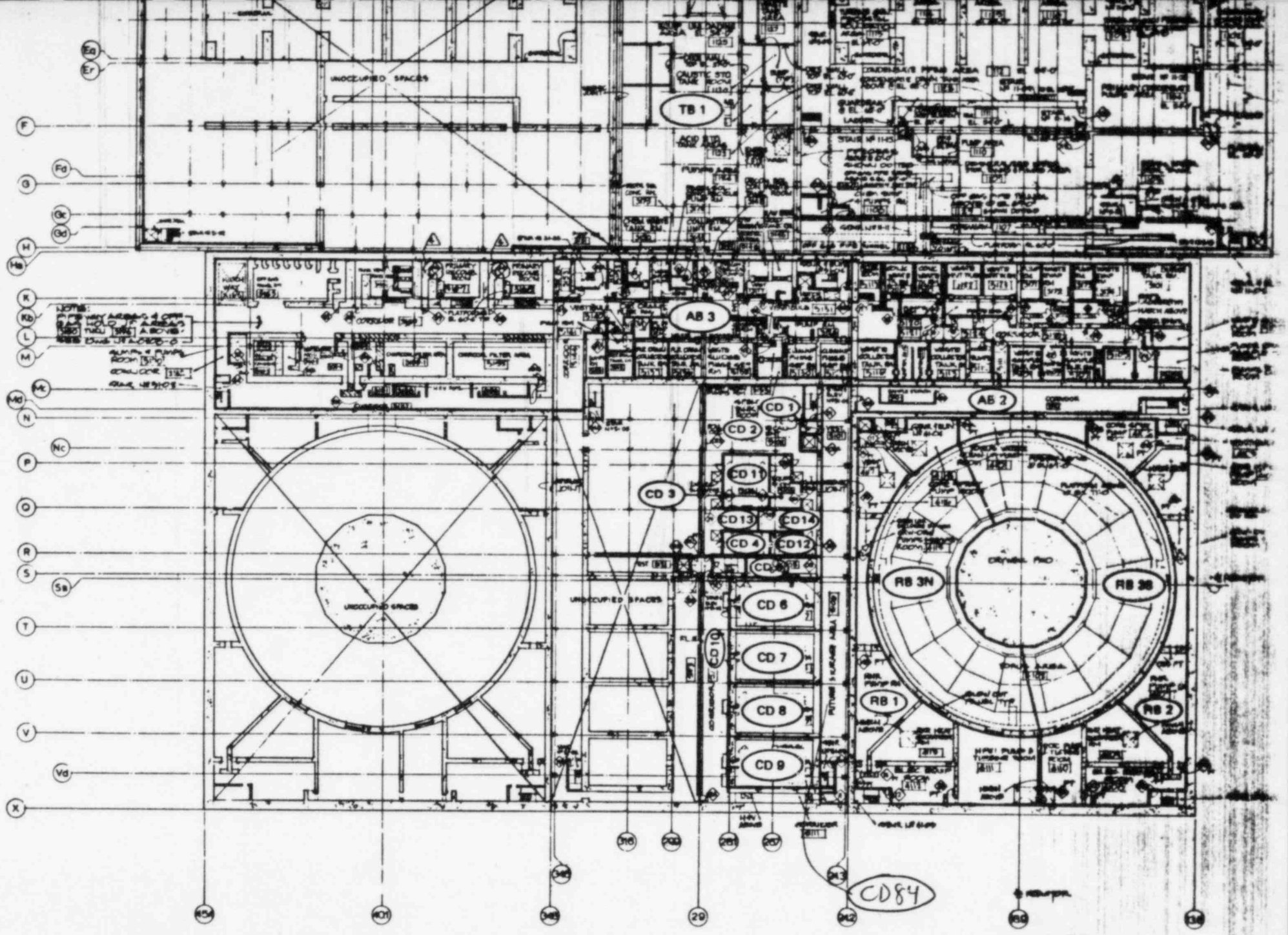

UNOCCUPIED SPACES
TB 1
AB 3
AB 2
CD 1
CD 2
CD 11
CD 3
CD13
CD14
CD 4
CD12
CD 6
CD 7
CD 8
CD 9
CD 10
RB 3N
RB 3S
RB 1
RB 2
CD84

