

Reactor Building:

The Reactor Building is one large fire area, separated from adjacent fire areas by reinforced concrete walls rated to provide greater than three hours fire resistance rating. Adjacent fire areas include the Drywell (Reactor Cavity) RB-FA-2, 480V Switchgear Room Fire OB-FA-6, MG Set Room Fire Zone OB-FZ-8A, Office Building Fire Area OB-FA-9, office building fire zones OB-FZ-10A and OB-FZ-10B and Turbine Building Fire zones TB-FZ-11B, TB-FZ-11E and TB-FZ-11F. The construction of the Reactor Building will effectively reduce the spread of fire within this fire area and allow the division of the building into fire zones. The analyses of the fire hazards are divided into the following zones:

RB-FZ-1A, 119' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-016, -017, -018, -019, -020, -021.
Area = 15,813 ft.²

Construction:

- Floors: Reinforced concrete with unprotected opening to lower levels (i.e., equipment hatch and stairway); reinforced steel plate separating RB-FZ-1A from RB-FA-2.
- Walls: Unprotected steel supports with insulated metal siding.
- Roof: FM Class I metal deck on unprotected steel.
- Openings: No openings to adjacent fire areas during reactor operation.

Ventilation:

One system provides normal ventilation for the Reactor Building (which is normally under a slight negative pressure) as a whole. The Stand-by Gas Treatment System provides emergency exhaust for clean-up following a radiological incident.

Normally two of three half-capacity fans (SF-1-12, SF-1-13 and SF-1-14) supply the system. From the air supply, located on the office building roof, air is circulated through a common duct from which two main ducts lead to various levels of the Reactor Building. Dampers in each duct consist of a series of butterfly valves which are interlocked with the supply fans. The system exhausts to the stack via one exhaust fan (either EF-1-5 or EF-1-6) located at the base of the stack.

The Stand-by Gas Treatment system maintains a negative pressure within the Reactor Building when the normal ventilation system stops and processes the exhaust air through filters to remove radioactivity. The exhaust air passes through EF-1-8 or EF-1-9 located at the base of the stack.

Drainage:

Most of discharged water will be retained. Excess will drain down northwest stairway to lower elevations and enter floor drains which terminate in Reactor Building Sump. Provisions exist to assure no flooding of corner rooms from water used for fire suppression will occur.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Fuel Handling Crane and Associated Equipment
Spent Fuel Storage Pool
New Fuel Storage Vault
Decontamination Area for Spent Fuel Shipping Casks
Reactor Internals Storage Area
100 Ton Gantry Crane
Elevator Equipment Room

3. Fire Loading:

Transient combustibles in the area consist of materials such as health physics supplies, fire retarding wooden shipping materials, miscellaneous paper and cardboard, and minor amounts of solvent in safety cans.

Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Primary fire suppression is provided by an automatic wet pipe sprinkler system at ceiling level. The main design objective of this system is to control exposure fires and to prevent the roof from being ignited. The automatic sprinklers are backed up by manual hose stations and portable extinguishers. The hose stations are arranged such that both the sprinkler system and hose stations will not be taken out of service by a single fire main break.

5. Conclusions:

The fire protection systems and equipment provided can be expected to control any fire and will protect against structural collapse. Administrative Controls regarding the opening of the new fuel storage vault will control any potential moderating effects of water spray on new fuel. For effects of fire on safe shutdown capability within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1B, 95' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-017, -019, -020, -021.
Area = 10,380 ft.²

Construction:

- Floor: Reinforced concrete with unprotected opening to lower levels RB-FZ-1C (Equipment Hatch and Stairway).
- Walls: Reinforced concrete with three hour fire resistive rating between RB-FZ-1B and RB-FA-2 (Drywell).
- Ceiling: Reinforced concrete supports with reinforced concrete slab with openings to the 119' elevation, RB-FZ-1A.
- Openings: No openings to adjacent fire areas.

Ventilation:

See RB-FZ-1A

Drainage:

Floor drains terminate in Reactor Building Sump. Provisions exist to assure no flooding of corner rooms from water used for fire suppression will occur.

Lighting:

Emergency lighting unit nos. ELU762010 and ELU762011 provide illumination for manual actions required at valves V-11-36 and V-11-34. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Emergency condenser with associated valves.

Safety Related:

Poison Pumps and Poison Storage Tanks with associated valves and piping
Closed Cooling Water Surge Tank
Motor operated valves

Non-Safety Related:

Motor operated valves
Equipment Decontamination Area
Control Rod Storage Area

3. Fire Loading:

The major in-situ combustibles include cable insulation, oil in pumps, work benches, and transient combustibles include health physics supplies, fire retardant wood, and insulation paper and cardboard. The total fire load is "low", as reflected in Section 8.0.

4. Fire Protection:

Fixed fire detection is provided by ionization type particle-of-combustion (POC) detectors which alarm locally and in the Control Room. Fire suppression equipment includes portable fire extinguishers backed up by manual hose station.

5. Conclusions:

Because of the limited fire hazard ("low" combustible loading, and minimum potential ignition sources) in this zone, automatic detection and manual fire suppression are considered adequate. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1C, 75' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-016, -019, -020, -021.
Area = 11,655 ft.²

Construction:

- Floor: Reinforced concrete with open equipment hatch and stairway to the 51' elevation RB-FZ-1D (See Fire Protection for protection of openings).
- Walls: Reinforced concrete with three hour Fire Resistive Ratings between RB-FZ-1C and RB-FA-2 (Drywell) and RB-FZ-1C and OB-FZ-22C (South cable bridge tunnel).
- Ceiling: Reinforced concrete supports with reinforced concrete slab with openings to the 95' elevation, RB-FZ-1B.
- Openings: No openings to adjacent fire areas, except the wall of this zone at Elev. 85' into RB-FA-2 where an 18 inch pipe penetrates this wall. This pipe is the containment purge ventilation supply and is equipped with 2 normally closed butterfly valves on the outside of RB-FA-2. Penetration is sealed as it penetrates the fire barrier. The drywell is inerted with nitrogen during normal plant operations and thus does not support combustion, and due to overriding nuclear considerations, the configuration does not require the installation of automatic closing fire dampers in the 18 inch pipe.

Ventilation:

See RB-FZ-1A

Drainage:

Floor drains terminate in Reactor Building Sump. Provisions exist to assure no flooding of corner rooms from water used for fire suppression will occur.

Lighting:

Emergency lighting unit ELU 762022 provides illumination for manual operation of V-20-21. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Isolation Condenser Valves
Core Spray System Valves

Safety Related:

Spent Fuel Pool Cooling Heat Exchangers and Pumps
Reactor Protection Instrument Racks

Non-Safety Related:

Clean-up Demineralizer and Associated Piping
Control Rod Drive Rebuild Area

3. Fire Loading:

The main in-situ combustibles include cable insulation and ion exchange resins. Transient combustibles include health physics supplies and miscellaneous paper and fire retardant wood. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Fixed fire detection is provided by ionization type POC detectors which alarm locally and in the Control Room. Automatic sprinkler protection is provided for the spent fuel pool cooling pumps. The southeast equipment hatch is protected by a water curtain suppression system below the floor slab of RB-FZ-1C. This system is an extension of the deluge system in RB-FZ-1D. This system utilizes open sprinkler heads providing a coverage of 3 gpm per linear ft. of water curtain. The floor opening at the northwest stairwell is protected by a spray nozzle at 80' elevation. The spray nozzle is an extension of the deluge system on a lower elevation and provides a density of 0.5 gpm per sq. ft. of stairway floor opening. Manual hose station and portable fire extinguishers are provided to facilitate manual fire suppression efforts.

5. Conclusions:

Because of the limited fire hazard ("low" combustible loading, and minimum potential ignition sources in this zone) automatic detection, and automatic suppression are considered adequate. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1D, 51' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-015, -019, -020, -021.
Area = 9,100 ft.²

Construction:

- Floor:** Reinforced concrete with unprotected opening to the 23' elevation RB-FZ-1E, RB-FZ-1H and 38' elevation RB-FZ-1G. For equipment hatch and stairway, see RB-FZ-1E.
- Walls:** Reinforced concrete with three hours fire resistive rating between RB-FZ-1D and RB-FA-2 (Drywell), between RB-FZ-1D and OB-FA-9 (Office Bldg.) below elevation 61'-0" and OB-FZ-8C (Battery Room A & B). The reinforced concrete wall between RB-FZ-1D and OB-FZ-10A to elevation 61'-0" (monitor and change area) is rated at least 1 1/2-hour fire resistance (wall is considered as 3-hour but door is 1 1/2-hour). Wall between RB-FZ-1D and OB-FZ-22B (North cable bridge tunnel) is 3 hour fire resistive rated.
- Ceiling:** Reinforced concrete supports with reinforced concrete slabs with openings to the 75' elevation, RB-FZ-1C. (See Fire Protection).
- Openings:** Reactor Building 51' Elevation Entrance Door No. 8 (R204) is a 1 1/2-hour fire rated, UL listed, Class B fire door. Door frame is not listed. TDR 717 identifies fire door No. 8 as functional with the following departures from NFPA 80: door through bolts for airlock interlock hardware, excessive door to frame clearance at head, latch and hinge side, non-labeled door frame. TDR 717 provides the following fire door evaluation for door No. 8:

The existing door frame bears no sign or stamp indicating it as a fire door frame. However, it is believed to be a fire door frame because it is listed on Burns & Roe drawing 4521 "door schedule" as a class B fire door and the Burns & Roe specification 2299-45 Section 8A states that fire doors and frames are to conform to the requirements of UL for the class of door furnished and installed in accordance with NFPA 80. In lieu of the lack of an approval stamp on the frame, which may be covered by paint and the lack of purchasing documentation as additional proof, a comparative evaluation of design documents with UL-63 "Standard for Fire Door Frames" was performed with the following findings. The frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along the jamb. The door stop is a 5/8" x 3" flat steel bar continuously welded onto the channel all around. The base anchor consists of a 12 gage metal clip angle welded to the bottom of each jamb. These meet or exceed the comparable requirements set by UL for channel frames and therefore do not require replacement.

The majority of fire loading is in the monitor and change room and is physically separated from the entrance door into the Reactor Bldg. by a concrete wall. The monitor and change area and hallway stairwell is provided with ionization smoke detectors. The monitor and change area is also provided with full wet pipe sprinkler coverage. The majority of the fire loading in RB-FZ-1D, is cable insulation, which is covered by a deluge system actuated by ionization smoke detectors in the area. There is also physical separation of all the combustibles from the reactor building entrance by the airlock enclosure and its second airlock door.

The clearances around the door are about 1/4" at some points instead of the 1/8" maximum allowed around the head, latch and hinge side of the door. The door stops still overlap the door by about 3/8" at those points of excessive clearance. Based on the low fire severity on both sides of this fire barrier, and the protection, detection and configuration described above, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. The implementing of the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Ventilation:

See RB-FZ-1A

Drainage:

Floor drains terminate in Reactor Building Sump. Provisions exist to assure no flooding of corner rooms from water used for fire suppression will occur.

Lighting:

Emergency lighting unit ELU762021 provides illumination for manual actions required at FI-225-998 gage. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

ADS System Relief Valve
Reactor Clean-up Valves
Isolation Condenser System Instrumentation
Reactor Building Closed Cooling Water Heat Exchanger and Pumps
Core Spray System Valves
Two Core Spray Booster Pumps

Safety Related:

Reactor Instrumentation Racks
Regenerative and Non-regenerative Heat Exchangers

Non-Safety Related:

Cleanup Recirculating Pumps
Sludge Pump
Sludge Receiver Tank
Neutron Monitoring Cables

3. Fire Loading:

The major fixed combustible is limited to cable insulation. Transient combustibles include health physics supplies and miscellaneous paper and fire retardant wood. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Fixed fire detection is provided by ionization type POC detectors which alarm locally and in the Control Room. Primary fire suppression is provided by fixed automatic water spray systems protecting grouped electrical cable installation. These fire suppression systems are divided into two zones. The deluge valves are operated by cross-zoned POC detectors. The southeast equipment hatch opening in the ceiling of RB-FZ-1D is protected by a water curtain suppression system at the ceiling. This system is an extension of the existing deluge system and utilizes open sprinkler heads providing a coverage of 3 gpm per linear ft. of water curtain. The ceiling opening at the northwest stairwell is protected by a spray nozzle at 80' elevation as well as at 55' elevation which is actuated by two detectors extended from existing system at 38' elevation as well as the existing system. (Protection of floor openings is detailed in RB-FZ-1E). The water spray systems are supplemented with hose stations and portable extinguishers. Hose stations are arranged such that both the water spray systems and the hose stations will not be taken out of service by a single fire main break.

5. Conclusions:

Because of the limited fire hazard ("low" combustible loading, and minimum potential ignition sources) in this zone, automatic detection, automatic suppression are considered adequate. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1E, 23' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-014, -015, -019, -020, -021.
Area = 12,140 ft.²

Construction:

- Floor:** Reinforced concrete with unprotected openings to the -19' elevation, RB-FZ-1F1 (i.e. stairway). The stairway to RB-FZ-1F4 is provided with an unrated enclosure. This enclosure is provided with a class B fire door. All penetrations in the enclosure are sealed to prevent the passage of smoke and hot gases across the enclosure in the event of a fire on either side of the enclosure.
- Walls:** Reinforced concrete with three hours fire resistive rating between RB-FZ-1E and Fire RB-FA-2 (Reactor Cavity) and between RB-FZ-1E and Fire OB-FZ-8A (MG Set Room). The reinforced concrete wall between RB-FZ-1E and Fire OB-FA-6 (480V Switchgear Room) is rated for at least 1 1/2-hour fire resistance (wall is considered as 3 hours but door is 1 1/2-hours).
- Ceiling:** Reinforced concrete supports with reinforced concrete slab with openings to the 51' elevation RB-FZ-1D and RB-FZ-1G. (For equipment hatch, duct, and stairway, see Fire Protection).
- Openings:** Opening to the drywell is protected by a steel hatch cover (closed during operation) of substantial construction but has not been tested for fire resistance (but is at least equivalent to a 3-hour fire rated door). Due to overriding nuclear considerations it is not a rated fire door. An opening is provided in the wall adjacent to OB-FZ-10B for post-accident sampling station exhaust (3 1/2-inches). The sample station is bolted to the wall inside OB-FZ-10B and backed by 2 to 4 inches of lead brick. While the enclosure is not fire rated, it is substantial in construction and does not degrade the fire barrier.

Reactor Bldg. 23' Elevation Entrance Door No. 11 (R-110) is a 1 1/2-hour fire rated, UL listed, Class B fire door. Door frame is not listed. TDR 717 identifies fire door No. 11 as functional with the following departures from NFPA 80: door-to-frame clearance at head and jambs excessive, non-UL gasketing materials. TDR 717 provides the following fire door evaluation for door No. 11:

Existing door frame bears no sign or stamp indicating it as a fire door frame. However, it is believed to be a fire door frame because it is listed on Burns & Roe 4521 "door schedule" as a Class B fire door and the Burns & Roe specification 2299-45 Section 8A states that fire doors and frames are to conform to the requirements of UL for the class of door furnished and installed in accordance with NFPA 80.

In lieu of the lack of an approval stamp on the frame, which may be covered by paint and the lack of purchasing documentation as additional proof, a comparative evaluation of design documents with UL-63 "Standard for Fire Door Frames" was performed with the following findings:

The frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along the jamb. The door stop is a 5/8" x 3" flat steel bar continuously welded on the channel all around. The base anchor consists of a 12 gage metal clip angle welded to the bottom of each jamb. These meet or exceed the comparable requirements set by UL for channel frames and therefore do not require replacement.

All the fire loading is located in the 480V Switchgear, OB-FA-6, which is physically separated from the entrance door into the Reactor Building by a 8" block wall which forms the hallway allowing access to Reactor Building, 480 Volt Switchgear Area, Turbine Building and to Hurricane shelter. The hallway contains one ionization smoke detector. 480 Volt Switchgear Area is covered by total flooding Halon suppression actuated by cross zoned ionization detectors. The majority of the loading in RB-FZ-1E is cable insulation which are covered by a deluge system actuated by ionization smoke detectors in the area. There is also physical separation of all combustibles from the reactor building entrance by the airlock enclosure and its second airlock door.

Clearance around the door is about 1/4" at some points exceeding the 1/8" maximum allowed around the head and jambs of the door. The door stops still overlap the door by about 3/8" at those points of excessive clearance. Present gasketing material around the frame will be replaced with gasketing material classified by UL for use on fire doors.

Based on low fire severity on either side of the fire barrier and configuration described above, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

No other openings exist to adjacent fire areas.

Ventilation:

See RB-FZ-1A

Drainage:

Floor drains terminate in Reactor Building Sump. Provisions exist to assure no flooding of corner rooms from water used for fire suppression will occur.

Lighting:

Emergency light unit ELU 762020 provides illumination for manual actions required at MCC 1B21B (Breakers for V-21-5 and V-21-13).

Emergency lighting unit nos. 10 and ELU762005 provide illumination for manual actions required at FI-225-002 and at valves V-15-30, V-15-237, V-11-44, V-11-49, and V-11-63. Emergency lighting unit fixture ELF 762027 provides illumination for manual actions for Valve V-21-13. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Control Rod Drive Hydraulic System
Containment Spray Heat Exchanger
Two Core Spray Booster Pumps
Motor Control Centers

3. Fire Loading:

The major fixed combustible is limited to cable insulation. Transient combustibles include health physics materials and minor amounts of paper and fire retardant wood. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Fixed fire detection is provided by ionization type POC detectors which alarm locally and in the Control Room. Primary fire suppression is provided by fixed automatic water spray systems protecting grouped electrical cable installations. These fire suppression systems are divided into two zones. The deluge valves are operated by cross-zoned POC detectors. The southeast equipment hatch opening in the ceiling of RB-FZ-1E is protected by a water curtain suppression system at the ceiling. This system is an extension of the existing deluge system and utilizes open sprinkler heads providing a coverage of 3 gpm per linear ft. of water curtain. The nearby duct penetration is provided with a water spray nozzle at 35' elevation. The ceiling opening at the northwest stairwell is protected by spray nozzles at 51' and 55' elevation which is actuated by two detectors extended from existing system at 38' elevation as well as the existing detection system. The water spray systems are supplemented with hose stations and portable extinguishers. Hose stations are arranged such that both the water spray systems and the hose stations will not be taken out of service by a single fire main break.

5. Conclusions:

Because of the limited fire hazard ("low" combustibile loading, and minimum potential ignition sources) in this zone, automatic detection and automatic suppression are considered adequate. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1F, -19' Elevation

1. Area Description (consists of four corner rooms) RB-FZ-1F1, 1F2, 1F3, 1F4 and 1F5.

Ref. Dwg. No. 3D-911-02-013, -019, -020, -021.

Area (RB-FZ-1F1) = 560 ft.² Area (RB-FZ-1F2) = 560 ft.²

Area (RB-FZ-1F3) = 560 ft.² Area (RB-FZ-1F4) = 560 ft.²

Area (RB-FZ-1F5) = 11,450 ft.²

Construction:

Floors: Reinforced concrete on grade

Walls: Reinforced concrete below grade on the north, east, and south sides, reinforced concrete greater than three hours fire resistance rating to RB-FA-2 (Drywell) and reinforced concrete wall with an unlabeled dual door air lock arrangement to Fire Zones TB-FZ-11B and TB-FZ-11F on the west side. This door arrangement consists of two unrated metal doors which are normally closed and locked. The doors are administratively controlled so both cannot be opened simultaneously.

Ceiling: Reinforced concrete slab with unprotected openings (i.e., stairways) to RB-FZ-1E and with protected hatches equivalent to 3 hours of fire resistance between RB-FZ-1F3 and OB-FA-6, and RB-FZ-1F2 and OB-FZ-8A. The stairway from RB-FZ-1F4 to RB-FZ-1E is protected by an unrated enclosure. This enclosure is provided with a class B fire door on elev. 23'6". All penetrations in the enclosure are sealed to prevent the passage of smoke and hot gases across the enclosure in the event of a fire on either side of the enclosure.

Openings: An 18 inch pipe penetrates the wall of RB-FZ-1F5 at elev. 21' into RB-FA-2. This pipe is the containment purge ventilation exhaust and is equipped with 2 normally closed butterfly valves on the outside of RB-FA-2. The penetration is sealed as it penetrates the fire barrier.

Since the drywell is inerted with nitrogen during normal plant operation, which does not support combustion, and due to overriding nuclear considerations, the configuration does not require the installation of automatic closing fire dampers in the 18 inch pipe.

TDR 717 identifies fire door No. 13 (T-114) as functional with the following departures from NFPA 80: non-UL labeled door, frame, hardware and gasket. TDR 717, provides the following fire door evaluation for door 13: Current fire loading in RB-FZ-1F3 is "low" - See Section 8.0. Current fire loading in TB-FZ-11B is "high" - See Section 8.0. However, the lube oil in this zone is approximately 80 feet from the door. Lube oil tanks and equipment are protected with thermally actuated deluge system and the lube oil bay general area is protected with a sprinkler system. An 8" block wall with a 1 1/2-hour rated door separates the lube oil bay area from the access hallway that leads to the entrance door of RB-FZ-1F3. The entrance door is an air lock configuration consisting of two doors in series.

Hallway and airlock are maintained free of combustibles and spread of a fire into RB-FZ-1F3 is not credible. Based on the above, door No. 13 is adequate to prevent the spread of a fire. Based on current fire area configuration of fire zones involved, the above justification remains valid.

RBEDT Southwest Corner Room Door No. 14 (T-113) is a non-UL listed fire door with frame not listed. TDR 717 identifies fire door No. 14 as functional with the following departures from NFPA 80: non-labeled fire door and frame. TDR 717 provides the following fire door evaluation for door No. 14:

Purpose of this evaluation is to justify continued use of the existing door assembly even though it does not meet NFPA 80 requirements to be labeled.

The current fire loading in corner room, RB-FZ-1F2, is "low" - See Section 8.0. The area is also provided with ionization detectors. There is also additional physical separation provided by the air lock configuration. Current fire loading in feedwater pump room, TB-FZ-11F, is "low" - See Section 8.0.

Based on the low fire severity on either side of the fire barrier and configuration described above, the existing door assembly is more than adequate to prevent the spread of a fire.

This agrees with the door and penetration analysis submitted to the NRC 8/1/78 which required no upgrading of this door. As approved in subsequent NRC Safety Evaluation Report. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Metal plate hatches in ceilings to MG Set Room (OB-FZ-8A) and 480V Switchgear Room (OB-FA-6) have been fire proofed with acceptable coatings providing three hours of fire resistance.

Hatches to the Torus are substantial steel and tightly latched and have not been tested for fire resistance (but are at least equivalent to a 3-hour door). Due to overriding nuclear considerations, it is not a rated fire door.

Ventilation:

See RB-FZ-1A

Drainage:

Floor drains from the corner rooms terminate in the Reactor Building Sump.

Lighting:

Emergency lighting unit no. 49 provides illumination for manual actions required at valve V-20-1 in RB-FZ-1F3. Emergency lighting unit ELF762019 provides illumination for manual actions required at valves V-20-2, V-20-4, V-20-33, and V-20-35 in RB-FZ-1F2. Emergency lighting units are also provided for access/egress.

2. Equipment:

Safe Shutdown Related:

Control Rod Drive Pumps
Two Core Spray Pumps in each of two corner rooms (RB-FZ-1F2 and 1F3) Two
Containment Spray Pumps in each of two corner rooms (RB-FZ-1F1 and 1F4)

Non-Safety Related:

Reactor Building Sump Pump RB-FZ-1F1
Reactor Building Equipment Drain Tank

3. Fire Loading:

The major fixed combustible is limited to molded fiberglass reinforced polyester and minor amounts of lube oil in the various pumps. Transient combustibles include health physics supplies. The fire loading is "low" for RB-FZ-1F, as reflected in Section 8.0.

4. Fire Protection:

Fixed fire detection is provided by ionization type POC detectors which alarm locally and in the Control Room. For manual fire suppression, portable fire extinguishers are provided with hose stations for backup.

5. Conclusions:

The low fire hazard is adequately protected by the detection system and the manual fire suppression equipment. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB-FZ-1G, Shutdown Cooling, 38' Elev. and 51' Elev.

1. Area Description

Ref. Dwg. No. 3D-911-02-015, -020, -021.
Area = 1,609 ft.²

Construction:

- Floor: Reinforced concrete on reinforced concrete supports and unprotected opening to RB-FZ-1E.
- Walls: Reinforced concrete with unprotected openings to RB-FZ-1D.
Reinforced concrete with no opening to RB-FA-2 (Drywell).
- Ceiling: Reinforced concrete with no openings adjacent to RB-FZ-1A and 1C.
- Openings: There are no openings to adjacent fire areas.

Ventilation:

See RB-FZ-1A

Drainage:

Drains terminate in the Reactor Building Sump.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

- Three shutdown cooling pumps
- Three shutdown cooling heat exchangers

Safety Related

None

Non-Safety Related

None

3. Fire Loading:

Combustible loading consist of cable insulation, miscellaneous health physics material and pump motors. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

POC detectors are installed and sound an alarm in the control room. Hose stations and portable extinguishers installed in RB-FZ-1D are available for use in this area.

5. Conclusions:

The low fire hazard is adequately protected by the detection system and manual fire suppression. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

RB FZ-1H, Trunnion Room, 23'-6" - Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-010, -014.
Area = 530 ft.².

Construction:

- Floor:** Reinforced concrete with small openings to the torus room (RB-FZ-1F5)
- Wall:** All walls are reinforced concrete. West wall adjacent to TB-FZ-11F is a three hour fire barrier. North wall adjacent to OB-FA-6, OB-FZ-10B and OB-FZ-8C is a three hour fire barrier. South wall adjacent to OB-FZ-8A and 8C is a three hour fire barrier. The east wall is adjacent to RB-FA-2 (Drywell).
- Ceiling:** Reinforced concrete providing at least a 3 hr. rated fire barrier.
- Openings:** Piping penetrations (Main Steam & feedwater) to the drywell (RB-FA-2), though not fire rated because of overriding nuclear concerns, are more than adequate to prevent the spread of flame and hot gases. Main steam and feedwater lines also penetrate the west wall to the turbine building (TB-FZ-11F). These penetrations are covered by a steel cover, sufficient to prevent the spread of hot gases and flames. Other wall penetrations have 3 hr. rated fire seals. The floor (constituting a zone boundary) contains 2 small openings which adjoin the Torus Room (RB-FZ-1F5).

Trunnion Room Entrance Door No. 25 (R-113) is a 3 hour fire rated, UL listed, Class A fire door with unlisted door frame. TDR 717 indicates fire door No. 25 is functional with the following departures from NFPA 80: excessive door-to-frame clearances, non-labeled door frame, use of non-UL classified gasketing material for use on fire doors. TDR 717 provides the following fire door evaluation for door No. 25:

Frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along jamb. Door stop is 5/8" x 3" plate steel bar continuously welded on the channel, all around. Base anchor is a 12 gage metal clip angle welded to the bottom of each jamb. These meet or exceed comparable requirements set by UL for channel frames and therefore do not require replacement.

Current fire loading in condenser bay area, TB-FZ-11E, is "low" - See Section 8.0. Condenser bay is protected by wet pipe sprinkler system. Current fire loading in trunnion room, RB-FZ-1H, is "low" - See Section 8.0.

Clearances around the door are about 1/4" to 3/8" at some points instead of the 1/8" maximum allowed. Door stop still overlaps the door by about 3/8" to 1/4" at those points of excessive clearance.

Based on low fire severity on both sides of the door and configuration described above, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. The implementing of the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Ventilation:

Cooling is provided by the two recirculating coolers, RF-1-6 and 7. Ventilation is provided by the reactor building ventilation via the small floor openings and a return air duct to the plant stack.

Drainage:

Floor drainage is provided. Excess water will flow through penetrations to the torus room.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe shutdown related:

Main Steam Isolation Valves (2)
Main Steam Isolation in Board Drain Valves

Safety Related:

Feedwater Check Valves

3. Fire Loading:

Fire loading consists of minimal cable and MSIV damping oil. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A hose station is provided in adjacent fire zone TB-FZ-11E in the heater bay area. In addition, portable extinguishers are provided in access to the condenser bay area for use in this zone.

5. Conclusions:

Combustible loading in this area is "low", and the impact of a fire based on this combustible loading would be minimal. The manual fire suppression available in adjacent fire zone TB-FZ-11E is adequate for fire fighting. For effects of a fire on safe shutdown capability within this fire zone, refer to Appendix R submittal Section 3.0.

RB-FA-2, Drywell and Torus

1. Area Description

Ref. Dwg. No. 3D-911-02-013, -014, -015, -016, -017, -018, -019, -020, -021.
Area = 2,782 ft.².

Construction:

- Floor: Reinforced concrete on grade.
- Walls: Reinforced concrete greater than 3 hours fire resistance rating with hatch covers to RB-FZ-1E. The torus is included as part of RB-FA-2 since it is open to the Drywell.
- Ceiling: Reinforced steel plate in place separating RB-FA-2 from RB-FZ-1A.
- Openings: No openings to adjacent fire areas exist during reactor operation. An 18 inch pipe penetrates the wall of this fire area at elev. 85' into RB-FZ-1C and at elev. 21' into RB-FZ-1F5. These pipes are the containment purge ventilation supply and exhaust, respectively. Each is equipped with 2 normally closed butterfly valves on the outside of RB-FA-2. The penetrations are sealed as they penetrate the fire barrier. Since the drywell is inerted with nitrogen during normal plant operation, which does not support combustion, and due to overriding nuclear considerations, the configuration does not require the installation or automatic closing fire dampers in the 18 inch pipes.

Ventilation:

During normal operations, the Drywell is isolated and inerted with nitrogen.

Drainage:

All drains terminate in the Reactor Building Sump.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment:

Safe Shutdown Related:

N/A

Safety Related:

N/A

Non-Safety Related:

N/A

3. Fire Loading:

See Fire Protection below.

Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

During operation the Drywell is inerted with nitrogen, preventing fire initiation. For periods when the Drywell is not inerted, hose stations are located outside the Drywell with sufficient hose to reach all combustibles in the drywell for manual fire fighting.

Fire extinguishers are also provided when Drywell is accessible. Containment temperature monitors and recirculation pump bearing and oil temperature monitors alarm in the Control Room.

5. Conclusions:

Manual fire fighting capability is adequate for the "low" fire hazard when the Drywell is not inerted.

**TB-FA-3A and 3B, 4160V Emergency Switchgear (1C & 1D) Vaults -
Turbine Building Mezzanine 23' Elevation**

1. Area Description

Ref. Dwg. No. 3D-911-02-003, -007, -009.

Area (TB-FA-3A) = 312 ft.² Area (TB-FA-3B) = 336 ft.²

Construction:

- Floors: Concrete with greater than 3-hour fire resistance rating.
- Walls: Metal lath on steel with fire resistant coating on the exterior of the walls provides a 3-hour resistance rating from fires originating in TB-FZ-11C except for the north side of the beam directly in front of the two 3-hour fire rated rollup door assemblies. This small portion of the beam has a 2-hour rating but the rest of the beam is coated adequately for a 3-hour rating. The interior walls of TB-FA-3A & 3B are not protected. The wall that separates TB-FA-3A & 3B is protected with a fire resistant coating that provides approximately a 2-hour rating. Engineering Evaluations 125-1 0017-01 & 0018-01 supported by Safety Evaluation SE-000911-008 performed a Structural Steel Survivability Analysis/Evaluation for both the "C" and "D" 4160V Switchgear Rooms. These documents concluded that a fire that originated within either room would be contained to that room for the required 3-hour duration due to the low combustible loading in the rooms. The evaluation also concluded that without the fire hazard provided by a potential oil fire in the vicinity of this beam, there are no other significant combustibles in the A and B Switchgear Area that would challenge the integrity of this portion of the beam with the reduced Pyrocrete thickness thus surviving for a 3-hour duration. No additional combustible loading can be added to either room without either re-evaluating the Structural Steel Survivability Analysis or putting compensatory measures into effect.
- Ceiling: Metal lath on steel with fire resistant coating providing a 3-hour fire resistance rating; (Note: fire resistant coating provided on outside surface of ceiling only).
- Openings: Access openings in walls are protected with 3-hour rated fire doors. These openings consist of one pedestrian door in the south wall of TB-FA-3B and one in the east wall of TB-FA-3A, one roll-up door in the south wall of each vault and one door in the barriers between the vaults.

Ventilation ducts are provided with 3-hour rated fire dampers. 4160V Switchgear East Entrance Door No. 15 is a 3 hour fire rated, UL listed, Class A fire door. Door frame is FM approved. TDR 717 identifies fire door No. 15 as functional with the following departures from NFPA 80: excessive door-to-frame clearance at latch side lower area, open screw holes in frame. TDR 717 provides the following fire door evaluation for door No. 15:

Current fire loading in 4160V Switchgear Vault, TB-FA-3A, is "low" - See Section 8.0. The area is covered by ionization smoke detectors and a manually actuated total flooding CO₂ suppression system protects the area. The current fire loading of the mezzanine level, Southwest corner, TB-FZ-11G, is "low" - See Section 8.0.

Clearance around the door is about 3/16" at the lower portion of the latch side which exceeds the 1/8" maximum allowed around the door. The door stops still overlap the door by about 3/16" at points of excessive clearance.

Based on the above configuration, fire loading, detection and protection, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

4160V Switchgear Door No. 16 (between vaults) is a 3 hour fire rated, UL listed, Class A fire door. Frame is FM approved. TDR 717 identifies fire door No. 16 as functional with the following departures from NFPA 80: excessive door-to-frame clearance on latch side. TDR 717 Rev. 0 provides the following fire door evaluation for door No. 16:

Current fire loading in 4160V Switchgear Vault, TB-FA-3A, is "Low" - See Section 8.0. Current fire loading in 4160V switchgear vault, TB-FA-3B, is "low" - See Section 8.0. Both vaults are covered by ionization smoke detectors, and manually actuated total flooding CO₂ suppression system protects both vaults. The clearance around the door is about 3/16" on the latch side, which exceeds the 1/8" maximum allowed around the door. The door stops still overlap the door by about 5/16" at the points of excessive clearance.

Based on the above configuration, fire loading, detection and protection, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Roll-up Fire Doors for 4160V Switchgear East and West Vaults
Doors No. 17 and 18 are 3 hour fire rated, UL listed, less than 120
sq. ft., Class A fire doors and frames.

4160V Switchgear South Door No. 19 is a 3 hour fire rated, UL listed,
Class A fire door. Door frame is FM approved. TDR 717 identifies
fire door No. 19 as functional with the following departures from
NFPA 80: non-UL approved door closer, and use of fire exit
hardware on a fire door not designated for use with fire exit. TDR
717 provides the following fire door evaluation for door No. 19:

Current fire loading in 4160V switchgear vault, TB-FA-3B, is "low" -
See Section 8.0. Vault is covered by ionization smoke detectors,
and manually actuated total flooding CO₂ suppression system.
Current fire loading in switchgear room, TB-FZ-11C, is "low" - See
Section 8.0. This area is covered by ionization smoke detectors
providing early warning for response by the fire brigade. There is a
hydrant just outside the roll-up door to the Truck Bay and portable
fire extinguishers in the area.

Based on the above detection and suppression provided, the
discrepancies will not adversely affect the fire doors' ability to prevent
the spread of a fire. Implementing the recommended modifications
will bring the door assembly as close to conformance to NFPA 80,
and will improve the fire door assembly over and above what was
evaluated as functional. Based on current fire area configuration of
fire zones involved, the above justification remains valid.

Ventilation:

Forced ventilation is provided by ceiling mounted fans. Operation of the POC
detectors will close all ventilation dampers to the vaults.

Drainage:

Floor drains in the area are capable of handling flow from hose streams required for
fire suppression.

Lighting:

Emergency lighting unit no. ELU762015 provides illumination for manual actions
required at 4160V switchgear 1C breakers CO and C5 in TB-FA-3A. Emergency
lighting unit nos. ELU762014 and LSP-1D provide illumination for manual actions at
LSP-1D, and 4160V switchgear 1D breakers D4, D6 and D9 in TB-FA-3B.
Emergency lighting units are also provided for access and egress.

2. Equipment Description:

Safe Shutdown Related:

4160V Switchgear 1C and 1D

Safety Related:

N/A

Non-Safety Related:

None

3. Fire Loading:

TB-FA-3A

Fire loading consists of minimal cable insulation, minimal plastics, and minimal amounts of hydrogen. The fire loading is "low", as reflected in Section 8.0.

Note that a cable tray cover was installed by modification OC-MD-H792-001 to eliminate the possibility of direct flame impingement on the structural steel in the immediate vicinity of the vertical cable tray, V29 (see SE-000911-008).

TB-FA-3B

Fire loading consists of cable insulation, minimal plastics, and minimal amounts of hydrogen. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A manual, total flooding CO₂ system supplied by a low pressure CO₂ tank protects both sets of switchgear. The system may be activated by an operator as necessary after receipt of an alarm in accordance with plant procedures. POC smoke detectors are installed at the ceiling of the vault and sound an alarm locally and in the Control Room.

5. Conclusions:

The exterior walls of TB-FA-3A/3B were evaluated by SE-000911-008 as being capable of surviving for a 3-hour duration from exposure fires in TB-FZ-11C. The interior walls were evaluated by SE-000911-008, 125-1 0017-01 & 0018-01 as being capable of surviving for a 3-hour duration from fires originating from within either room (TB-FA-3A/3B). However, no additional combustible loading can be added to either room (TB-FA-3A/3B) without either re-evaluating the Structural Steel Survivability Analysis or putting compensatory measures into effect. The manual CO₂ total flooding system provides adequate protection for fires originating in the switchgear equipment. For effects of a fire on safe shutdown capabilities within these fire areas refer to Appendix R submittal Section 3.0.

OB-FA-5, Control Room Complex, Elevs. 36', 46'-6", 63'-6", and 74'

This fire area consists of the following fire zones:

- OB-FZ-4, Cable Spread Room, Elev. 36'
- OB-FZ-5, Control Room, Elev. 46'-6"
- OB-FZ-22A, Upper Cable Spread Room, Elev. 63'-6"
- OB-FZ-22B, North Cable Bridge Tunnel, Elev. 74'
- OB-FZ-22C, South Cable Bridge Tunnel, Elev. 74'
- OB-FZ-22D, Mechanical Equipment Room, Elev. 74'

The fire area barriers consist of a 3-hour fire rated concrete floor (floor of OB-FZ-4), 3-hour fire rated concrete south and west walls and 2-hour fire rated north and east block walls from elevation 36' to elevation 46'-6" (walls of OB-FZ-4), 3-hour fire rated concrete north, east and west walls and 2-hour fire rated south wall from elevation 46'-6" to elevation 63'-6" (walls of OB-FZ-5) and 3 hour rated floor slab at elevation 46'-6" over TB-FZ-11B (floor of OB-FZ-5), 3-hour fire rated concrete west wall to the Turbine Building zone TB-FZ-11A and concrete north, east and south walls to the outside from elevation 63'-6" to elevation 74' (walls of OB-FZ-22A), concrete slab at elevation 74' partially communicating to the outside and partially to OB-FZ-22D above (ceiling of OB-FZ-22A and the Cable Bridge Tunnels), steel floor, walls and ceiling to the outside surrounding the North and South Cable Bridge Tunnels with 3-hour fire rated barrier at entry to the Reactor Building, prefabricated metal walls and ceiling to outside above elevation 74' (OB-FZ-22D).

All fire area barriers are either 2-hour or 3-hour fire rated with the exception of those boundaries to the outside. Since the exposure potential from outside locations is minimal, these non-rated portions of the fire area boundaries are adequate. This also includes the portion of the north wall of OB-FZ-5 which is an exterior wall.

Based on the combustible loadings in the zones of fire area OB-FA-5, the rated area barriers are adequate to contain a fire within this fire area. The fire area barriers are adequate to protect against damage from exposure fires in adjacent areas. The only adjacent area which contains a combustible loading which exceeds the hourly rating of a barrier for OB-FA-5 is TB-FZ-11B. However, the high combustible loading is due primarily to concentrations of turbine lube oil in tanks and oil handling equipment. Localized water suppression systems are provided within TB-FZ-11B to mitigate the exposure hazard to zone OB-FZ-4. Details are provided in the description of TB-FZ-11B. The mitigating features are considered adequate compensating features to support the integrity of the rated fire barrier.

Alternate shutdown capability has been provided independent of, and outside fire area OB-FA-5. Therefore, the boundaries between fire zones within the fire area are considered non-fire rated without adversely impacting the ability of the plant to achieve safe shutdown in the event of a fire in OB-FA-5.

The concrete ceiling slab of OB-FZ-5 (common slab to OB-FZ-22A) and the concrete floor slab of OB-FZ-5 (common slab to OB-FZ-4), although not required to be fire rated barriers, provide a substantial deterrent to fire conflagration within the fire area. These zone boundaries are provided with penetration seals and duct dampers to minimize the potential for smoke or water intrusion into the control room (OB-FZ-5) in the event of a fire or inadvertent actuation of a water type fire suppression system. Conduits which penetrate the control room (OB-FZ-5) are sealed internally to preclude smoke and water intrusion. These advantageous features, although not required to achieve safe shutdown in the event of a fire, are administratively controlled to minimize the effects of a fire.

The construction of the Control Room Complex will effectively reduce the spread of fire within fire area OB-FA-5 and allows the division of the fire area into fire zones. An analysis of the fire hazards within each zone follows.