Figure 9A-39

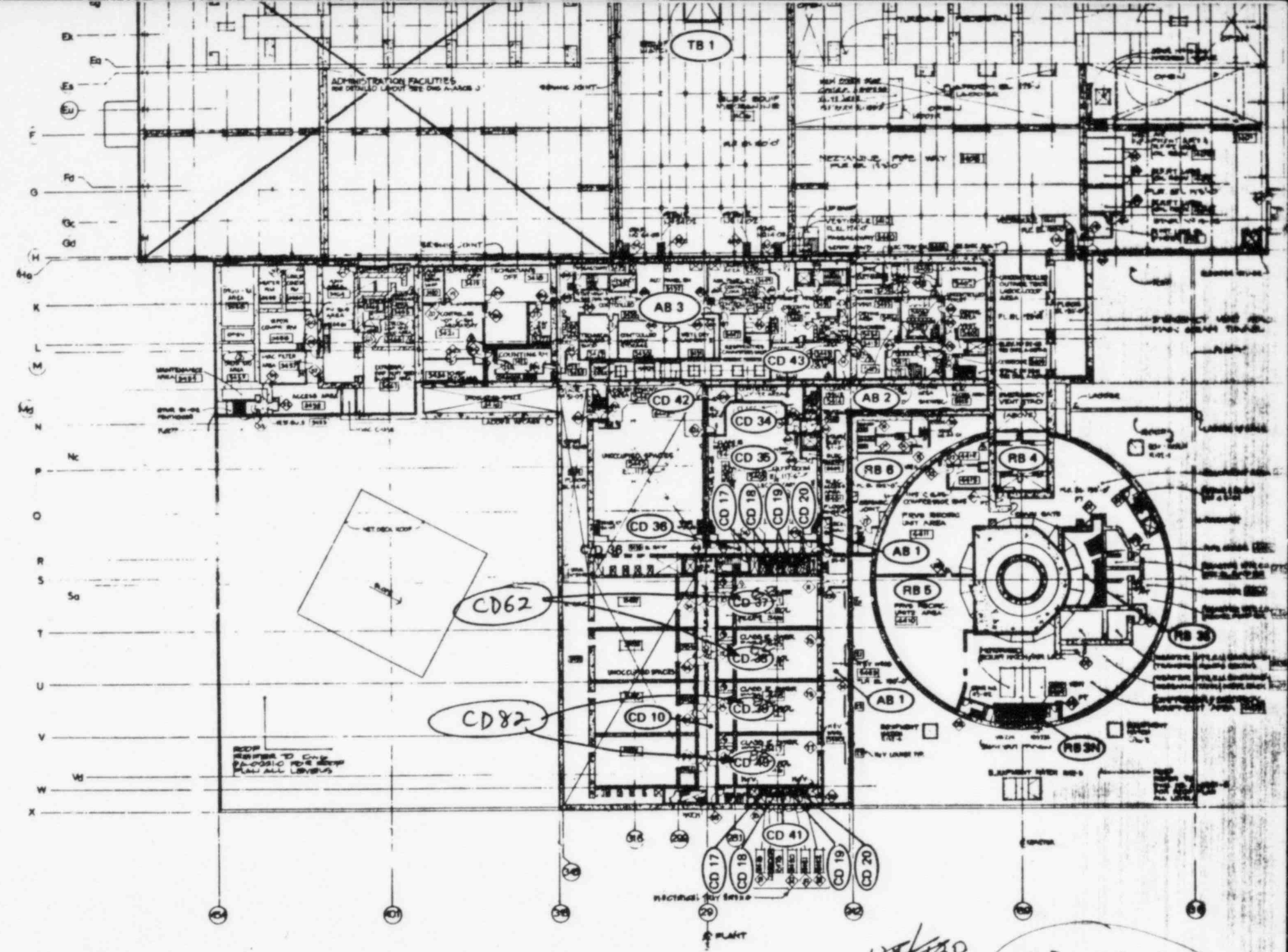
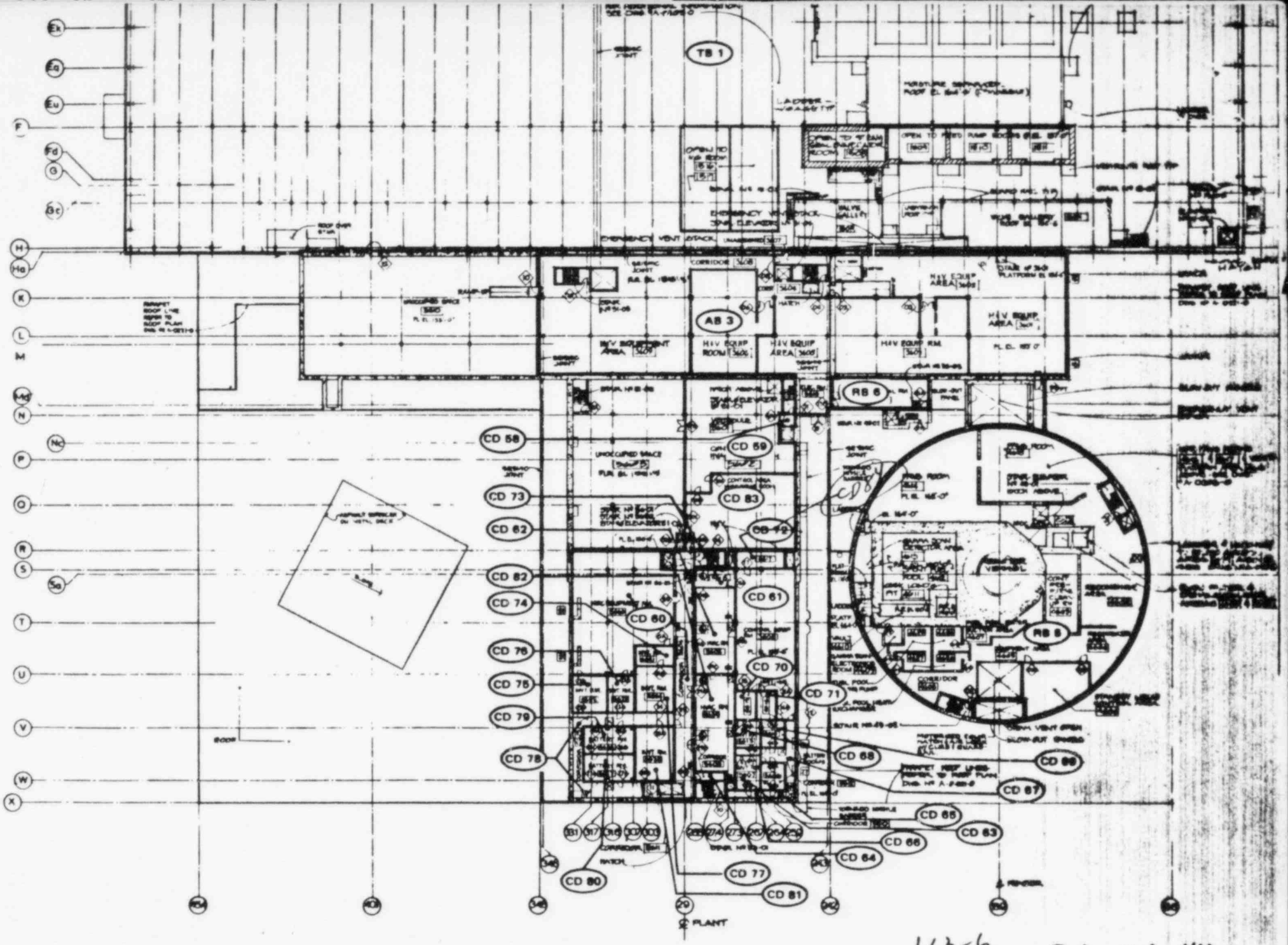

TB 1
AB 3
CD 43
CD 42
CD 34
AB 2
CD 35
RB 6
RB 4
CD 36
AB 1
RB 5
RB 3M
CD62
CD 37
CD 38
CD 39
CD82
CD 10
CD 40
AB 1
CD 41
CD 17
CD 18
CD 19
CD 20
PLANT

Figure 9A-42



163-6

Figure 9A-44