OB-FZ-4, Cable Spread Room 36' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-004, -008.
Area = 2,543 ft.²

Construction:

- Floor:** Concrete with 3-hour fire resistance rating.
- Walls:** South and west walls are concrete with a 3-hour fire resistance rating. North wall is block construction with two-hour fire resistance rating with 1 1/2-hour rated door to corridor (TB-FZ-11B). East wall is block construction with 2-hour fire resistance rating.
- Ceiling:** Concrete non-fire rated zone boundary.
- Openings:** A hollow block ventilation shaft, open at both ends, communicates from this fire zone to OB-FZ-22A via the control room. Isolation of the shaft way in the control room is detailed in OB-FZ-5. Ducts within the shaftway are not provided with fire dampers.

Cable Spreading Room Entrance Door No. 9 (T-302) is a 3 hour fire rated, UL listed, Class A fire door. Door frame is not listed. TDR 717 identifies fire door No. 9 as functional with the following departures from NFPA 80: door through bolts for door closer and security hardware, excessive door-to-frame clearances at hinge side of active door, non-labeled door frame, and portions of frame missing where hinge was once located. TDR 717 provides the following fire door evaluation for door No. 9:

The exiting door frame bears no sign or stamp indicating it as a fire door frame. However, it is believed to be a fire door frame because it is listed on Burns & Roe drawing 4521 "door schedule" as a Class B fire door and Burns & Roe specification 2299-45 Section 8A states that fire doors and frames are to conform to the requirements of UL for the class of door furnished and installed in accordance with NFPA 80. There are other door frames on site which have no label but have pressed into the steel frame, the FM approval stamp. With one coat of paint this FM approval stamp would no longer be visible. This could explain why design drawings designate this door as a fire door and no approval label appears on the frame.

The current fire loading in turbine lube oil bay area, TB-FZ-11B, is "high" - See Section 8.0. This fire loading is due primarily to the turbine lube oil. The lube oil tanks are on elevation 0'-0" and the door is on elevation 36'-0". The fire door leads to a hallway which is part of TB-FZ-11B. At the west end of the hallway is a door which goes into the lube oil bay area on elevation 27'-0" and is still within TB-FZ-11B, however, it is listed as a Class B fire door and will afford separation from the lube oil bay area. Directly ahead of the cable spreading room door is an open staircase to elevation 0'-0" and 23'-0" (still part of TB-FZ-11B). However, this portion of TB-FZ-11B is separated from the lube oil tank area by a 8" block wall, and the door on this wall on elevation 0'-0", although not required to be rated, is a Class B fire door and does afford separation from the lube oil tank area. In addition, a wet pipe sprinkler system is provided in the lube oil tank area for general area coverage. A deluge system actuated by thermal detectors are provided to cover the turbine lube oil tanks and oil handling equipment. A hose station is also available.

The current fire loading in cable spreading room, OB-FZ-4, is "low" - See Section 8.0. The cable spreading room is protected by a deluge system actuated by cross zoned ionization smoke detectors.

The clearance around the door is about 3/16" at some points instead of the 1/8" maximum allowed around the hinge jamb of the active door. The door stops still overlap the door by about 7/16" at those points of excessive clearance.

Based on the configuration described above, for the fire areas and the door, and the extent of the fire protection provided, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommendations will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

The non-fire rated ceiling (control room floor) is sealed and administratively controlled to minimize smoke and water intrusion into the control room.

Ventilation:

Forced ventilation is provided from the common HVAC system supply for both the Cable Spread Room (OB-FZ-4), and Control Room (OB-FZ-5). The ventilation system is interconnected with the Control Room Halon system to shutdown upon activation of detectors. Additionally, smoke detectors are provided in the air supply ducts to each supply fan and the B ventilation system also has a detector in the return duct. Upon actuation the detector shuts the fan off which in turn causes the associated isolation dampers to close. The control room operator has available the means to manually initiate a once through ventilation mode for smoke removal.

Drainage

A fixed system is installed to drain fire protection water to the Turbine Building Sump.

Lighting:

Emergency lighting unit ELU762041 provides illumination for manual actions required at transfer switch PS-1. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Control Cables
Power Cables

Safety Related:

Reactor Protection System MG Sets (2)
Batteries

Non-Safety Related:

Rod Worth Minimizer Controls

3. Fire Loading:

Major combustible loading is cable insulation. Minor combustibles are plastic battery cases and lube oil. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Fixed fire suppression for cable trays is provided by an open head water spray system actuated by a cross zoned smoke detection system. However, the heads above the RWM and CRD cabinets are closed sprinkler heads to prevent damage to this equipment during spurious actuations. POC detectors are installed at the ceiling. The first detector sends an alarm to the local control module and to the control room. Also, this first detector will cause the "A" control room ventilation system to trip if running. The second detector on the separate zone activates fire water spray system. The water spray system is designed to limit a fire in the cables to the tray of origin. A maronite board obstructs a spray nozzle impingement on a portion of a single cable tray. The automatic suppression system is backed up for manual fire fighting by a fire hose station located immediately outside the Cable Spread Room. CO₂ portable extinguishers are also provided. The hose station supplied is such that a single fire main break will not affect both the water spray systems and the hose station simultaneously.

5. Conclusions:

With early detection and a water spray system over the cable trays, protection is adequate to control a fire within the cable tray or to protect the cables from an exposure fire. The fire hose station and extinguishers provide adequate manual fire fighting support for the automatic system. Large volumes of fire suppression water will be adequately handled by the drainage system. An alternative shutdown system independent of fire area OB-FA-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FZ-5, Control Room 46'-6" Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-006, -008
Area = 2,764 ft.²

Construction:

- Floor:** Concrete non-fire rated zone boundary where adjacent to OB-FZ-4 and concrete 3 hour rated fire barrier where adjacent to TB-FZ-11B.
- Walls:** North, east, and west walls are concrete with three-hour fire resistance rating with protected openings. The south wall has a fire resistive rating of 2 hours with protected openings. A portion of the north wall is a non-fire rated exterior wall.
- Ceiling:** Concrete non-fire rated zone boundary.
- Openings:** Substantial blast resistant doors at entrances and exits are provided.

Control Room Main Access Door No. 1 (0-317) is a 3 hour fire rated, UL listed and labeled (UL 10B), Class A and bullet resistive (UL 752) fire door and frame.

Control Room South Wall Egress Door No. 2 (0-322) is a 3 hour fire rated, UL listed and labeled (UL10B), Class A and bullet resistive (UL752) fire door and frame. TDR 717 identifies door No. 2 as functional with the following departure from NFPA 80: excessive gaps between doors and frames. TDR 717, provides the following fire door evaluation for door No. 2:

Current fire loading in the control room, OB-FZ-5, is "low" - See Section 8.0. Control room is covered by ionization smoke detectors and majority of the panels protected by an automatic halon suppression system (local application). The control room is occupied 24 hours a day with portable extinguishers located throughout the area and a manual hose station just outside the control room entrance. The current fire loading in the Mux. Room area, OB-FA-9, is "low" - See Section 8.0. Ionization smoke detectors are located in this area. The closest hose station is near the control room entrance.

The clearance around the door is about 1/4" at some points instead of 1/8" maximum allowed around the head and jamb. The door stops still overlap the door by about 3/8" at points of excessive clearance.

Based on low fire severity on either side of this fire barrier and adequacy of the fire protection provided, non-conformance to the clearance requirements around the fire door will not adversely affect the fire doors' ability to prevent the spread of a fire. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Control Room East Wall Equipment Operator Lunch Room/Office Door No. 3 (0-323) is a 3 hour fire rated, UL listed and labeled (UL10B), Class A and bullet resistive (UL752) fire door and frame.

The non-fire rated ceiling and floor is sealed and administratively controlled to minimize smoke and water intrusion into the control room.

Ducts which penetrate the non-fire rated ceiling are provided with dampers to minimize smoke intrusion into the control room. The dampers are administratively controlled.

A hollow block ventilation shaft traverses the control room and is open at the non-fire rated floor and ceiling, creating a shaftway from OB-FZ-4 to OB-FZ-22A. A penetration in this shaftway into the control room provides a return air register. The register is equipped with a damper and a back-draft damper. The back draft damper allows air flow out of the control room only.

Upon shutoff of the ventilation supply fan, this damper will close to prevent the intrusion of smoke into the control room. The dampers are administratively controlled.

Ventilation:

Forced ventilation is provided from the common HVAC system supply for both the cable spread room (OB-FZ-4) and the control room (OB-FZ-5). The ventilation system is interconnected with the control room Halon system to shutdown upon activation of detectors. Additionally, smoke detectors are provided in the air supply ducts to each supply fan and the "B" ventilation system also has a detector in the return duct. Upon actuation the detector shuts the fan off which in turn causes the associated isolation dampers to close. The control room operator has available the means to manually initiate a once through ventilation mode for smoke removal.

Drainage:

No floor drains are provided.

Lighting:

Emergency lighting is provided.

2. Equipment:

Safe Shutdown Related:

Cables
Control Cabinets

Safety Related:

Cables
Control Cabinets

Non-Safety Related:

Kitchen Equipment
Office Equipment

3. Fire Loading:

Major fire loading is from cable insulation, office supplies, and floor coverings. The fire loading is "low", as reflected in Section 8.0.

Cable trays are installed above the suspended ceiling.

4. Fire Protection:

POC detection is installed in safety related cabinets. Local application Halon 1301 extinguishing systems are installed in the following cabinets:

System 1. Cabinets 1F-4F and 1R-6R
System 2. Cabinets 5F-9F and 7R-11R
System 3. Cabinets 10F and 11F

These halon systems are automatically actuated by cross zoned POC detectors. Each halon extinguishing system is provided with a 100% reserve capacity. Manual fire fighting capability is provided by a fire hose station in the corridor and portable fire extinguishers within the control room.

Products of combustion type detectors are located above the suspended ceiling of the control room which actuate an alarm signal only. These detectors provide early warning of a fire in the cable trays located above the suspended ceiling.

The detection system complies with the requirements of NFPA 72E and provides fire detection for a major combustible in the Control Room - the electrical cable trays in the hung ceiling space. Pre-fire plans have been established to effectively use manual fire fighting strategies upon indication of a tray fire.

5. Conclusions:

Fire protection systems provided are adequate to control/limit a fire within the protected control cabinets to one control cabinet. Early detection in the Control Room will allow effective manual fire fighting efforts to extinguish a fire in the general areas with minimal damage. Administratively controlled fire zone boundaries minimize the potential for smoke or water intrusion into the control room. The "low" combustibile loading of OB-FZ-5, constant attendance, and the limited sources of ignition present above the suspended ceiling make the notification of fire and manual suppression activities adequate for the presence of electrical cable in trays above the suspended ceiling.

An alternative shutdown system independent of fire area OB-FA-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FZ-22A Upper Cable Spread Room 63'-6" Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-008
Area = 3,435 ft.²

Construction:

- Floor:** Reinforced concrete non-fire rated zone boundary.
- Walls:** Reinforced concrete non-fire rated zone boundary to the outside on the north, east and south walls, and a concrete three hour fire rated west barrier to the Turbine Building (TB-FZ-11A). The vestibule on the south wall is constructed of steel Q-decking with pyrocrete 102 fire proofing, providing a 2-hr fire rating with 1 1/2 hour rated door. Note that fireproofing of the Q deck is only provided on the OB-FZ-22A side of the wall. The wall is considered rated at 2 hours as clarified here. Safety Evaluation 000911-006 provides the details for justifying this configuration.
- Roof:** Reinforced concrete non-fire rated zone boundary to the outside, to OB-FZ-22D, and to OB-FZ-22B and C.
- Openings:** A hollow block ventilation shaft, open at both ends, communicates from this fire zone to OB-FZ-4 via the control room. Isolation of the shaftway in the control room is detailed in OB-FZ-5. Ducts within the shaftway are not provided with fire dampers.

The non-fire rated floor (control room ceiling) is sealed and administratively controlled to minimize smoke and water intrusion into the control room. New Cable Spreading Room Door No. 23 is a 1 1/2 hour fire rated, UL listed, Class B door with UL listed door frame. TDR 717 identifies fire door No. 23 as functional with the following departures from NFPA 80: open hole in soffit for dead bolt, and frame does not contact floor and thus no floor anchors exist. TDR 717 provides the following fire door evaluation for door No. 23:

Current fire loading in new cable spreading room, OB-FZ-22A, is "low" - See Section 8.0. This area is also protected by wet pipe sprinkler system and covered by ionization smoke detectors.

Current fire loading in the adjacent area, Mux Area OB-FA-9, is "low" - See Section 8.0. This area is covered by ionization smoke detectors. Physical configuration consists of a vestibule and a stairwell which are maintained free of combustibles and provide a buffered area where fire propagation is not credible.

Based on low fire severity on both sides of fire door assembly, and protection and detection provided, at the present time this door with its discrepancies is more than adequate to prevent the spread of a fire, and is considered functional. Therefore, a fire watch is not required. However, it is recommended that the recommended modifications including the fire door frame replacement should be implemented before the addition of cables in the new cable spreading room increases fire loading to a point where the existing door assembly is considered unable to prevent the spread of a fire. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Ducts which penetrate the non-fire rated floor (control room ceiling) are provided with dampers to minimize smoke intrusion into the control room. The dampers are administratively controlled.

The non-fire rated ceiling communicates to OB-FZ-22B, C and D. Penetration seals are not required for the communication. However, in order to minimize conflagration and resulting property damage in the event of a fire, all penetrations to the Cable Bridge Tunnels (OB-FZ-22B and C) are sealed with a 3 hour rated seal. Empty conduits are sealed with a steel plug. These penetration seals are administratively controlled.

Ventilation:

No ventilation needed.

Drainage:

A fixed system is installed to drain fire protection water to the Turbine Building Sump and to the storm drain system.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

Cables

Safety Related:

Cables

Non-Safety Related:

Cables

3. Fire Loading:

The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Ionization detectors are provided for early warning of a fire. A closed head wet pipe automatic sprinkler system is also provided. A hose station by the entrance to the room and portable fire extinguishers in the room are provided.

5. Conclusions:

With early detection and a sprinkler system in this fire zone, protection is adequate to control a fire in the zone or to protect against an exposure fire. The fire hose station and extinguishers provide adequate manual fire fighting support for the automatic system. An alternative shutdown system independent of fire area OB-FA-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FZ-22B North Cable Bridge Tunnel

1. Area Description

Ref. Dwg. No. 3D-911-02, -008, -009, -016, -020.
Area = 1,084 ft.²

Construction:

Floor: Armored steel

Walls: Armored steel

Roof: Armored steel

Openings: All penetrations to the reactor building are sealed to provide a three hour fire barrier. Although not required, all penetrations to the Upper Cable Spread Room (OB-FZ-22A) are sealed with a steel plug if empty, or sealed with a 3 hour fire rated seal if containing a cable to minimize conflagration and resulting property damage in the event of a fire. These penetration seals are administratively controlled. The cable bridge tunnel is open to the outdoors at various places.

Ventilation:

None (open to outdoors)

Drainage:

2" holes in floor, drain freely to office and turbine building roofs.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description:

Safe-shutdown related:

Cables

Safety-related:

Cables

Non-safety-related:

Cables

3. Fire Loading:

Present combustible loading consists only of cable in trays. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Linear heat detector wire (Protectowire) is installed in each tray on top of the cables to provide warning of a fire. This application of the Protectowire in close proximity to the hazard (i.e. cables) will provide rapid response. A closed-head manually actuated Preaction sprinkler system and hose station are provided.

5. Conclusions:

With Protectowire detection and a manually actuated Preaction sprinkler system in this fire zone, protection is adequate to control a fire in the zone or protect against an exposure fire. An alternative shutdown system independent of fire area OB-FA-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FZ-22C South Cable Bridge Tunnel

1. Area Description

Ref. Dwg. No. 3D-911-02, -009, -016, -020
Area = 1,084 ft.²

Construction:

Floor: Armored steel

Walls: Armored steel

Roof: Armored steel

Openings: All penetrations to the reactor building are sealed to provide a three hour fire barrier. Although not required, all penetrations to the Upper Cable Spread (OB-FZ-22A) are sealed with a steel plug if empty, or sealed with a 3-hour fire rated seal if containing a cable to minimize conflagration and resulting property damage in the event of a fire. These penetration seals are administratively controlled. The cable bridge tunnel is open to the outdoors at various places.

Ventilation:

None (open to outdoors)

Drainage:

2" holes in floor, drain freely to office and turbine building roofs.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description:

Safe-shutdown related:

Cables

Safety-related:

Cables

Non-safety-related:

Cables

3. Fire Loading:

Present combustible loading consists only of cable in trays. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Linear heat detector wire (Protectowire) is installed in each tray on top of the cables to provide warning of a fire. This application of the Protectowire in close proximity to the hazard (i.e. cables) will provide rapid response. A closed-head manually actuated preaction sprinkler system and hose station are provided.

5. Conclusions:

With early detection and a manually actuated preaction sprinkler system in the fire zone, protection is adequate to control a fire in the zone or protect against an exposure fire. An alternative shutdown system independent of fire area OB-FA-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FZ-22D, Mechanical Equipment Room 74' Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02, -008, -009
Area = 173 ft.²

Construction:

Floor: Concrete non-fire rated zone boundary
Walls: Metal, to outside
Ceiling: Metal, to outside
Openings: Unprotected openings

Ventilation:

Natural ventilation

Drainage:

Holes in floor

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown related:

Cabling
Control Cabinets

Safety Related:

None

Non-safety related:

Office Building ventilation system chillers.

3. Fire Loading:

The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Fire hose stations are available at the Cable Bridge Tunnels (OB-FZ-22B and C) and at the vestibule of the Upper Cable Spread Room (OB-FZ-22A). Portable fire extinguishers are also available in these fire zones.

5. Conclusions:

The available manual fire fighting equipment provides adequate protection for this roof mounted metal building of inconsequential combustible loading. An alternative shutdown system independent of fire area OB-FZ-5 has been provided to meet the requirements of 10CFR50 Appendix R, Section III.G.3.

OB-FA-6, 480V Switchgear Room, Elevation 23'-6"

This fire area consists of two fire zones: OB-FZ-6A ("A" 480V Switchgear Room) on the south and OB-FZ-6B ("B" 480V Switchgear Room and Corridor) on the north. Details of the area description, equipment, fire loading and fire protection are provided for each zone.

The two zones in fire area OB-FA-6 are separated by a one hour fire rated wall partially constructed of hollow concrete block and partially constructed of gypsum board on metal stud framing. A Class B fire rated door is provided in the wall. Wall penetrations are sealed with silicone foam to provide one hour fire rated penetration seals.

HVAC ductwork and electrical cables in OB-FZ-6B, required for safe shutdown utilizing the "A" Switchgear, are protected by one hour fire rated barriers as they traverse OB-FZ-6B.

Based on the "high" combustible loading in fire zone OB-FZ-6A and the "moderate" combustible loading in fire zone OB-FZ-6B, the total fire load in fire area OB-FA-6 is "moderate". Detailed loadings are provided for each fire zone in Section 8.0.

Each fire zone is protected by products of combustion detectors through- out. Each fire zone is protected by an automatic, total flooding Halon 1301 suppression system throughout, except the corridor space of OB-FZ-6B as detailed in the zonal descriptions.

Conclusion

Based on the "moderate" fire loading in OB-FA-6, the fire area boundaries are adequate to contain a fire within this fire area. Fire area boundaries are adequate to protect against damage from exposure fires in adjacent areas.

The separation of redundant trains of equipment, cables and associated circuits in Fire Area OB-FA-6 with one hour fire rated barriers, and the provision of fire detectors and automatic suppression systems is adequate to meet the requirements of Appendix R to 10CFR50, Section III-G.2.C. An analysis of the fire hazards within each zone follows.

Fire Zone OB-FZ-6A, "A" 480V Switchgear Room - 23'-6" Elevation

1. Zone Description

Ref. Dwg. No. 3D-911-02, -014, -020
Area = 1,157 ft.²

Construction:

- Floor: Concrete with three-hour fire resistance rating.
- Walls: South, East and West walls - concrete with three-hour fire resistance rating with protected openings to Fire Zones RB-FZ-1E, RB-FZ-1H and Fire Area TB-FA-11. North wall - one hour fire resistance rating with protected openings to OB-FZ-6B.
- Ceiling: Concrete with three hour fire resistance rating.
- Openings: Penetrations to the Reactor Building and Turbine Building are sealed with three hour rated penetration seals.

Ventilation system ductwork for this zone passes through the north wall into OB-FZ-6B and then into fire zone TB-FZ-11B. The ductwork inside OB-FZ-6B is provided with a one (1) hour fire barrier. Three (3) hour fire dampers are provided at the fire wall bounding TB-FZ-11B. Each duct penetration contains two (2) fire dampers in parallel to insure ventilation system air flow if a single fusible link suffers a mechanical failure. Each damper section is provided with a limit switch to provide a remote alarm upon damper closure.

NOTE: Justification for eliminating the need for the aforementioned one hour ductwork fire barriers is documented in 50.59 Review SE-403042-002. As a result, these barriers are no longer required and are abandoned in place. Also, NO fire dampers are provided in the ductwork that penetrates the one hour barrier separating Fire Zone OB-FZ-6A & 6B. Justification is in the aforementioned 50.59 Review.

Ventilation:

Normal ventilation is provided by a supply fan and exhaust fan located on a HVAC platform outside the north wall of the Turbine Building. Alternate ventilation is provided by operation of an exhaust fan and intake damper located on the HVAC platform. Both ventilation systems share common ductwork. The alternate system initiates automatically upon receipt of a loss of normal ventilation signal. The Halon 1301 system automatic ventilation shutdown feature can be overridden by a key accessed disable switch in the Halon system control panel which allows manual restart of ventilation for smoke removal.

Drainage:

None

Lighting:

Emergency Lighting Unit Nos. 1 and LSP-1A2 provide illumination for manual actions required at USS1A2 breakers 036B and 036C, and at LSP-1A2. Emergency lighting unit No. 1 provides illumination for manual actions required at MCC1A21 (Breaker for V-20-21). In addition, emergency lighting units are provided for access/egress.

2. Equipment Description:
Safe Shutdown Related:

Cables
480V Switchgear USS 1A2

Safety Related

480V Switchgear USS 1A2
Motor Control Centers
One 480V Transformer ("less flammable fluid" cooled and curbed)
DC Power Distribution Panel (from C Battery Room)

Non-Safety Related:

Cables

3. Fire Loading:

The significant combustible loading is from transformer oil and cable insulation. There are also minor amounts of oil (for circuit breakers) and ordinary combustibles (paper and plastic). A transient combustible load is assumed to be present in the overall fire loading for this zone. The fire loading is "high", as reflected in Section 8.0.

4. Fire Protection:

A fixed, total flooding, automatic Halon 1301 extinguishing system is installed throughout the zone. The system has reserve capacity for a full second discharge. A cross-zoned detection system consisting of ionization and photoelectric detectors is installed which sounds an alarm locally and in the Control Room upon operation of one detector in either detection zone. Detectors actuate the Halon system and shut down ventilation fans and close ventilation system isolation dampers upon activation of a detector in the second zone. The system is controlled by a local panel in the corridor of OB-FZ-6B which provides for manual actuation, momentary contact abort and a number of other supervisory and alarm functions. Remote alarms to the Control Room indicate fire condition, Halon discharge and local panel trouble. Portable fire extinguishers are provided in adjacent areas for manual fire fighting. Hose lines are available from the Turbine Building and outside fire hydrants and hose houses.

**Fire Zone OB-FZ-6B, "B" 480V Switchgear Room, Including Outside Corridor -
23' - 6" Elevation**

1. Zone Description

Ref. Dwg. No. 3D-911-02, -014
Area = 679 ft.²

Construction:

Floor: Concrete with three-hour fire resistance rating with protected opening (fire proofed equipment hatch to the corner room, Fire Zone RB-FZ-1F3) in corridor.

Walls: North, East and West walls - concrete with three-hour fire resistance rating with protected openings to Fire Zone RB-FZ-1E and Fire Area TB-FA-11. South wall has one-hour fire resistance rating with protected openings to OB-FZ-6A. The reinforced concrete wall between Fire Zone OB-FZ-6B corridor and RB-FZ-1E has a 1 1/2 hour fire rated door and an unrated metal door in series (an air lock) which are administratively controlled so that both cannot be opened at the same time. The opening from the corridor to the Turbine Building is through an enclosed stairway with 1 1/2 hour rated fire doors. The door between the corridor and the Turbine Building stairway is normally held open. Actuation of a fire detector on either side of the door will cause the door to close.

Ceiling: Concrete with three-hour fire resistance rating.

Openings: The former door in the north wall has been replaced with a reinforced concrete wall and roof entry equipped with a Class A, 3 hour fire rated, automatic closing roll-up steel fire door to maintain the fire rating of the North Wall. Concrete is approximately 18 inches thick. The fire door is UL listed and fusible link actuated. The hallway between the "B" 480V Switchgear room and the north wall of OB-FZ-6B provides additional spacial separation due to the negligible combustible loading. The hallway is provided with smoke detectors. The steel hatch to the corner room has been provided with a sprayed-on fire resistant material (corner room side only) to provide a three-hour fire resistance rating. Penetrations to the Reactor Building and Turbine Building are sealed with three-hour rated penetration seals.

480V Switchgear Room West Wall Door No. 10 (T-207) is a 1 1/2 hour fire rated, UL listed, Class B fire door. Door frame is not listed. TDR 717 identifies fire door No. 10 as functional with the following departures from NFPA 80: door UL label has been removed, excessive door-to-frame clearance at head and jamb, excessive clearance at bottom of door, through bolt in door for magnetic release, non-labeled door frame. TDR 717 provides the following fire door evaluation for door No. 10:

The existing door frame bears no sign or stamp indicating it as a fire door frame. However, it is believed to be a fire door frame because it is listed on Burns & Roe drawing 4521 "door schedule" as a Class B fire door and Burns & Roe specification 2299-45 Section 8A states that fire doors and frames are to conform to the requirements of UL for the class of door furnished and installed in accordance with NFPA 80.

In lieu of the lack of an approval stamp on the frame which may be covered by paint and the lack of purchasing documentation as additional proof, a comparative evaluation of design documents with UL-63 "Standard for Fire Door Frames" was performed with the following findings. The frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along the jamb. Door stop is 3/4" x 1" flat steel bar continuously welded onto the channel all around. The base anchor consists of a 12 gage metal clip angle welded to bottom of each jamb. These meet or exceed comparable requirements set by UL for channel frames and does not require replacement.

Current fire loading in the 480V SWGR Room, OB-FZ-6B, is "moderate" - See Section 8.0. All fire loading is located in the 480 Volt Switchgear area which is physically separated from the west entrance door into OB-FA-6 by a 8" block wall which forms the hallway allowing access to the Turbine Bldg., 480 Volt Switchgear Area, Reactor Bldg. and Hurricane shelter. The hallway contains one ionization smoke detector which releases this door. The 480 Volt Switchgear area is covered by a total flooding Halon suppression system actuated by cross zoned ionization detectors.

Current fire loading in Turbine lube oil bay, TB-FZ-11B, is "high" - See Section 8.0. This fire loading is due primarily to the turbine lube oil. The oil tanks are on 0'-0" elevation and the door opens to a staircase which is part of TB-FZ-11B, however this portion of TB-FZ-11B is separated from the lube oil tank area by a 8" block wall and the door on this wall on elevation 0'-0", although not required to be rated, is a Class B fire door and does afford separation from lube oil tank area. In addition, a wet pipe sprinkler system is provided in the lube oil tank area on 0'-0" elevation for general area coverage. A deluge system actuated by thermal detectors is provided to cover the Turbine lube oil tanks and oil handling equipment. Hose stations are available.

The clearance around the door is to be about 1/4" at some points instead of 1/8" maximum allowed around the head and hinge jamb of the door. The door stops are 3/4" instead of the standard 5/8" therefore the door stop overlaps the door by about 1/2" which is the same amount of overlaps provided on a standard 5/8" door stop with the proper 1/8" door and frame clearance.

Based on the configuration described above for the fire areas, the door, and the extent of fire protection provided, these deviations will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Refer to Fire Hazards Analysis of RB-FZ-1E for Reactor Bldg. 23' Elev. Entrance Door No. 11 (R-110).

Three-hour fire resistance rated fire dampers are provided in ventilation system openings in the north wall.

Barriers: One (1) hour fire barriers are provided on Fire Zone OB-FZ-6A HVAC ductwork, and conduits which are located in OB-FZ-6B, and are required for safe shutdown of the plant for a fire in this fire zone. NOTE: Justification for eliminating the need for the aforementioned one hour ductwork fire barriers is documented in 50.59 Review SE-403042-002. As a result, these barriers are no longer required and are abandoned in place.

Ventilation:

Normal ventilation is provided by a supply fan and exhaust fan mounted on the roof of the Office Building. The Halon 1301 system automatic ventilation shutdown feature can be overridden by a key accessed disable switch in the Halon system control panel which allows manual restart of ventilation for smoke removal. NOTE: A bypass switch was installed on Panel 11R to isolate and bypass the Halon interlock if there was a fire in OB-FZ-6B corridor.

Drainage:

None

Lighting:

NOTE: Justification for eliminating the need for the aforementioned one hour ductwork fire barriers is documented in 50.59 Review SE-403042-002. As a result, these barriers are no longer required and are abandoned in place.

Emergency lighting unit nos. 2, ELF762014, ELU762043 and RSP provide illumination for manual actions required at RSP, USS1B2 breakers 046B and 046C, and fuel zone level panel. Emergency lighting unit no. 2 and ELF762029 provides illumination for manual actions required at MCC1B21. Emergency lighting units are also provided for access/egress.

2. Equipment Description:

Safe Shutdown Related:

Cables
480V Switchgear USS 1B2

Safety Related

480V Switchgear USS 1B2
Motor Control Centers
One 480V Transformer ("less flammable fluid" cooled and curbed)
DC Power Distribution Panel (from C Battery Room)

Non-Safety Related:

Cables

3. Fire Loading:

The significant combustible loading is from transformer oil and cable insulation. There are also minor amounts of oil (from circuit breakers) and ordinary combustibles (paper and plastic). A transient combustible load is assumed in the overall fire loading for this zone. The fire loading is "moderate", as reflected in Section 8.0.

4. Fire Protection:

A fixed, total flooding, automatic Halon 1301 extinguishing system is installed in the "B" 480V Switchgear Room only. The system has reserve capacity for a full second discharge. A cross zoned detection system consisting of ionization and photoelectric detectors is installed which sounds an alarm locally and in the Control Room upon operation of one detector in either detection zone. Detectors actuate the Halon system and shut down ventilation fans and close ventilation system isolation dampers upon activation of a detector in the second zone. The system is controlled by a local panel in the corridor which provides for manual actuation, momentary contact abort and a number of other supervisory and alarm functions. Remote alarms to the Control Room indicate fire condition, Halon discharge and local panel trouble. Portable fire extinguishers are provided for manual fire fighting. Hose lines are available from the Turbine Building and outside fire hydrants and hose houses.

The corridor is provided with products of combustion detectors which sound an alarm locally and in the Control Room. Automatic suppression is not provided in the corridor due to the negligible combustible loading and the separation provided between the corridor and OB-FZ-6A by the "B" 480V Switchgear Room with Halon 1301 protection throughout.

The wall between the corridor and the "B" 480V Switchgear Room within OB-FZ-6B is sealed and administratively controlled to contain the Halon concentration, although the wall is not a rated fire boundary.

**OB-FZ-8A, MG Set Room, & OB-FZ-8B, Mechanical Equipment Room
35'-0" and 23'-6" Elevations**

1. Area Description

Ref. Dwg. No. 3D-911-02, -010, -014, -019, -021
Area = (OB-FZ-8A/B) = 2,607 ft.² total.

Construction:

Floor: Concrete with three-hour fire resistance rating and protected openings, (OB-FZ-8A) Concrete with unprotected openings, (OB-FZ-8B).

Walls: North, east, and west walls of OB-FZ-8A are concrete with three-hour fire resistance rating. The south wall is 2 hour rated, hollow concrete block separating OB-FZ-8A from the Office Building OB-FA-9 and unrated insulated metal panels open to the outside.

The south and east walls of OB-FZ-8B are one hour fire resistance rating for separation from adjacent OB-FA-9. The west wall is 3 hour fire resistance rating. The common wall to OB-FZ-8C is sealed and administratively controlled to contain a Halon discharge.

Ceiling: OB-FZ-8A: Concrete with unprotected openings to OB-FZ-8B, 8C and OB-FA-9.
OB-FZ-8B: Concrete with 3 hour fire resistance rating.

Openings: Steel hatch in floor of OB-FZ-8A is coated to provide three-hour fire resistance rating. Cable penetrations to RB-FZ-1E are sealed with silicone foam to provide a three hour resistance rating.

Two ducts, 16" x 6", penetrates the 2 hour rated south fire barrier of OB-FZ-8A, traverse the 2 hour rated north stairwell enclosure on floor elevation 23'-6" of OB-FA-9 into the Elevator Machine Room of OB-FA-9. No fire dampers are provided in the ventilation ducts at either of the 2 hour rated barriers. The ducts are sealed at both barriers to preclude the entrance of smoke into the stairwell. The stairwell contains no combustible loading and does not present an exposure hazard to the ducts as they traverse. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which will preclude conflagration. OB-FZ-8A is provided with automatic sprinkler protection throughout the major portion of the fire zone.

While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, the metal duct's heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperature at the ducts, which are eight feet above floor level. Should such deformation occur due to a fire in OB-FZ-8A, or OB-FA-9, any hot gases escaping would have to pass through the rated stairwell enclosure, and initiate conflagration in the adjacent zone/area. While such a scenario is highly unlikely, even if it were to occur the safe shutdown of the plant would not be jeopardized since the only cables required for safe shutdown in OB-FA-9 are located in an electrical tray on the third floor. As stated earlier, the light hazard occupancy of this fire area and the high degree of compartmentalization would preclude a fire from spreading throughout the building while simultaneously impacting safe shutdown equipment in OB-FZ-8A. Therefore, the provision of fire rated dampers would not improve the safety of the plant.

Two vertical ducts, 10" x 10" penetrate the ceiling of OB-FZ-8A at slab elevation 35'-0" into the second floor of OB-FA-9. No fire dampers are provided in the ducts at the slab penetration. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which would preclude conflagration. OB-FZ-8A is provided with automatic sprinkler protection throughout the major portion of the fire zone. While localized high off-gas temperatures can be expected in the vicinity of a fire, the metal ducts' heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperature at the ducts, which are twelve feet above floor level in OB-FZ-8A. Should such deformation occur due to a fire in OB-FZ-8A, ignition of combustibles in the second floor of OB-FA-9 might occur, however, the occupancy and combustibles in OB-FA-9 are not conducive to conflagration. A fire originating in the second floor of OB-FA-9 would have to deform the duct and propagate downward into OB-FZ-8A in order to initiate a fire there. These scenarios, unlikely as they are, could occur without having an adverse impact on the safe shutdown of the plant, since the only cables required for safe shutdown in OB-FA-9 are located in an electrical tray on the third floor. As stated earlier, the light hazard occupancy of the fire area and the high degree of compartmentalization would preclude a fire from spreading throughout the building while simultaneously impacting safe shutdown equipment in OB-FZ-8A. The provision of fire rated dampers would not increase the safety of the plant.

Three ducts (50" x 12", 14" x 8" and 12" x 6") penetrate the one hour rated barrier between OB-FA-9 and OB-FZ-8B at elevation 43'-0" of the second floor. No fire dampers are provided in the ducts at the barrier. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which would preclude conflagration. OB-FZ-8B is a mechanical equipment room with low combustible loading. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, the metal duct's heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperatures at the ducts which are eight feet above floor level. Should such deformation occur, and a fire damage safe shutdown cables on the third floor of OB-FA-9 while simultaneously creating fire damage in OB-FZ-8B, which is an unlikely scenario, the safe shutdown of the plant would not be jeopardized since OB-FZ-8B contains no equipment or cables essential for safe shutdown. Therefore, the provision of rated fire dampers in the ducts would not improve the safety of the plant.

Ventilation:

Forced ventilation is provided by supply fans and exhaust fans. Supply fan SF-1-20 is located on the roof above the Battery Room. Exhaust fan EF-1-20 is located in the Mechanical Equipment Room.

Drainage:

Adequate drainage is provided through doorways open to the outside.

Lighting:

Emergency lighting unit no. 13 in OB-FZ-8A, provides illumination for manual actions required at field breakers for MG sets of recirc. pumps at RY21. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Cabling

Safety Related:

Cabling (Core Spray Pumps & Instrumentation)

Non-Safety Related:

Motor Generator (MG) Sets
Associated Control Panels
- Ventilation Equipment

Fire Loading:

Combustible loading consists of lubricating oil and cable insulation. The total fire loading is "low" for OB-FZ-8A/B, as reflected in Section 8.0.

4. Fire Protection:

A closed head sprinkler system is installed throughout the MG Set Room North of column line R1. An alarm is provided to the Control Room when water flows from a single sprinkler. A smoke detector is provided in the exhaust duct of fan EF-1-20. Fire extinguishers are provided for manual fire fighting backup. Hose lines are available from outside hydrants and hose houses to the MG Set Room and from the Office Building corridor for the mechanical equipment room.

5. Conclusions:

Automatic sprinkler protection will control a fire in the room with prompt notification to the Control Room. Barriers in conjunction with suppression are adequate to prevent fire propagation outside of the MG Set Room and mechanical equipment room.

**OB-FZ-8C, A & B Battery Room, Tunnel, & Electric Tray Room
35'-0" Elevation**

1. Area Description

Ref. Dwg. No. 3D-911-02-010
Area = 1,292 ft.²

Construction:

- Floor: Concrete with unprotected openings.
- Walls: North, east, and west walls are concrete with three-hour fire resistance rating and 6 inch hollow block north and east side of electrical tray room adjacent to OB-FZ-10B is one hour rated. West wall adjacent to OB-FZ-4 is hollow block with 2 hour fire resistance rating. South wall is hollow block with one hour fire resistance rating between OB-FA-9 and this zone and hollow block between Zone B and Zone C within this area, sealed and administratively controlled to contain a halon discharge in Zone B.
- Ceiling: Concrete with three hour fire resistance rating and unprotected openings.
- Openings: Steel floor hatch to the MG Set Room (OB-FZ-8A) is unrated. Openings to OB-FZ-10B from the electric tray room are protected with dampers for Halon containment. Pressure relief vents with dampers are provided in the south wall between the Battery Room and the Mechanical Equipment Room.

A/B Battery Room Door No. 21 (0-220) is a non-UL listed door with non-UL listed frame. TDR 717 provides the following fire door evaluation for door No. 21:

Purpose of this evaluation is to justify continued use of the existing door assembly even though it does not meet NFPA 80 requirements.

Current fire loading in A/B Battery Room, OB-FZ-8C, is "low" - See Section 8.0. A total flooding Halon System protects the AB Battery Room and is actuated by ionization smoke detectors. The adjoining area where the door is located, is part of the office building OB-FA-9. The door opens to a hallway which leads to another door that opens to the main office building corridor. The hallway and main corridor are maintained free of combustibles and the spread of fire through the corridor is not credible. In addition, ionization smoke detectors are located in the corridor throughout the office building.

Based on low fire loading, the protection and detection provided, the existing door assembly is more than adequate to prevent the spread of a fire.

This conclusion conforms with our statements in the door and penetration analysis submitted to the NRC 8/1/78.

This states that the AB Battery Room door has no rating and will not be upgraded to show rating due to lack of combustibles.

Based on the above Fire Hazard Analysis the following additional discrepancies on this door do not affect the door assembly's ability to prevent the spread of a fire. They are as follows: electric conduit penetrates frame on Battery Room side only. However, it is recommended that the conduit penetration be sealed inside and out as described in maintenance procedure 759.1.006 "Fire Barrier penetration seal repair and installation requirements." This will improve the integrity of the door assembly. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Electric Tray Room Door No. 24 (0-221) is a 3 hour fire rated, UL listed, Class A fire door with unlisted door frame. TDR 717 identifies fire door No. 24 as functional with the following departures from NFPA 80: non labeled door frame and non UL listed lock set. TDR 717 provides the following fire door evaluation for door No. 24:

Frame is constructed of at least 16 gage steel, hinge reinforcements not less than 10 gage and lock, strike and closer reinforcements not less than 14 gage steel. Not less than 3 adjustable corrugated anchors formed of 14 gage steel not less than 12" long and spaced not over 24" apart are on each jamb. One 12 gage metal clip angle welded to bottom of each jamb for floor anchor. These meet or exceed comparable requirements set by UL for pressed steel frames and therefore do not require replacement.

Current fire loading in electric tray room, OB-FZ-8C, is "low" - See Section 8.0. A total flooding halon system protects the electric tray room which is part of the AB battery room and is actuated by ionization smoke detector. Current fire loading in the chemistry laboratory, OB-FZ-10B, is "low" - See Section 8.0. This area is also covered by ionization smoke detectors, portable extinguishers, and a hose station.

Based on low fire severity on both sides of the door and the protection and detection provided, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Ventilation:

Normal ventilation to the electric tray room is provided by supply and exhaust fans located on the office building roof. Normal ventilation for the Battery Room is provided by a roof mounted supply fan and exhaust fan in the Mechanical Equipment Room (See OB-FZ-8B). Loss of flow alarm is provided to the control room. The supply air duct is shared with the MG Set Room (OB-FZ-8A) below. Fire dampers are provided at the discharge of the supply ducts to the Battery Room and are closed upon actuation of the Halon 1301 system.

Drainage:

Drainage is adequate for water use in manual fire suppression.

Lighting:

Emergency lighting unit No. ELF762026 and 9A provide illumination for manual actions required at 125V DC Distribution Center B and Static Charger in OB-FZ-8C. Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

DC Power System
Cabling

Safety Related:

Cabling
Rotary Invertor
DC Power System

Non-Safety Related:

Miscellaneous equipment

3. Fire Loading:

Major combustible loading is from cable insulation and plastic battery cases and fiberglass laminated polyester battery racks. There is also a minor amount of oil in the rotary invertor. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A fixed, total flooding, Halon 1301 extinguishing system will discharge throughout the Battery Room, Cable Tunnel, and Electrical Tray Room. POC detectors are installed at the ceiling level and cross-zoned to sound a local alarm and an alarm in the Control Room upon actuation of one detector. Actuation of a second detector will sound a local alarm, discharge halon system and close dampers. Actuation of the detector in the return air duct from the MG Set Room will not shut down the supply fan, but alerts the operator to manually trip the fan.

5. Conclusions:

The fire detection and suppression systems will control and extinguish a fire in the batteries and associated equipment. The south wall provides an adequate fire barrier from the low fire exposure hazard on either side of the wall. A fire in this area will not affect the safe shutdown of the plant since a third DC supply (Train C) is provided outside of this fire area.

OB-FA-9, Office Building:

The Office Building is a three story facility enveloped by the Reactor Building on the east side, the Turbine Building on the west side, and the service area on the north side. The Office Building is considered a light hazard occupancy with limited amounts of combustibles, primarily paper and furnishings. The building's materials of construction are non-combustible with the shell structure being reinforced concrete and the highly compartmentized interior being hollow concrete block. Because of the light fire hazard and many compartments in the Office Building, a severe fire exposure to safety-related areas is not anticipated.

1. Area Description

Ref. Dwg. No. 3D-911-02-006, -010, -011, -021
Area = 5,739 ft.²

Construction:

Floors: Concrete

Walls: Exterior are concrete, interior partitions have generally a 3/4 hour fire resistance rating. Stairway walls have two-hour fire resistance rating with fire sealed openings. Adjacent Fire Areas/Zones to Fire Area 9 are:

RB-FA-1 - East Wall Reactor Building
OB-FZ-5 - North Wall Control Room
OB-FZ-8A - North Wall MG Set Room
OB-FZ-8B - North Wall Battery Room
OB-FA-10 - North Wall Office Building
TB-FA-11 - West Wall Turbine Building

Roof: Concrete

Openings: Stairway openings are provided with 1 1/2 hour rated fire doors, except in the lobby.

Control Room Main Access Door No. 1 (0-317) is a 3 hour fire rated, UL listed and labeled (UL 10B), Class A and bullet resistive (UL 752) fire door and frame.

Refer to Fire Hazards Analysis of OB-FZ-5 for Control Room South Wall Egress Door No. 2 (0-322).

Equipment Operator Lunch Room/Office Entrance Door No. 4 is a 1 1/2 hour FM approved Class B fire door. TDR 717 identifies door No. 4 as functional with the following departures from NFPA 80: excessive door-to-frame clearance on headpiece, and a non-labeled frame. TDR 717, provides the following fire door evaluation for door No. 4:

Frame is constructed of at least 16-gage steel, hinge reinforcements no less than 10-gage, and lock, strike, and closer reinforcements no less than 14-gage steel. No less than 3 adjustable corrugated anchors formed of 14-gage steel not less than 12" long, and spaced not over 24" apart are on each jamb. One 12-gage metal clip angle is welded to bottom of each jamb, for floor anchor. These meet or exceed the comparable requirements set by UL for pressed steel frames, and therefore, do not require replacement.

Current fire loading in the monitor and change area, OB-FZ-10A, is "low" - See Section 8.0.

This door opens to a hallway leading to the Equipment Operator Lunch Room/Office. Hallway is protected by a wet pipe sprinkler system, and is covered by ionization smoke detectors. The other side of this door is the office building hallway, which is covered by ionization smoke detectors. The hallway is maintained free of combustibles, and the spread of a fire through the hallway is not credible.

The door-to-frame clearance exceeds the 1/8" allowed which still leaves a door stop overlap of 3/8".

Based on low fire severity on both sides of the door, and the protection and detection provided, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

A portion of the wall above this door (59" x 66" masonry block) is not rated but is sealed with noncombustible material.

Entrance to Monitor and Change Room Door No. 5 (0-326) is a 3 hour fire rated, UL listed, Class A fire door. TDR 717 identifies door No. 5 as functional with the following departures from NFPA 80: excessive door-to-frame clearance on latch jamb, non-labeled frame. TDR 717 provides the following fire door evaluation for door No. 5:

Frame is constructed of at least 16-gage steel, hinge reinforcements no less than 10-gage, and lock, strike, and closer reinforcements no less than 14-gage steel. No less than 3 adjustable corrugated anchors formed of 14-gage steel not less than 12" long, and spaced not over 24" apart are on each jamb. One 12-gage metal clip angle is welded to bottom of each jamb, for floor anchor.

These meet or exceed the comparable requirements set by UL for pressed steel frames, and therefore, do not require replacement.

Current Fire loading in the monitor and change area, OB-FZ-10A, is "low" - See Section 8.0.

The area above and below the hung ceiling is protected by a wet pipe sprinkler system, and is covered by ionization smoke detectors. The area on the other side of the door is the office building hallway, which is covered by ionization smoke detectors. Hallway is maintained free of combustibles, and spread of a fire through the hallway is not likely.

The door-to-frame clearance exceeds the 1/8" maximum allowed, which still leaves a door stop overlap of 3/8".

Based on low fire severity on both sides of the door, and the protection and detection provided, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

South Entrance to Monitor and Change Room Door No. 6 is a 1 1/2 hour fire rated, UL listed, Class B fire door. Door frame is FM approved. TDR 717 identifies door No. 6 as functional with the following departures from NFPA 80: label missing from door, excessive door-to-frame clearance on headpiece and at bottom of door, and use of a non listed door closer, latch, strike plate and electric door release. TDR 717 provides the following fire door evaluation for door No. 6:

Current fire loading in the monitor and change area, OB-FZ-10A, is "low" - See Section 8.0. The area above and below the hung ceiling is protected by a wet pipe sprinkler system, and is covered by ionization smoke detectors. The other side of this door is a hallway containing steel locker cabinets. The amount of combustibles has not been calculated, but is considered minimal and a fire in this area is unable to spread because of the separation provided by the steel lockers.

Based on low fire severity on both sides of the door, and the protection and detection provided, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of fire zones involved, the above justification remains valid.

Refer to Fire Hazards Analysis of OB-FZ-8C for A/B Battery Room Door No. 21 (0-220).

Refer to Fire Hazards Analysis of OB-FZ-22A for New Cable Spreading Room Door No. 23.

Two ducts, 16" x 6", penetrate the 2 hour rated south fire barrier of OB-FZ-8A, traverse the 2 hour rated North stairwell enclosure on floor elevation 23'-6" of OB-FA-9 into the Elevator Machine Room of OB-FA-9. No fire dampers are provided in the ventilation ducts at either of the 2 hour rated barriers. The ducts are sealed at both barriers to preclude the entrance of smoke into the stairwell. The stairwell contains no combustible loading and does not present an exposure hazard to the ducts as they traverse. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which would preclude conflagration. OB-FZ-8A is provided with automatic sprinkler protection throughout the major portion of the fire zone.

While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, the metal duct's heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperature at the ducts, which are eight feet above floor level. Should such deformation occur due to a fire in OB-FZ-8A, or OB-FA-9, any hot gases escaping have to pass through the rated stairwell enclosure and initiate conflagration in the adjacent zone/area. While such a scenario is highly unlikely, even if it were to occur the safe shutdown of the plant would not be jeopardized since the only cables required for safe shutdown in OB-FA-9 are located in an electrical tray on the third floor. As stated earlier, the light hazard occupancy of this fire area and the high degree of compartmentalization would preclude a fire from spreading throughout the building while simultaneously impacting safe shutdown equipment in OB-FZ-8A. Therefore, the provision of fire rated dampers would not improve the safety of the plant.

Two vertical ducts, 10" x 10" penetrate the ceiling of OB-FZ-8A at slab elevation 35'-0" into the second floor of OB-FA-9. No fire dampers are provided in the ducts at the slab penetration. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which would preclude conflagration. OB-FZ-8A is provided with automatic sprinkler protection throughout the major portions of the fire zone. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, the metal ducts' heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperature at the ducts, which are twelve feet above floor level in OB-FZ-8A. Should such deformation occur due to a fire in OB-FZ-8A, ignition of combustibles in the second floor of OB-FA-9 might occur, however, the occupancy and combustibles in OB-FA-9 are not conducive to conflagration. A fire originating in the second floor of OB-FA-9 would have to deform the duct and propagate downward into OB-FZ-8A in order to initiate a fire there. These scenarios, unlikely as they are, could occur without having an adverse impact on the safe shutdown of the plant, since the only cables required for safe shutdown in OB-FA-9 are located in an electrical tray on the third floor. As stated earlier, the light hazard occupancy of the fire area and the high degree of compartmentalization would preclude a fire from spreading throughout the building while simultaneously impacting safe shutdown equipment in OB-FZ-8A. The provision of fire rated dampers would not increase the safety of the plant.

Three ducts (50" x 12", 14" x 8" and 12" x 6") penetrate the one hour rated barrier between OB-FA-9 and OB-FZ-8B at elevation 43'-0" of the second floor. No fire dampers are provided in the ducts at the barrier. OB-FA-9 is a light hazard office occupancy, and highly compartmentalized which would preclude conflagration. OB-FZ-8B is a mechanical equipment room with low combustible loading. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, the metal duct's heat transmission and dissipation characteristics would serve to render the ductwork impervious to extensive expansion deformation or heat failure due to air mixture dilution temperatures at the ducts which are eight feet above floor level. Should such deformation occur, and a fire damage safe shutdown cables on the third floor of OB-FA-9 while simultaneously creating fire damage in OB-FZ-8B, which is an unlikely scenario, the safe shutdown of the plant would not be jeopardized since OB-FZ-8B contains no equipment or cables essential for safe shutdown. Therefore, the provision of rated fire dampers in the ducts would not improve the safety of the plant.

Ventilation:

A recirculating air conditioning system and recirculating heating and ventilation systems are provided.

Supply fans are SF-1-18 and SF-1-19

Exhaust fans are EF-1-18 and EF-1-19

Drainage:

Drainage is tied to plant sewage system.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

Cabling

Safety Related:

Cables in corridor, above ceiling between OB-FZ-5, Control Room and OB-FZ-10A.

Non-Safety Related:

General Office Equipment

Computer Equipment

3. Fire Loading:

Fire loading consists of general office supplies, minimal plastics and cable insulation, and minor quantities of hydrogen. Actual fire loading has not been computed but may be estimated as below average for office occupancy. Refer to Section 8.0 for fire loading break-down.

4. Fire Protection:

Products-of-combustion-detectors are installed in the hallway on each floor. Detector actuation sounds an alarm locally and in the Control Room. Fire extinguishers are provided on each floor and hose stations are provided on the second and third floor.

5. Conclusions:

A fire in the Office Building will not impact safe shutdown. Construction and protection of openings are adequate to limit fire damage to the Office Building. With early detection, manual fire fighting capabilities are adequate to control a fire in this area.

OB-FA-10, Office Building (Service Area):

The Service Area is located between the Reactor Building and Turbine Building. The Service Area equipment does not perform safety related functions although safety related cabling is routed through the building. Materials of construction are non-combustible, primarily reinforced concrete and concrete block. Since the building is highly compartmentized, fire propagation would be limited.

OB-FZ-10A, Monitoring & Change Room Area and Equipment Operator Lunch Room/Office - 46' Elev.

1. Area Description

Ref. Dwg. No. 3D-911-02-006, -010, -011

Area = 2,019 ft.²

Construction:

Floor: Concrete with unprotected openings to OB-FZ-10B.

Walls: The north wall is an outside concrete wall. The concrete east wall adjoining Reactor Building, RB-FZ-1D, has a 3 hour fire rating with door opening with an air lock protected by one 1 1/2 hour fire door and one unrated metal door. The south wall separating OB-FZ-10A from the Office Building (OB-FA-9) is a one-hour block wall with protected openings with one exception (see below). The west wall is a 3-hour concrete wall separating this area from the Control Room (OB-FZ-5).

Ceiling: Concrete with three-hour fire resistance rating. Suspended ceiling in Monitoring and Change Room is non-combustible.

Openings: Control Room East Wall Equipment Operator Lunch Room/Office Door No. 3 (0-323) is a 3 hour fire rated, UL listed and labeled (UL10B), Class A and bullet resistive (UL752) fire door and frame.

Refer to Fire Hazards Analysis of OB-FA-9 for Equipment Operator Lunch Room/Office Entrance Door No. 4.

Refer to Fire Hazards Analysis of OB-FA-9 for entrance to Monitor and Change Room Door No. 5 (0-326).

Refer to Fire Hazards Analysis of OB-FA-9 for South Entrance to Monitor and Change Room Door No. 6.

Stairwell Door No. 7 (T-300) to Turbine Bldg. is a 1 1/2 hour fire rated, UL listed, Class B fire door. Frame is not listed. TDR 717 identifies door No. 7 as functional with the following departures from NFPA 80: non-labeled door frame, and improper attachment of door stop to frame. TDR 717 provides the following fire door evaluation for door No. 7:

Current fire loading in the monitor and change area, OB-FZ-10A, is "low" - See Section 8.0. The area above and below the hung ceiling is protected by a wet pipe sprinkler system, and is covered by ionization smoke detectors.

The current fire loading in turbine lube oil bay area, TB-FZ-11B, is "high" - See Section 8.0. This fire loading is due primarily to the turbine lube oil. The lube oil tanks are on elevation 0'-0" and the door on elevation 36'-0". This fire door leads to a hallway which is part of TB-FZ-11B. At the west end of the hallway is a door which goes into the lube oil bay area on elevation 27'-0" and is still within TB-FZ-11B, however it is listed as a Class B fire rated door and will afford separation from the lube oil bay area. Directly ahead of the turbine building entrance door is an open staircase to elevation 0'-0" and 23'-0" which is still part of TB-FZ-11B. However, this portion of TB-FZ-11B is separated from the lube oil tank area by a 8" block wall, and the door on the wall on elevation 0'-0", although not required to be rated, is a Class B fire door and does afford separation from the lube oil tank area. In addition, a wet pipe sprinkler system is provided in the lube oil tank area for general area coverage.

A deluge system actuated by thermal detectors is provided to cover the turbine lube oil tanks and oil handling equipment. A hose station is also available.

The frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along the jamb. The base anchor consists of 12 gage metal clip angle welded to the bottom of each jamb. These features are comparable to the UL requirements for channel frames. However, the door stop is not in accordance with UL requirements.

Based on extent of detection and suppression provided, the separation afforded by the physical configuration of the area, and the installation of the new fire door and listed hardware, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and will improve the fire door assembly over and above what was evaluated as functional. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Refer to Fire Hazards Analysis of RB-FZ-1D for Reactor Building 51' Elev. Entrance Door No. 8 (R204).

Cable penetrations from cable tray closet to the floor below, from OB-FZ-10A to the Reactor Building (RB-FZ-1D), and to the Control Room (OB-FZ-5) are sealed to provide a 3 hour rated fire seal. The stairway is part of OB-FZ-10A. The west wall in the stairway is part of OB-FZ-10A. The west wall in the stairway is 2 hr. rated.

A portion of the south boundary (59" x 66" masonry block over the Equipment Operator Lunch Room/Office door) is not rated but is sealed with noncombustible material.

Ventilation:

Ventilation is provided by supply fans, SF-1-16 and SF-1-17 and exhaust fan EF-1-27 located on the Office Building roof. The exhaust system discharges to atmosphere after filtration.

Drainage:

Drainage is to the laundry drain tank.

Lighting:

Emergency lighting unit ELF762022 provides illumination for manual actions required at lighting panel LP-4. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Cabling, above ceiling

Safety Related:

Cabling, above ceiling

Non-Safety Related:

Personnel Monitoring Equipment
Cabling

3. Fire Loading:

Major combustibles consist of electrical cable insulation located above the suspended ceiling. Other combustibles include health physics materials, wood, and other miscellaneous materials. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Products-of-combustion (ionization type) smoke detectors are installed throughout the zone to provide early warning fire detection. A closed head automatic sprinkler system is installed above and below the ceiling in the Monitor and Change Room, in the Cable Tray Closet and above the ceiling in the Equipment Operator Lunch Room/Office hallway to protect cable trays. In addition, manual suppression capability is provided by a hose station located outside the Control Room in Corridor #5.

5. Conclusions:

Products-of-combustion detection provides adequate notification of a fire condition for the fire brigade. Fixed suppression is adequate to control a fire in the cables or exposing the cables from below. Backup manual suppression is adequate from the hose station located adjacent to the fire area and from portable fire extinguishers.

**OB-FZ-10B, Hot & Cold Chemical Lab, Instrument Lab, P.A.S.S., Count Room
35' Elevation**

1. Area Description

Ref. Dwg. No. 3D-911-02-010
Area = 1,517 ft.²

Construction:

- Floor: Concrete with three hour fire resistance rating.
- Walls: Concrete with three hour fire resistance rating for the east and south walls. West wall adjacent to OB-FZ-4 is hollow concrete block of 2 hour rating. South and west walls adjacent to OB-FZ-8C are 6 inch hollow block with one hour fire resistance rating. The north wall is an outside wall. Adjacent to the west concrete wall adjoining OB-FZ-4, Cable Spreading Room, is an enclosed stairway part of OB-FZ-10A with a two hour fire resistive rating (see OB-FZ-4).
- Ceiling: Concrete (three hour fire resistance rating) with unprotected openings to OB-FZ-10A.
- Openings: Stairway is enclosed with two hour fire resistance rated walls. The stairway is part of OB-FZ-10A. A 1 1/2 hour rated fire door is installed in the west wall leading from the stairwell to TB-FZ-11B. Doorway from OB-FZ-10B into stairwell is protected by a 1 1/2 hour rated fire door. Refer to Fire Hazards Analysis of OB-FZ-8C for Electric Tray Room Door No. 24 (0-221).

Dampers are provided in the supply and exhaust duct openings to the Electric Tray Room (See OB-FZ-8C). The east wall of the P.A.S.S. room contains a 3.5 inch pipe penetration used for venting the P.A.S.S. cabinet. No fire damper is required because accidental closure of a fire damper, if provided, could prevent exhausting air from the sample station causing exfiltration from the sample station which could spread contamination into the P.A.S.S. room. A fire will not spread through this penetration because fire loading on either side is low. The wall thickness is 5 feet. The penetration opens into a steel metal enclosure sealed to the wall and backed by 2 to 4 inches of brick. This is not rated but is structurally substantial.

Ventilation:

See OB-FZ-10A

Drainage:

See OB-FZ-10A

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Laboratory Equipment
Electronic Test Equipment
Post Accident Sampling

3. Fire Loading:

Fire loading consists of wooden work benches and furniture and miscellaneous flammable liquids in the Lab. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Product of combustion (ionization) type smoke detectors are provided throughout OB-FZ-10B, except spaces above suspended ceilings. Detectors are not provided in the space above the ceiling in the Chem. Lab., however this space does not contain cable tray or other combustible material. Detectors are provided below the hung ceiling to provide early notification of a fire condition. Manual hose stations and portable fire extinguishers are provided.

5. Conclusions:

A fire in this area will not affect the safe shutdown of the plant since no systems or components necessary for safe shutdown are located in this zone.

TB-FA-11, Turbine Building

The Turbine Building consists of three levels: operating floor, basement floor, and a partial mezzanine. Portions of the mezzanine level and operating floor are separate fire areas.

The building is an open area with non-combustible construction of steel and reinforced concrete. Adjacent fire areas are as indicated on the fire area layout drawings. The walls in the building that separate fire zones will reduce the spread of fire. The analyses of the fire hazards are divided into the following zones:

TB-FZ-11A, Turbine Operating Floor 46' - Elevation

1. Area Description

Ref. Dwg. No. 3D-911-02-005, -006, -007, -008, -009
Area = 20,787 ft.²

Construction:

- Floor: Reinforced concrete with unprotected openings to lower floors.
- Walls: Walls are sheet metal on unprotected steel. The east wall adjoining OB-FZ-5, is a three hour fire resistive wall. Stairwell is enclosed with two hour fire resistance rated walls.
- Roof: Class II metal deck on unprotected steel.
- Openings: Large openings to lower floors some with heavy metal hatch covers.

Ventilation:

5 Systems

Sys. #1 - Supplies 8 Areas

- A. T.B. Mezz. south 23' elev.
- B. Regen. Room
- C. Valve space
- D. Demin. room
- E. Vacuum pump room
- F. Steam jet air ejector room
- G. Access area 3'6"
- H. Turb. basement - south
From SF-1-1, SF-1-2
Located on Turbine Roof west, 46'-6" (elev.)
Exhausts to:
 - A. To stack via EF-1-6, EF-1-7 (located at stack pad)
 - B. To T.B.O.F. via exciter

Sys. #2 - Supplies 6 Areas

- A. T.B.O.F.
- B. Condenser Bay
- C. Heater Bay
- D. Reheater Area
- E. Reheater Protection and misc. equip. area (27'-0" elev.)
- F. Turb. Lube Oil Area
From SF-1-3, SF-1-4, SF-1-5, SF-1-6
Located on Turbine Roof west, 46'-6" elev.

Exhausts to:

- A. T.B.O.F. Area
 - 1. Thru EF-1-12, EF-1-13, EF-1-14, EF-1-15 located on the T.B. roof to EF-2-1 located on the west roof of T.B. then monitored and out new stack at same location.
 - 2. Some to Condenser Bay
- B. Heater Bay, Condenser Area and Reheater Area
 - 1. Some to EF-1-2 and EF-1-3 then to stack via EF-1-6, EF-1-7
 - 2. Some directly to stack via EF-1-6, EF-1-7
- C. Reheater prot. and misc. equip. area
 - 1. To new stack via EF-1-4 located on Turbine Bldg. roof NW elev. 46'-6".

Sys. #3 - Supplies 3 Areas

- A. Reheater Area
- B. Condenser Bay
- C. Heater Bay
 - From SF-1-8, SF-1-9, SF-1-10, SF-1-11 located in the Turbine Building Mezzanine North
 - Exhaust to main stack exhaust fans
 - EF-1-6, EF-1-7 (at stack pad) via EF-1-2, EF-1-3 located on the north side of Condenser Bay

Sys. #4 - Supplies the machine shop and office area from SF-1-22

Located on the Machine Shop roof
Exhausts to EF-1-23 located on the Machine Shop roof and roof ventilators (RV-1-3, RV-1-4)

Sys. #5 - Supplies the feed pump room and condensate area

From SF-1-7 located on the Heater Bay roof exhaust to EF-1-1 located on the Heater Bay roof

Drainage:

Drainage is to the Turbine Building sump.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Steam Turbine
Generator and Exciter
Bearing Lift Pump

3. Fire Loading:

The only significant combustible loading is the bearing lube oil and hydrogen for generator cooling. Fire loading is "moderate", as reflected in Section 8.0.

4. Fire Protection:

An automatic closed head sprinkler system is provided over the bearing lift pump and turbine bearings. A fixed CO₂ extinguishing system is provided for localized protection of the generator bearings and exciter. Hose stations are provided throughout the operating floor. CO₂ and dry chemical extinguishers are also provided.

5. Conclusions:

A fire in this area will not affect the safe shutdown of the plant since no safe shutdown related systems or components are located in the area.

TB-FZ-11B, Turbine Lube Oil Storage, Pumping & Purification Areas:

1. Area Description

Ref. Dwg. No. 3D-911-02-001, -004, -006, -007, -008, -010
Area = 3,175 ft.²

Construction:

Floors: Reinforced concrete with three hour fire resistance rating and unprotected opening between floors. This zone covers elevation 27'-0", 0'-0" & 36'-0".

Walls: South wall is reinforced concrete with unprotected openings to zone TB-FZ-11E. North and west walls are exposed to the outside, not to adjacent fire areas. The east and south wall adjoining OB-FZ-4, Cable Spreading Room at El. 36'-0", is rated for two hour fire resistance.

Ceiling: Reinforced concrete with unprotected openings to TB-FZ-11A turbine operating floor. Concrete 3 hour rated where adjacent to OB-FZ-5.

Openings: Equipment hatches with steel covers and unprotected openings. Stairwell has two hour fire rated walls on turbine operating floor.

Refer to Fire Hazards Analysis of RB-FZ-1F for fire door No. 13 (T-114).

Refer to Fire Hazards Analysis of OB-FZ-10A for Stairwell Door No. 7 (T-300) to Turbine Bldg.

Refer to Fire Hazards Analysis of OB-FZ-4 for Cable Spreading Room Entrance Door No. 9 (T-302).

Refer to Fire Hazards Analysis of OB-FZ-6B for 480V Switchgear Room West Wall Door No. 10 (T-207).

Ventilation:

See TB-FZ-11A

Drainage:

Drains terminate in Turbine Building sump.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

Cables (some AC power and DC power cables)

Non-Safety Related:

Lube Oil Storage Tank
Lube Oil Purifier
Lube Oil Pumps
Bearing Lift Pumps
Cables

3. Fire Loading:

Turbine Lube Oil is the major fuel loading. Cable insulation also provides some combustible loading. The fire loading is "high", as reflected in Section 8.0.

4. Fire Protection:

A closed head automatic sprinkler system is provided over cable trays. Water spray system is installed over oil handling equipment and the oil storage tank. Closed head sprinkler system is provided for the bearing lift pump. The deluge (water spray) system is actuated by thermal detectors. Hose stations are installed in the area at the basement level and in an adjacent corridor on the mezzanine level. Hose lines are also available from outside hydrants and hose houses. Fire extinguishers are also provided.

5. Conclusions:

Protection provided by fixed suppression systems is adequate to control a fire in the oil equipment and the automatic sprinklers over the cable trays are adequate to keep a fire from spreading out of the cable trays. Adequate backup manual suppression is provided by hose stations and fire extinguishers. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

TB-FZ-11C, Switchgear Room, West End of Turbine Bldg. on Mezzanine Level

1. Area Description

Ref. Dwg. No. 3D-911-02-003, -007, -009
Area = 2,666 ft.²

Construction:

Floor: Concrete with unprotected openings to TB-FZ-11D.

Walls: Concrete with unprotected openings, except the north wall adjoining TB-FA-3A and 3B which is adequately protected for a 3-hour duration as evaluated by SE-000911-008. Also, TB-FA-26, Battery Room, is enveloped with three hour fire resistive rated barriers except for the roof/ceiling of TB-FA-26 which has a rating of approximately 1 hour (see SE-000911-007).

Ceiling: Concrete slab roof

Openings: Opening for the main buses is provided with a water spray system on the outside.

Roll-Up Fire Doors for 4160V Switchgear East and West Vaults Door Nos. 17 and 18 are 3 hour fire rated, UL listed, less than 120 sq. ft., Class A fire doors and frames.

Refer to Fire Hazards Analysis of TB-FA-3A/B for 4160V Switchgear South Door No. 19.

"C" Battery Room Door No. 20 is a 3 hour fire rated, UL listed Class A fire door. Door frame is FM approved. TDR 717 identifies fire door No. 20 as functional with the following departures from NFPA 80: excessive door-to-frame clearances on latch and hinge side and bottom of door near hinge side. TDR 717 provides the following fire door evaluation for door No. 20:

Current fire loading in C Battery room, TB-FA-26, is "low" - See Section 8.0. Ionization smoke detectors are located in C Battery room. Hose stations and portable extinguishers are available. Current fire loading of mezzanine southwest area, TB-FZ-11G, is negligible. Current fire loading in the switchgear room, TB-FZ-11C, is "low" - See Section 8.0. This area is covered by ionization smoke detectors providing early warning for response by the fire brigade. There is a hydrant just outside the roll up door to the truck bay and portable fire extinguishers in the area.

Clearance around the door is about 1/4" at both jambs, which exceeds the 1/8" maximum allowed around the door. Door stops still overlap the door by about 3/8" at points of excessive clearance.

Based on fire loading and detection provided, the non-conformance to the clearance requirements around the fire door will not adversely affect the fire doors' ability to prevent the spread of a fire. Based on the current fire area configuration of fire zones involved, the above justification remains valid.

Ventilation:

See TB-FZ-11A

Drainage:

Southwest corner of Turbine Building basement

Lighting:

Emergency lighting unit ELU762013 provides illumination for manual actions required at 4160V switchgears 1A and 1B. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Cabling

Safety Related:

Cabling

Non-Safety Related:

4160V Switchgear IA and IB

3. Fire Loading:

Fire loading consists of cable insulation and hydrogen seal oil (H₂ seal oil piping only passes through this zone). There are also miscellaneous ordinary combustibles. The fire loading is "low", as reflected in Section 8.0. This includes oil contained in the piping system.

4. Fire Protection:

A products-of-combustion detection system is installed at the ceiling over 4160V Switchgear and actuates an alarm locally and in the control room.

5. Conclusion:

Detection will provide notification of a fire in the 4160V Switchgear area. Manual fire fighting utilizing hose streams from the yard hydrant and Turbine Building Zone TB-FZ-11G would contain a fire to this area. A fire in this area would not affect safe shutdown.

TB-FZ-11D, Basement Floor South End

1. Area Description

Ref. Dwg. No. 3D-911-02-002, -007, -009
Area = 9,668 ft.²

Construction:

- Floor: Reinforced concrete on grade.
- Walls: Reinforced concrete with unprotected openings. Stairwells have walls with two hour fire resistance rating.
- Ceiling: Reinforced concrete with three hour fire resistance rating below Fire Areas TB-FA-3A & 3B (4160V Emergency Switchgear 1C and 1D Vault and TB-FA-26 Battery Room C) with unprotected openings to TB-FZ-11C.
- Openings: Equipment hatches in ceiling are opened. Stairwells have 1 1/2 hour fire rated doors.

Ventilation:

See Zone TB-FZ-11A

Drainage:

Drainage is to the Turbine Building sump (including curbed transformers containing "less flammable" transformer fluid)

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

Cables (AC power)

Safety Related:

Cables (AC Power)

Non-Safety Related:

Air Compressors
Demineralization Units
Closed Cooling Water Heat Exchangers & Pumps
480V Substation
Regeneration Waste Transfer Pumps
Hydrogen Seal Oil Unit

3. Fire Loading:

Cable insulation provides the majority of the combustible loading. Lube oil and hydrogen seal oil are also present. Miscellaneous ordinary combustibles, such as wood and paper, exist in small quantities. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A closed-head, automatic sprinkler system is installed throughout the general area. A water spray system with closed head directional nozzles protects the hydrogen seal oil unit. Hose stations and fire extinguishers are also located in the area.

5. Conclusions:

The fire detection and suppression equipment in the area are adequate for the hazard. For effects of a fire on safe shutdown capability within this fire zone, refer to Appendix R submittal Section 3.0.

TB-FZ-11E, Condenser Bay

1. Area Description

Ref. Dwg. No. 3D-911-02-001, -002, -003, -004, -007, -008
Area = 26,427 ft.²

Construction:

- Floor: Reinforced concrete slab below grade.
- Walls: Reinforced concrete with unprotected openings except the walls adjoining adjacent fire areas which are three hour fire resistive rated.
- Ceiling: Reinforced concrete with unprotected openings.
- Openings: Hatches in ceiling are provided with steel covers which are not fire rated.

Refer to Fire Hazards Analysis of RB-FZ-1H for Trunnion Room Entrance Door No. 25 (R-113).

Ventilation:

See TB-FZ-11A

Drainage:

Drainage is to Turbine Building sumps 1-2 (NE corner of this area) and 1-3 in Feed Pump Room.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

Cables (AC and DC Power)

Safety Related:

Cables (AC and DC Power)

Non-Safety Related:

Cables
- Condensers
Reheaters
Drain Pumps

3. Fire Loading:

Majority of the combustible loading is from fiberglass reinforced polyester grating installed on permanent scaffolding and cable insulation with a minor amount of lube oil in pumps. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Closed head automatic sprinklers are installed throughout the Condenser Bay and over cable trays. This system also extends to the pipe and duct chase opening in the southeast corner of TB-FZ-11E with two sprinklers at approximately 40' -0" elevation and two sprinklers at approximately 30' -0" elevation. The system waterflow alarms are tested at the alarm check valve; an inspector's test connection is not utilized. Hose stations and fire extinguishers are also provided.

5. Conclusions:

Existing protection is adequate to control a fire at the location of the oil hazard or within the cable trays. Backup manual suppression is adequate. For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

TB-FZ-11F, Feedwater Pumps

1. Area Description

Ref. Dwg. No. 3D-911-02-001, -002, -008
Area = 5,650 ft.²

Construction:

Floor: Reinforced concrete slab on grade.

Walls: Reinforced concrete with unprotected openings to adjacent zones and three hour rated between RB-FA-1, Reactor Bldg.

Ceiling: Reinforced concrete with unprotected openings.

Openings: Hatches in the ceiling to operating floor are provided with steel covers which are not fire rated.

Refer to Fire Hazards Analysis of RB-FZ-1F for RBEDT Southwest Corner Room Door No. 14 (T-113).

The north wall adjacent to TB-FZ-11B has a 1 1/2 hr. rated fire door.

Ventilation:

See Zone TB-FZ-11A

Drainage:

Drains terminate in Turbine Bldg. 1-3 Sump

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

Cabling

Safety Related:

Cabling

Non-Safety Related:

Feedwater Pumps
Condensate Pumps

3. Fire Loading:

Fire loading is "low", as reflected in Section 8.0., and consists of lube oil for the pumps.

4. Fire Protection:

Manual suppression is available from fire extinguishers and hose stations.

5. Conclusions:

For effects of a fire on safe shutdown capabilities within this fire zone refer to Appendix R submittal Section 3.0.

TB-FZ-11G, Mezzanine Level Southwest Corner & Machine Shop

1. Area Description

Ref. Dwg. No. 3D-911-02-003, -007, -009
Area = 5,987 ft.²

Construction:

Floor: Reinforced concrete with unprotected openings

Walls: Reinforced concrete west wall adjoining TB-FA-26 (Battery Room C) is provided with three hour fire resistive ratings. The stairwell is enclosed in masonry construction with 1 1/2 hour fire rated door. The other walls are not fire rated.

Ceiling: Reinforced concrete with unprotected openings and metal panels on steel structure.

Openings: Refer to Fire Hazards Analysis of TB-FZ-3A/B for 4160V Switchgear East Entrance Door No. 15.

Refer to Fire Hazards Analysis of TB-FZ-11C for "C" Battery Room Door No. 20.

Ventilation:

See Zone TB-FZ-11A

Drainage:

To 1-4 sump in Turbine Basement southeast corner.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Equipment:

None

Safety Related:

None

Non-Safety Related:

Valves
Various Machining Tools

3. Fire Loading:

The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Manual suppression capability is provided by adjacent hose stations and fire extinguishers. Closed head sprinkler system protects the machine shop, office area, and under turbine area. This system alarms locally.

5. Conclusions:

All equipment is non-safety related and the low fire hazard presents no fire exposure to adjacent areas. A fire in this area would not affect safe shutdown.

TB-FZ-11H, Demineralizer Tank and Steam Jet Air Ejector Area, Elevations 3'-6" and 23'-6"

1. Area Description:

Ref. Dwg. No. 3D-911-02-002, -003, -009
Area = 3,944 ft.²

Construction:

Floor: Reinforced concrete with unprotected openings
Walls: Walls are not fire rated
Ceiling: Reinforced concrete with unprotected openings. Opening to TB-FZ-11E is protected with sprinklers.

Ventilation:

TBD

Drainage:

TBD

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Equipment:

None

Safety Related:

None

Non-Safety Related:

Demineralizer Tanks
Regeneration Waste Tank
Condensate Demineralizer Recycle Pump
Condenser Vacuum Pump

3. Fire Loading:

The fire loading is TBD.

4. Fire Protection:

Manual fire suppression capability is provided by hose station (elev. 3'-6") and CO₂ fire extinguishers (elev. 23'-6").

5. Conclusions:

All equipment is non-safety related and the fire hazard presents no fire exposure to adjacent areas. A fire in this area would not affect safe shutdown.

MT-FA-12, Main Transformer and Condensate Area

1. Area Description

Ref. Dwg. No. 3D-911-01-001
Outdoor Area

General:

An outdoor area with sheet metal enclosure around condensate transfer equipment. Transformers are separated from the Turbine Building by 32 feet. The wall separating the transformers from TB-FA-3B is reinforced concrete rated with at least 3 hour fire resistance.

Lighting:

Emergency lighting unit nos. ELU762026 and LSP-1B32 provide illumination for manual actions required at LSP-1B32. Emergency lighting Unit No. ELF762008 provides illumination for manual action required at MCC1B32. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

Condensate, demineralized water transfer pumps

Safety Related:

None

Non-Safety Related:

Main transformers
Auxiliary transformers
Start-up transformers
Service water booster pump
Chlorination equipment

3. Fire Loading:

The only combustible loading is the oil in the transformers. No specific quantification of fire loading is considered necessary for this area because the transformers are in an open area with nothing to contain the heat release in the event of a fire.

4. Fire Protection:

Thermally activated water spray systems are installed on each transformer. A water spray system is also installed on the outside wall of the Turbine Building where the main bus enters. Outside hose houses and hydrants are located nearby.

5. Conclusions:

The fire suppression systems are adequate to control a fire and limit damage to one transformer and to prevent fire spread to the Turbine Building. Backup manual suppression is adequate from the hydrants in the area.

AB-FA-13, Auxiliary Boiler House

The Auxiliary Boiler House is remotely located from the Reactor Building with open spatial separation of at least 65 feet. The boiler house is also detached from the Railroad Airlock by approximately 10 feet. The sheet metal boiler house contains two package boilers with feed pumps and exhaust stack.

1. Area Description

Ref. Dwg. No. 3D-911-02-034

Area = 1,870 ft.²

Construction:

Floor: Concrete on grade
Walls: Sheet metal on unprotected steel
Roof: Sheet metal on unprotected steel

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

MCC for standby Gas Treatment Fans

Non-Safety Related:

Package Boilers
Stack gas sample pumps
Feed pumps for boilers

Ventilation:

Supply fan, SF-1-25, serves this area.
Exhaust fan, EF-1-30 serves this area.

Drainage:

N/A

Lighting:

Emergency lighting unit nos. ELU762037 provides illumination for manual actions required at valves V-36-51 and V-36-53. In addition, emergency lighting units are provided for access/egress.

3. Fire Loading:

Combustibles in this area include minor amounts of diesel fuel oil and cable insulation. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A rate of rise thermal detection system is installed to sound an alarm in the Control Room. A hydrant and hose house are located nearby and a hose station is located inside the boiler house.

5. Conclusions:

Detection is adequate to notify the Control Room of a fire condition. Manual suppression efforts from the hose station and nearby hydrant will contain the fire to the Auxiliary Boiler House. Separation from adjacent areas would prevent the spread of fire to any adjacent area.

CW-FA-14, Circulatory Water Intake Area

1. Area Description:

Ref. Dwg. No. 3D-911-01-001

3D-911-02-025

Outdoor Area

Outside area greater than 100 ft. from any building.

Lighting:

Emergency lighting unit nos. ELU762024 and LSP-1B3 provide illumination for manual actions required at USS1B3 breaker 062C and LSP-1B3. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description:

Safe Shutdown Related:

Main Circulating Pumps

Safety Related:

Emergency Service Water Pumps

None-Safety Related:

Service water pumps

3. Fire Loading:

Combustible loading consists of transformer oil and electrical motors. No specific quantification of fire loading is considered necessary for this structure because it is an open structure with nothing to contain the heat release in the event of a fire.

4. Fire Protection:

Manual suppression is provided by hydrant and hose house within 100 feet of the area and CO₂ extinguishers. Transformers are diked to contain oil to immediate area.

5. Conclusions:

Fire within electrical motor would cause loss of one pump. Transformer fire would cause loss of transformers but these do not provide power to pumps. Loss of one pump or transformers would not prevent safe shutdown.

Diesel Generator Building:

The Diesel Generator Building containing DG-FA-15, FS-FA-16, and DG-FA-17 is remotely located from the Turbine Building by approximately 150 feet and from the Reactor Building by approximately 375 feet. The safety related emergency Diesel Generator Building contains two redundant diesel driven generators, each rated at 2500 kw. The generators provide a source of back-up power to the safety related areas of the plant in the event of loss of off-site power. Safety related equipment in the building consists of control panels, switchgear and a fuel storage area. Primary building material is reinforced concrete.

DG-FA-15, No. 1 Emergency Diesel Generator Room

1. Area Description

Ref. Dwg. No. 3D-911-02-012

Area = 1,269 ft.²

Construction:

- Floor: Reinforced concrete on grade
- Walls: Reinforced concrete with fire resistance rating greater than 3 hours with protected openings between DG-FA-15 and FS-FA-16.
- Roof: Reinforced concrete with unprotected openings.
- Openings: Emergency Diesel Generator Door No. 22 (between vaults) is a 3 hour fire rated, UL listed, Class A door with unlisted frame. TDR 717 identifies fire door No. 22 as functional with the following departures from NFPA 80: excessive door-to-frame clearances at top and hinge side of door, and non-labeled door frame. TDR 717 provides the following fire door evaluation for door No. 22:

Current fire loading in Emergency Diesel Generator Vault No. 1, DG-FA-15, is "low" - See Section 8.0. In addition, area is covered by thermal detectors and an ionization detector within the control panel.

Roof of the building has 8' x 10' opening, which will ventilate any heat and smoke from a fire, thereby reducing the impact on the fire door. The Emergency Diesel Generator Vault No. 2, DG-FA-17, is the same as Vault No. 1.

Based on low fire severity on either side of this fire barrier and its configuration, the discrepancies will not adversely affect the fire doors' ability to prevent the spread of a fire. Implementing the recommended modifications will bring the door assembly as close to conformance to NFPA 80, and improve the fire door assembly over and above what was evaluated as functional.

Frame is constructed of 6" channel steel with 2" x 1/8" x 12" long anchors embedded in concrete, spaced 2'-0" O.C. along jamb. Door stop is 3/4" x 1 1/2" flat steel bar continuously welded onto the channel all around. Base anchor consists of 12 gage metal clip angle welded to the bottom of each jamb. These meet or exceed comparable requirements set by UL for channel frames, and therefore do not require replacement. Based on current fire area configuration of the fire zones involved, the above justification remains valid.

Penetrations in the common wall between DG-FA-15 and FS-FA-16 are fire sealed. Conduit penetrations are provided with 3 hour rated internal conduit seals.

Openings in roof for intake and exhaust air are not protected.

Ventilation:

A large roof opening provides ventilation for smoke and heat.

Drainage:

Floor drains are provided.

Lighting:

Emergency lighting unit no. 56 provides illumination for manual actions required at diesel generator EDG-1 and 4160V switchgear breaker DG-1. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

Diesel Driver & Generator (No. 1)
Diesel Control Panel
Generator Switchgear

Non-Safety Related:

None

3. Fire Loading:

Fire loading consists of diesel fuel, diesel lube oil and nominal electrical equipment including cables. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Thermally activated rate-of-rise fire detection and ionization type POC detection systems are installed and sound an alarm in the Control Room and at the local panel. A fire hydrant and hose house with AFFF supply are located approximately 100 feet to the north.

5. Conclusions:

Manual suppression utilizing hose lines and AFFF in conjunction with the fire barriers will contain a loss to one diesel generator unit. Emergency power will still be available from the other diesel generator.

FS-FA-16 Emergency Diesel Generator Fuel Storage Area

1. Area Description

Ref. Dwg. No. 3D-911-02-012

Area = 281 ft.²

Construction:

- Floor: Concrete slab below grade.
- Walls: Reinforced concrete with a fire resistance rating of greater than three hours.
- Roof: Reinforced concrete with a fire resistance rating of greater than three hours.
- Openings: Penetrations in the common wall between DG-FA-15 and FS-FA-16 are fire sealed. Conduit penetrations are provided with 3 hour rated internal conduit seals.

Ventilation:

No mechanical ventilation is provided

Drainage:

None

Lighting:

For the outside area adjacent to FS-FA-16, emergency lighting unit ELF762017 provides illumination for manual actions required at valves V-36-46 and V-36-94. In addition, emergency lighting units are provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

Diesel Fuel Storage Tank

Non-Safety Related:

None

3. Fire Loading:

Fire loading consists of fuel oil. The fire loading is "high", as reflected in Section 8.0.

4. Fire Protection:

Thermally activated rate-of-rise fire detection is provided to sound an alarm locally and in the Control Room in the event of a fire.

5. Conclusions:

A fire in the fuel storage area would cause the loss of all fuel for the diesel generators. However, with manual suppression and fire barriers the loss would be contained to the fire area. A fire in this area would not affect safe shutdown.

DG-FA-17, No. 2 Emergency Diesel Generator Room

1. Area Description

Ref. Dwg. No. 3D-911-02-012

Area = 1,335 ft.²

Construction:

Floor: Reinforced concrete on grade.

Walls: Reinforced concrete with fire resistance rating greater than 3 hours with protected openings, separating it from adjacent fire area.

Roof: Reinforced concrete with unprotected openings.

Openings: Refer to Fire Hazards Analysis of DG-FA-15 for Emergency Diesel Generator Door No. 22 (between vaults).

Openings in roof for intake air and exhaust are not protected.

Ventilation:

A large roof opening provides ventilation for smoke and heat.

Drainage:

Floor drains are provided.

Lighting:

Emergency lighting unit no. 57 provides illumination for manual actions required at valves V-36-48 and V-39-107. Emergency lighting unit no. 58 provides illumination for manual actions required at 4160V switchgear breaker DG-2. Emergency lighting unit #762019 provides illumination for actions required at LSP-DG2. Emergency lighting units are also provided for access/egress.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

Diesel Driver & Generator (No. 2)
Diesel Control Panel
Generator Switchgear

Non-Safety Related:

None

3. Fire Loading:

Fire loading consists of diesel fuel, diesel lube oil and nominal electrical equipment including cables. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Thermally activated rate-of-rise fire detection and ionization type POC detection systems are installed and sound an alarm in the Control Room and at the local panel. A fire hydrant and hose house with AFFF supply are located approximately 100 feet to the north.

5. Conclusions:

Manual suppression utilizing hose lines and AFFF in conjunction with the fire barriers will contain a loss to one diesel generator unit.

FW-FA-18: Fire Water Pump House

The Fire Water Pump House is an isolated, non-safety related structure. The building is a sheet metal facility with unprotected steel supports. It houses two diesel driven fire pumps.

1. Area Description:

Ref. Dwg. No. 3D-911-02-030
Area = 960 ft.²

Construction:

Floor: Concrete on grade.
Walls: Sheet metal on unprotected steel structure.
Roof: Sheet metal on unprotected steel structure.

Ventilation:

Local space heaters are provided.

Drainage:

Drainage is provided.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

None-Safety Related:

Two Pond Pumps
Two Fire Pumps
Pump Controllers (Note: The two fire pump controllers do not contain a pressure recorder)

3. Fire Loading:

Major fire loading is fuel oil for diesel engines and miscellaneous cable and electrical equipment. Fire loading is "moderate", as reflected in Section 8.0.

4. Fire Protection:

A fixed water suppression system is installed to protect both fire pumps and fuel tanks. The suppression system is activated by rate-of-rise thermal detectors located above the fuel tanks and by rate compensated/fixed temperature thermal detectors located within the building. System operation will alarm locally and in the control room.

5. Conclusions:

A fire in one pump will be limited to the one pump by the suppression system. Fire water supply should still be available from the adjacent fire pump and the alternate water supply.

OR-FA-19: Old Radwaste Building

1. Area Description:

Ref. Dwg. No. 3D-911-02-022, -023, -024
Area = 11,713 ft.²

This area is separated from the Reactor Building by 15 ft. (15 ft. to railroad airlock) and from other fire areas by open space of at least 50 ft.

Construction:

Floor: Concrete on grade

Walls: Concrete

Openings: N/A

NOTE: A prefabricated steel building was attached on the west concrete wall to enclose the four sample tanks. This structure will be considered part of OR-FA-19 but the overall area was not increased because it is separated by the concrete wall and there are no combustibles in this new enclosure.

Ventilation:

Two roof mounted supply fans, exhausting to the stack exhaust system.

Drainage:

Drainage is to Radwaste Sump.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Small pumps and associated piping
Heat exchangers and storage tanks
Drum handling equipment

3. Fire Loading:

Combustible loading consists of health physics supplies, lubricating oils, ion exchange resins, paper products, and wood products. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A products-of-combustion fire detection system is installed. The system will sound an alarm locally and in the control room. There is no fire detection in the prefabricated steel enclosure around the sample tanks because there are neither combustibles nor radwaste processing in the area. Manual suppression is available utilizing fire extinguishers. Hose lines are available from outside hydrants and hose houses.

5. Conclusions:

The fire detection system will provide early warning of a fire to allow utilization of manual suppression. A fire will be contained within the area and will have no effect on safe shutdown.

NR-FA-20 New Radwaste

1. Area Description:

Ref. Dwg. No. 3D-911-02-031, -032, -033
Area = 10,132 ft.²

This area is separated from other fire areas by open space of at least 50'.

Construction:

Floors: Concrete on grade

Walls: Concrete

Roof: Concrete

Openings: N/A

Ventilation:

A closed loop ventilation system is provided. Exhausts are monitored and channeled through the plant's stack exhaust system.

Drainage:

Drains are provided to the waste collector sumps.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Pumps, tanks, evaporators and other waste treatment equipment.

3. Fire Loading:

Combustible loading consists of health physics supplies, lubricating oils, ion exchange resin, cable, paper products, and wood products. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Portable extinguishers, thermal and POC detectors to Control Room and outside hose houses.

5. Conclusions:

The fire detection system will provide early warning of a fire to allow utilization of manual suppression. A fire will be contained within the area and will have no effect on safe shutdown.

OG-FA-21: Augmented Off Gas Building

1. Area Description

Ref. Dwg. No. 3D-911-02-026, -027
Area = 3,972 ft.²

Construction:

This area is separated from other fire areas by at least 50 ft.

Floor: Concrete on both elevations

Walls: Steel frame with concrete and metal siding

Roof: Concrete slab

Openings: N/A

Ventilation:

Supply and exhaust fans located on the 2nd floor provide heating and ventilation. The building is under a slight negative pressure and the exhaust is monitored.

Drainage:

Floor drains are provided. Effluent is transferred to the sump located at the base of the stack.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Charcoal Absorbers
H₂ recombiner

3. Fire Loading:

Combustible loading consists of charcoal beds, lubricating oils, cable and miscellaneous combustibles such as wood and paper. Fire loading is "moderate", as reflected in Section 8.0.

4. Fire Protection:

POC and thermal detectors are provided at ceiling level throughout the building. Hose stations are available from outside hydrants and a dry standpipe inside the building. Portable extinguishers are provided. H₂ detection is provided in areas containing process piping.

5. Conclusions:

The protection provided is adequate for the hazards. A fire in this area will not effect safe shutdown.

OB-FZ-22A Upper Cable Spread Room and (Mechanical Equipment Room) (See OB-FA-5)

OB-FZ-22B North Cable Bridge Tunnel (See OB-FA-5)

OB-FZ-22C South Cable Bridge Tunnel (See OB-FA-5)

NW-FA-23, New Warehouse

1. Area Description:

Ref. Dwg. No. 3D-911-02-035, -036

Area (NW-FZ-23A) = 34,904 ft.² Area (NW-FA-23B) = 4,800 ft.²

Area (NW-FA-23C) = 5,763 ft.²

This area is separated from other fire areas by at least 50 ft. of open space.

Construction:

Floor: Concrete on grade

Walls &

Roof: Sheet metal on unprotected steel structure with concrete block partitions.

Openings: N/A

Ventilation:

Large wall mounted exhaust fans are provided.

Drainage:

No interior drains. Utilize exterior openings.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Spare equipment
Miscellaneous Supplies

3. Fire Loading:

Combustibles include wood, paper and health physics supplies. Minor storage of flammable and combustible liquids. Fire loading is undetermined.

4. Fire Protection:

Automatic sprinkler protection is provided throughout the building. Water flow alarm is local. Portable extinguishers and interior hose stations are provided.

5. Conclusions:

The protection provided is adequate for the hazard. A fire in this area would not affect safe shutdown of the plant.

MB-FA-24, Maintenance Building

1. Area Description:

Ref. Dwg. No. 3D-911-02-028, -029
Area = 16,470 ft.²

This area is separated from other fire areas by at least 30 ft. of open space.

Construction:

Floor: Concrete on grade
Wall: Sheet metal panels on unprotected steel structure.
Roof: Sheet metal panels on unprotected steel structure.

Ventilation:

A forced ventilation system is provided with roof mounted supply and exhaust fans. Ducting distributes the air through-out the building aided by fans located in the Mechanical Equipment Room.

Drainage:

No floor drains are provided. Utilize exterior openings.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Miscellaneous metal working tools.

3. Fire Loading:

Combustible loading consists of minor amounts of flammable and combustible liquids and other miscellaneous combustibles. Fire loading is minimal. No specific quantification of fire loading is considered necessary for this building as no radioactive release is possible in the event of a fire and a fire will not impact safe plant operation.

4. Fire Protection:

Building is protected with automatic wet pipe sprinkler system throughout. Upon sprinkler actuation an alarm will sound locally.

5. Conclusions:

Automatic suppression will control a fire to the area of origin. A fire in this area would not affect safe shutdown.

PH-FA-25, New F.P. Pump House and Tank

1. Area Description

Ref. Dwg. No. 3D-911-02-030

Area = 200 ft.²

Construction:

Floor: Concrete on grade

Walls: Metal panels on unprotected steel structure.
Tank is constructed of steel and located on grade.

Roof: Metal panels on unprotected steel structure. Tank is constructed of steel and located on grade.

Ventilation:

A forced ventilation system is provided and is controlled by room temperature.

Drainage:

No interior drains. Utilize exterior openings.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Fire Pump
Pump Controller and Cables
Fuel Storage Tank

3. Fire Loading:

Combustibles include minor electrical equipment and cabling. Fire loading is minimal.

4. Fire Protection:

Hydrant and hose houses.

5. Conclusions:

A fire at the pump would damage pump and controller. Fire water supply will still be available from other fire pumps. A fire in this area will not affect safe shutdown.

TB-FA-26, Battery Room South of 4160 Volt Switchgear

1. Area Description

Ref. Dwg. No. 3D-911-02-003, -007

Area = 140 ft.²

Construction:

- Floor: Concrete with greater than 3-hour fire resistant rating.
- Walls: Steel covered with a coating with 3 hour fire resistant rating.
- Ceiling: Steel covered with a coating with approximately 1 hour fire resistant rating. (Note: fire resistant coating provided on outside surface of ceiling only.) (See SE-000911-007 for evaluation of ceiling.)
- Openings: Refer to Fire Hazards Analysis TB-FZ-11C for "C" Battery Room Door No. 20.

Ventilation:

Forced ventilation is provided to prevent an accumulation of H₂. An air flow alarm is provided to indicate in the Control Room a loss of ventilation in the Battery Room.

Drainage:

No drainage is provided.

Lighting:

Emergency lighting is provided to facilitate fire brigade emergency response to this area.

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

Batteries
Cables

Non-Safety Related:

None

3. Fire Loading:

Fire loading consists of battery cases and a minimum amount of cable. Fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

Particles of combustion detection system will send an alarm to the Control Room. CO₂ extinguishers and outside hose are available for manual suppression.

5. Conclusions:

With early fire detection, manual suppression and construction features will limit damage to the Battery Room. The loss of the batteries will not affect shutdown, since redundant battery banks A and B are located in a separate fire area.

EB-FA-28 Site Emergency Building

Ref. Dwg. No. 3D-911-02-037, -038

The Site Emergency Building (SEB) does not perform any Nuclear Safety Related functions, or functions required to achieve and maintain safe shutdown in the event of a fire, nor does it house any equipment for these functions.

Separation exceeding 50 ft. precludes an exposure hazard to any structures, systems or equipment that performs a safety function or function required to achieve and maintain safe shutdown in the event of a fire.

An unmitigated fire in the SEB would not result in an unacceptable radiological release to the environment. The active and passive fire protection features of the SEB are not considered within the scope of BTP APCS 9.5-1, Appendix A. These features are provided to protect plant investment, satisfy insurance requirements and comply with building codes only.

The interface with the plant fire service water system is provided with an isolation valve which can prevent degradation of regulatory required fire protection systems in the event of a break or other failure in the SEB fire protection piping.

No specific quantification of fire loading is considered necessary for this building as no radioactive release is possible in the event of a fire and a fire will not impact safe plant operation.

The above provides the basis for an abbreviated treatment of the SEB in the Fire Hazards Analysis Report.

LL-FA-29: Low Level Radwaste Storage Facility

1. Area Description:

Ref. Dwg. No. None
Area = N/A

This area is separated from other fire areas by open space of at least 50'.

Construction:

Floor: Concrete on grade
Walls: Reinforced and pre-cast concrete on steel
Roof: Concrete over steel deck on steel joists
Openings: N/A

Ventilation:

Motor operated roof ventilators with gravity dampers for cell storage and dry active waste storage areas. Dry active waste compaction area has independent HEPA filtered ventilation system.

Drainage:

Drains, piping and trenches to building sumps for containment of contaminated liquids. Sump pumps, piping and controls. Portion of building designed to function as liquid retention via depressed floor. Sumps emptied via manually operated pump and valving to portable tanks for transport to New Radwaste Building (NR-FA-20) for treatment. Sump provided with High and High-High level alarms, low level alarm and pump operation indication in the facility control room.

Lighting: N/A

2. Equipment Description

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Forklifts, bridge crane and other material hauling equipment.

3. Fire Loading:

Low to ordinary hazard type combustibles. High percent of combustibles are within concrete storage cells and B-25 boxes. No specific quantification of combustible loading is considered necessary for this fire area as a fire will not impact safe plant operation. The effects of a fire on a radioactive release are discussed below.

4. Fire Protection:

Fire protection consists of a wet pipe sprinkler system. The sprinkler systems are designed for a density of 0.15 gpm/sq. ft over 3400 sq. ft. A Class II standpipe system is provided throughout. Sprinkler System Flow Alarms are annunciated in the LLRW building control room and transmitted to the new Radwaste Building control room. Local annunciation is provided for fire alarms. Fire extinguishers are provided throughout the building.

5. Conclusions:

The facility is adequately separated from other plant buildings to preclude consideration of this facility as an exposure (fire) hazard.

There are no systems or equipment in the building required to achieve safe shutdown from a fire (10CFR50, Appendix R). The building has been analyzed for liquid or airborne radio active releases to the environment without reliance on active or passive fire protection features. Potential airborne releases were evaluated without reliance on the ventilation systems. Potential contaminated liquids are contained within the building for transport to decontamination processing. Potential release due to a fire was analyzed with no reliance on fire detection or suppression equipment or activities. Inadvertent operation of the sprinkler systems was analyzed as a potential liquid release of radioactivity or contamination. In all such cases the radioactive or contamination release was well within the limits of 10CFR100. Therefore a fire does not present an unacceptable release to the environment and the active and passive fire protection features of this building are not considered within the scope of BTP APCS 9.5-1, Appendix A. The active and passive features provided for this building are to protect plant investment, satisfy insurance requirements and comply with building codes only.

Based on the above, this fire area is given abbreviated treatment:

Combustible loading is not quantified nor tracked, a drawing is not included, no fire zone boundary analysis has been performed and safe shutdown scenarios are not detailed in corresponding Fire Hazards Analysis Report sections.

LL-FA-30: Independent Spent Fuel Storage Installation (ISFSI) - Complete Facility

1. Area Description:
Ref. Dwg. No. None
Area = N/A

This area is separated from other safety related structures by open space of at least 50'. The facility is located outside the protected area within its own security fence approximately 100 yards east of the Reactor Building truck bay airlock door.

Construction:

Load bearing foundation that consists of a reinforced concrete basemat on compacted engineered fill. Horizontal Storage Module (HSM) is the principal structure to be located on the site and it is placed on the basemat. The HSM is constructed of reinforced concrete and structural steel. The Dry Shielded Canister (DSC) shell assemble is a stainless steel, welded pressure vessel (redundant multi-pass closure welds) that provides a leak tight confinement barrier for all radioactive materials and envelopes the spent fuel assemblies in an inert helium atmosphere. The DSC is housed by the HSM.

Ventilation:

Passive ventilation system that allows ambient air to enter the HSM through vents in the lower side walls and then exits through openings in the upper side walls.

Drainage:

N/A

Lighting:

N/A

2. Equipment Description:

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

None

3. Fire Loading:

The Independent Spent Fuel Storage Installation contains no flammable or combustible material. No specific quantification of fire loading is considered necessary because the facility is in an open area with nothing to contain a heat release in the event of a fire. Also, the design of the facility precludes addition of anything inside the storage module except the shielded canisters.

4. Fire Protection:

No credible fire hazard exists with the facility which would require the installation of fixed fire detection and suppression. Yard hydrants are provided in the vicinity of this structure.

5. Conclusions:

The facility is adequately separated from other plant buildings to preclude consideration of this facility as an exposure (fire) hazard. The concrete and steel used for the fabrication of the Horizontal Storage Module can withstand any credible fire hazard. Two fire hydrants are located within 250 feet of the facility to combat exposure fires such as a brush fire.

The Dry Shielded Canister was evaluated for a total and complete instantaneous leak and the results were well within the 10CFR72.106 limits.

There are no systems or equipment at the facility required to achieve safe shutdown in the event of a fire (10CFR50, Appendix R).

Based on the above, this fire zone is given an abbreviated treatment:

There is no combustible loading added and it will not be tracked, a drawing is not included, no fire zone boundary analysis has been performed and safe shutdown scenarios are not detailed in corresponding Fire Hazards Analysis Report sections.

SGTS-FZ-31, Standby Gas Treatment System (SGTS) and Ventilation Tunnel

1. Area Description:
Ref. Dwg. No. None
Area = N/A

Construction:

Floors: Reinforced concrete

Walls: Reinforced concrete

Ceiling: Reinforced concrete

Openings: Openings are unprotected to Reactor , Turbine and Old Radwaste Buildings.

Ventilation:

None

Drainage:

Floor drains provided

Lighting:

No emergency lights are provided

2. Equipment Description:

Safe Shutdown Related:

None

Safety Related:

Standby Gas Treatment System

Non-Safety Related

None

3. Fire Loading:

Fire loading consists of SGTS charcoal filters.

4. Fire Protection:

The charcoal filters from SGTS do not result in excessive releases to the environment in the event of a fire. No fixed fire detection or suppression is required.

5. Conclusions:

The charcoal filters are not located in proximity to safety-related equipment and thus do not present a hazard to safe shutdown as indicated in the NRC's SER for the Fire Protection Program (dated March 3, 1978). SGTS is not designated by Appendix R as being required for safe shutdown and therefore, SGTS filtration units don't need to be separated from each other.

Based on the above, this fire area is given an abbreviated treatment:

Minimal combustible loading represented by the charcoal filters in SGTS is recognized but the combustible loading will not be tracked because it is contained within the metal filter housings, a drawing is not included, no fire zone boundary analysis has been performed and safe shutdown scenarios are not detailed in corresponding Fire Hazards Analysis Report sections.

LL-FA-32, Low Level Radwaste Storage Facility Yard Area - Storage of Radioactive Materials (Non-waste)

1. Area Description:
Ref. Dwg. No. None
Area = N/A (Outside Area)

There are Radioactive Material Storage Freight Containers/Trailers located north of the Low Level Radwaste Storage Facility.

General:

2. Equipment Description:

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related

None

3. Fire Loading:

Fire loading consists of outage required equipment such as power buggies, scaffolding materials (Planks, wheels, etc.), Hepa filters, hoses, tools, etc. No specific quantification of combustible loading is considered necessary for this area because it is an open area with nothing to contain the heat release in the event of a fire.

4. Fire Protection:

No fixed fire detection or suppression is contained in these areas.

5. Conclusions:

The Yard Area does not present a hazard to safe shutdown. The storage areas are separated from other fire areas by open space of at least 50 ft. There are no systems or equipment in these areas required to achieve safe shutdown in the event of a fire. The consequences of a radioactive release due to a fire in one of these storage areas has been evaluated to be acceptable by Rad Engineering Calculation 6632-97-011. Based on the above, this fire area is given an abbreviated treatment:

The combustible loading represented by these storage areas in the yard is recognized but the combustible loading will not be tracked, a drawing is not included, no fire zone boundary analysis has been performed and safe shutdown scenarios are not detailed in corresponding Fire Hazards Analysis Report sections.

OR-FA-33, Old Radwaste/New Radwaste Yard Area - Storage of Radioactive Materials (Non-waste)

1. Area Description:
Ref. Dwg. No. None
Area = N/A (Outside Area)

There are three permanent storage areas that are presently contained in the Yard Area. The Laundry Facility is located approximately 100 ft north east of the Old Radwaste Building, Scaffolding storage area is attached to the south east corner of the New Radwaste Building and the Radioactive Material Freight Containers are located on the east side of the New Radwaste Building.

General:

2. Equipment Description:

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related

None

3. Fire Loading:

Fire loading consists of PC's, rubber boots/gloves, scaffolding materials (Planks, wheels, etc.), Hepa filters and hoses. No specific quantification of combustible loading is considered necessary for this area because it is an open area with nothing to contain the heat release in the event of a fire.

4. Fire Protection:

No fixed fire detection or suppression is contained in these areas.

5. Conclusions:

The Yard Area does not present a hazard to safe shutdown. The storage areas are separated from the Reactor Building by at least 30 ft. There are no systems or equipment in these areas required to achieve safe shutdown in the event of a fire. The consequences of a radioactive release due to a fire in one of these storage areas has been evaluated to be acceptable by Rad Engineering Calculation 6632-97-011. Based on the above, this fire area is given an abbreviated treatment:

The combustible loading represented by these storage areas in the yard is recognized but the combustible loading will not be tracked, a drawing is not included, no fire zone boundary analysis has been performed and safe shutdown scenarios are not detailed in corresponding Fire Hazards Analysis Report sections.

AB-FA-34, New Auxiliary Boiler House

The New Auxiliary Boiler House is approximately 110 feet east of the Reactor Building. It is approximately 10 feet east of the Auxiliary Boiler House. The sheet metal boiler house contains one package boiler with an exhaust stack.

1. Area Description:

Ref. Dwg. No. 3D-911-02-034

Area = 513 ft.²

Construction:

Floor:	Concrete on grade
Walls:	Sheet metal on unprotected steel
Roof:	Sheet metal on unprotected steel

2. Equipment Description:

Safe Shutdown Related:

None

Safety Related:

None

Non-Safety Related:

Package Boiler

Ventilation:

Gable Vents

Drainage:

N/A

Lighting:

None

3. Fire Loading:

Combustibles in this area include minor amounts of diesel fuel oil, propane and mixed plastic. The fire loading is "low", as reflected in Section 8.0.

4. Fire Protection:

A rate of rise thermal detection system is installed to sound an alarm in the Control Room. A hydrant and hose house are located nearby and a hose station is located inside the existing auxiliary boiler house.

5. Conclusions:

Detection is adequate to notify the Control Room of a fire condition. Manual suppression efforts from the hose station in the existing Auxiliary Boiler House and a nearby hydrant will contain the fire to the New Auxiliary Boiler House. Adequate separation exists from Plant Safety Related Structures (i.e. greater than 50 feet from the Reactor Building, etc.).

SECTION 8.0
OYSTER CREEK FIRE LOADING
(by material)

FA/FZ ID	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
0		0	0.00
Max load =	0	Current load =	0.00
		Trans load =	0

FA/FZ ID AB-FA-13

7 CABLE INSULATION - POWER	292	ft	484.06
21 HYDROGEN	0	cuft	0.03
26 NEOPRENE FOAM	0	lbs	3.08
31 OIL - FUEL #2 DIESEL	500	gal	38,823.56
37 PAPER	20	lbs	85.56
39 PLASTICS - MIXED	126	lbs	1,078.07
41 PLASTICS - POLYVINYL CHLORIDE	42	lbs	175.09
42 PLASTICS - POLYETHYLENE	54	lbs	578.93
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 41,228.38 Trans load = 78,771

FA/FZ ID AB-FA-34

31 OIL - FUEL #2 DIESEL	20	gal	5,653.02
37 PAPER	20	lbs	311.89
39 PLASTICS - MIXED	50	lbs	1,559.45
45 PROPANE	2	lbs	85.77

Max load = 120,000 Current load = 7,610.13 Trans load = 112,389

FA/FZ ID CW-FA-14

6 CABLE INSULATION - INSTRUMENT	40	ft	0.00
7 CABLE INSULATION - POWER	1,542	ft	0.00
8 CABLE INSULATION - CONTROL	1,783	ft	0.00
21 HYDROGEN	0	cuft	0.00
35 OIL - LUBRICATING-MINERALS	500	gal	0.00
39 PLASTICS - MIXED	2,511	lbs	0.00
41 PLASTICS - POLYVINYL CHLORIDE	531	lbs	0.00
42 PLASTICS - POLYETHYLENE	118	lbs	0.00
118 ZERO COMBUSTIBLES	0		0.00

Max load = 0 Current load = 0.00 Trans load = 0

FA/FZ ID DG-FA-15

7 CABLE INSULATION - POWER	300	ft	732.86
8 CABLE INSULATION - CONTROL	50	ft	122.14
35 OIL - LUBRICATING-MINERALS	430	gal	51,505.13
37 PAPER	21	lbs	132.38
46 RUBBER - ISOPRENE (NATURAL)	20	lbs	307.14
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	334.91
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	41	lbs	531.03
69 CABLE INSULATION-GENERAL	200	ft	157.60
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 53,823.19 Trans load = 66,176

FA/FZ ID DG-FA-17

7 CABLE INSULATION - POWER	303	ft	703.60
8 CABLE INSULATION - CONTROL	50	ft	116.10
35 OIL - LUBRICATING-MINERALS	430	gal	48,958.80
37 PAPER	21	lbs	125.84
46 RUBBER - ISOPRENE (NATURAL)	20	lbs	291.96
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	318.35
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	41	lbs	504.77

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
69 CABLE INSULATION-GENERAL	200	ft	149.81
118 ZERO COMBUSTIBLES	0		0.00
Max load = 120,000	Current load = 51,169.23	Trans load = 68,830	
FA/FZ ID EB-FZ-28A			
6 CABLE INSULATION - INSTRUMENT	1,320	ft	0.00
7 CABLE INSULATION - POWER	130	ft	0.00
118 ZERO COMBUSTIBLES	0		0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID EB-FZ-28B			
6 CABLE INSULATION - INSTRUMENT	20	ft	0.00
39 PLASTICS - MIXED	2	lbs	0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID EB-FZ-28C			
6 CABLE INSULATION - INSTRUMENT	20	ft	0.00
118 ZERO COMBUSTIBLES	0	lbs	0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID EB-FZ-28D			
118 ZERO COMBUSTIBLES	0		0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID EB-FZ-28E			
118 ZERO COMBUSTIBLES	0		0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID EB-FZ-28F			
6 CABLE INSULATION - INSTRUMENT	60	ft	0.00
39 PLASTICS - MIXED	2	lbs	0.00
Max load = 0	Current load = 0.00	Trans load = 0	
FA/FZ ID FS-FA-16			
7 CABLE INSULATION - POWER	322	ft	4,092.53
35 OIL - LUBRICATING-MINERALS	15,150	gal	8,195,017.79
37 PAPER	20	lbs	569.40
118 ZERO COMBUSTIBLES	0		0.00
Max load = 8,200,000	Current load = 8,199,679.72	Trans load = 320	
FA/FZ ID FW-FA-18			
7 CABLE INSULATION - POWER	300	ft	968.75
8 CABLE INSULATION - CONTROL	40	ft	129.17
35 OIL - LUBRICATING-MINERALS	600	gal	95,000.00
37 PAPER	20	lbs	166.67
69 CABLE INSULATION-GENERAL	200	ft	208.33
118 ZERO COMBUSTIBLES	0	lbs	0.00
Max load = 120,000	Current load = 96,472.92	Trans load = 23,527	
FA/FZ ID MB-FA-24			
118 ZERO COMBUSTIBLES	0		0.00

(by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
Max load =	0	Current load =	0.00
Trans load =			0
FA/FZ ID MT-FA-12			
21	HYDROGEN	0 cuft	0.00
39	PLASTICS - MIXED	147 lbs	0.00
41	PLASTICS - POLYVINYL CHLORIDE	2,044 lbs	0.00
42	PLASTICS - POLYETHYLENE	179 lbs	0.00
46	RUBBER - ISOPRENE (NATURAL)	10 lbs	0.00
56	WOOD-UNTREATED (AVG. FOR ALL SPECIES)	-2,160 lbs	0.00
59	CONCRETE COATING	60 lbs	0.00
114	PLASTICS - POLYESTER UNSATURATED	8,550 lbs	0.00
115	PLASTICS-POLYVINYLIDENE FLUORIDE	70 lbs	0.00
116	ASPHALT	40 lbs	0.00
118	ZERO COMBUSTIBLES	0	0.00

Max load = 0 Current load = 0.00 Trans load = 0

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
FA/FZ ID NR-FA-20			
6	CABLE INSULATION - INSTRUMENT	330 ft	16.61
7	CABLE INSULATION - POWER	975 ft	298.31
8	CABLE INSULATION - CONTROL	570 ft	174.40
26	NEOPRENE FOAM	600 lbs	682.73
35	OIL - LUBRICATING-MINERALS	100 gal	1,500.20
37	PAPER	1,000 lbs	789.58
39	PLASTICS - MIXED	915 lbs	1,444.93
41	PLASTICS - POLYVINYL CHLORIDE	25 lbs	19.05
42	PLASTICS - POLYETHYLENE	40 lbs	78.96
43	PLASTICS - POLYSTYRENE	3,760 lbs	6,849.05
46	RUBBER - ISOPRENE (NATURAL)	35 lbs	67.32
47	RUBBER - LATEX FOAM	228 lbs	393.03
48	RUBBER - TIRE	335 lbs	463.68
55	WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	190 lbs	164.93
56	WOOD-UNTREATED (AVG. FOR ALL SPECIES)	122 cuft	3,320.31
69	CABLE INSULATION-GENERAL	108,000 ft	10,659.30
98	CLASS A COMBUSTIBLE SOLIDS	81 lbs	63.96
101	INITIAL LOAD ION EXCHANGE RESIN	400 cuft	19,739.44
112	CHARCOAL	600 lbs	884.01
118	ZERO COMBUSTIBLES	0	0.00
120	CHEMELEX HEAT TRACE	-100 ft	-2.47

Max load = 120,000 Current load = 47,607.33 Trans load = 72,392

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
FA/FZ ID NW-FZ-23A			
118	ZERO COMBUSTIBLES	0	0.00

Max load = 0 Current load = 0.00 Trans load = 0

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
FA/FZ ID OB-FA-09			
6	CABLE INSULATION - INSTRUMENT	6,280 ft	558.12
7	CABLE INSULATION - POWER	747 ft	403.50
8	CABLE INSULATION - CONTROL	760 ft	410.53
9	CLOTH (RAG, ETC.)	200 lbs	273.36
21	HYDROGEN	0 cuft	0.02
37	PAPER	1,850 lbs	2,578.85
39	PLASTICS - MIXED	773 lbs	2,155.77
40	PLASTICS - NYLON	600 lbs	1,425.72
41	PLASTICS - POLYVINYL CHLORIDE	2,100 lbs	2,825.61
42	PLASTICS - POLYETHYLENE	2 lbs	6.97
46	RUBBER - ISOPRENE (NATURAL)	200 lbs	679.14

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
56 WOOD-UNTREATED (AVG. FOR ALL SPECIES)	700	lbs	918.45
69 CABLE INSULATION-GENERAL	5,800	ft	1,010.63
108 CABLE - FIBER OPTIC INSTRUMENT	2,560	ft	285.48
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 13,532.15 Trans load = 106,467

FA/FZ ID OB-FZ-04

6 CABLE INSULATION - INSTRUMENT	1,500	ft	300.83
7 CABLE INSULATION - POWER	323	ft	393.75
8 CABLE INSULATION - CONTROL	-256	ft	-312.07
37 PAPER	20	lbs	62.92
39 PLASTICS - MIXED	62	lbs	390.09
69 CABLE INSULATION-GENERAL	125,600	ft	49,390.48
84 INITIAL LOAD BATTERY CASES1	60	lbs	188.75
94 INITIAL LOAD LUBE OIL9	2	gal	115.08
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 50,529.83 Trans load = 69,470

FA/FZ ID OB-FZ-05

6 CABLE INSULATION - INSTRUMENT	16,488	ft	3,042.31
7 CABLE INSULATION - POWER	7,351	ft	8,369.43
8 CABLE INSULATION - CONTROL	12,762	ft	14,315.88
37 PAPER	1,002	lbs	2,902.32
39 PLASTICS - MIXED	208	lbs	1,207.60
42 PLASTICS - POLYETHYLENE	28	lbs	203.04
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	-191	lbs	-608.08
57 ACRYLIC FIBER	2,644	lbs	12,675.22
64 LEXAN (POLYCARBONATE)	2	lbs	13.12
66 PHENOL	7	lbs	37.88
69 CABLE INSULATION-GENERAL	1,195	lbs	4,323.44
98 CLASS A COMBUSTIBLE SOLIDS	1,019	lbs	2,949.35
105 INITIAL LOAD PLASTIC TUBING, 1/4" DIA.	-5,100	ft	-144.66
106 TEMPORARY TRANSIENT COMBUSTIBLES	48	lbs	141.48
109 PLEXIGLASS/ACRYLIC/POLYMETHYL METHACRYLA	144	lbs	597.10
113 LUCITE/ACRYLIC	20	lbs	82.93
114 PLASTICS - POLYESTER UNSATURATED	0	lbs	1.16
118 ZERO COMBUSTIBLES	17		0.00

Max load = 120,000 Current load = 50,109.52 Trans load = 69,890

FA/FZ ID OB-FZ-06A

7 CABLE INSULATION - POWER	220	ft	589.45
8 CABLE INSULATION - CONTROL	1	ft	4.02
31 OIL - FUEL #2 DIESEL	225	gal	28,197.93
37 PAPER	21	lbs	145.20
39 PLASTICS - MIXED	37	lbs	512.08
46 RUBBER - ISOPRENE (NATURAL)	21	lbs	353.71
47 RUBBER - LATEX FOAM	1	lbs	15.10
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	367.33
69 CABLE INSULATION-GENERAL	169,273	ft	146,303.37
98 CLASS A COMBUSTIBLE SOLIDS	65	lbs	452.07
103 TRANSIENT COMBUSTIBLES	52	lbs	365.64
107 INITIAL LOAD OIL3	4	gal	507.87
117 THERMOLAG FIRE BARRIER	7	lbs	42.35
118 ZERO COMBUSTIBLES	0		0.00

Max load = 240,000 Current load = 177,856.12 Trans load = 62,143

SECTION 8.0
OYSTER CREEK FIRE LOADING
(by material)

FA/FZ ID	OB-FZ-06B	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	500	ft	375.55
7	CABLE INSULATION - POWER	123	ft	561.56
8	CABLE INSULATION - CONTROL	3	ft	13.70
21	HYDROGEN	0	cuft	0.07
31	OIL - FUEL #2 DIESEL	225	gal	48,048.60
37	PAPER	21	lbs	247.42
39	PLASTICS - MIXED	34	lbs	801.41
40	PLASTICS - NYLON	100	lbs	2,008.39
42	PLASTICS - POLYETHYLENE	0	lbs	3.83
69	CABLE INSULATION-GENERAL	26,727	ft	39,362.30
98	CLASS A COMBUSTIBLE SOLIDS	151	lbs	1,782.03
103	TRANSIENT COMBUSTIBLES	52	lbs	623.03
107	INITIAL LOAD OIL3	4	gal	865.39
117	THERMOLAG FIRE BARRIER	4,213	lbs	43,432.99
118	ZERO COMBUSTIBLES	0	lbs	0.00

Max load = 160,000 Current load = 138,126.27 Trans load = 21,873

FA/FZ ID	OB-FZ-08AB	AMOUNT	UNITS	FIRELOAD
7	CABLE INSULATION - POWER	103	ft	122.48
21	HYDROGEN	0	cuft	0.02
37	PAPER	20	lbs	61.37
39	PLASTICS - MIXED	54	lbs	332.03
69	CABLE INSULATION-GENERAL	15,228	ft	5,841.26
104	INITIAL LOAD LUBE OIL10	735	gal	41,416.00
118	ZERO COMBUSTIBLES	10		0.00

Max load = 120,000 Current load = 47,773.16 Trans load = 72,226

FA/FZ ID	OB-FZ-08C	AMOUNT	UNITS	FIRELOAD
7	CABLE INSULATION - POWER	525	ft	1,259.69
37	PAPER	20	lbs	123.84
39	PLASTICS - MIXED	4	lbs	49.54
40	PLASTICS - NYLON	3,120	lbs	32,931.46
41	PLASTICS - POLYVINYL CHLORIDE	1,680	lbs	10,040.99
42	PLASTICS - POLYETHYLENE	1	lbs	15.48
64	LEXAN (POLYCARBONATE)	-1,680	lbs	-17,335.73
66	PHENOL	0	lbs	2.70
69	CABLE INSULATION-GENERAL	35,600	ft	27,554.18
84	INITIAL LOAD BATTERY CASES1	200	lbs	1,238.39
94	INITIAL LOAD LUBE OIL9	1	gal	113.25
118	ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 55,993.79 Trans load = 64,006

FA/FZ ID	OB-FZ-10A	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	180	ft	45.47
7	CABLE INSULATION - POWER	113	ft	173.50
8	CABLE INSULATION - CONTROL	180	ft	276.37
21	HYDROGEN	0	cuft	0.02
37	PAPER	20	lbs	79.25
39	PLASTICS - MIXED	560	lbs	4,438.64
42	PLASTICS - POLYETHYLENE	3	lbs	29.72
69	CABLE INSULATION-GENERAL	15,000	ft	7,429.42
98	CLASS A COMBUSTIBLE SOLIDS	1,535	lbs	6,082.22
118	ZERO COMBUSTIBLES	68		0.00

Max load = 40,000 Current load = 18,554.61 Trans load = 21,445

SECTION 8.0
OYSTER CREEK FIRE LOADING
(by material)

FA/FZ ID	OB-FZ-10B	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	200	ft	67.24
7	CABLE INSULATION - POWER	100	ft	204.35
25	METHANOL	2	gal	85.02
37	PAPER	50	lbs	263.68
39	PLASTICS - MIXED	1,812	lbs	19,114.04
44	PLASTICS - POLYURETHANE	5	lbs	33.89
57	ACRYLIC FIBER	195	lbs	1,709.75
58	CARBON TETRA CHLORIDE	1	gal	3.83
60	DIOXANE	1	gal	107.59
61	GLYCEROL ANHYDROUS	1	gal	131.61
62	ISO AMYL ALCOHOL	0	gal	9.36
63	ISO PROPAL ALCOHOL	2	gal	279.31
66	PHENOL	0	lbs	4.05
67	PROPANOL	1	gal	63.91
68	1,1,2-TRICHLORO-1,2,2-TRIFLOURO ETHANE	0	gal	31.96
98	CLASS A COMBUSTIBLE SOLIDS	1,000	lbs	5,273.57
99	CLASS B COMBUSTIBLE LIQUIDS	21	lbs	266.28
111	INITIAL LOAD FLAMMABLE LIQUIDS	20	gal	1,582.07
118	ZERO COMBUSTIBLES	0		0.00

Max load = 40,000 Current load = 29,231.51 Trans load = 10,768

FA/FZ ID	OB-FZ-22A	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	5,742	ft	2,107.75
7	CABLE INSULATION - POWER	800	ft	721.98
8	CABLE INSULATION - CONTROL	6,322	ft	5,705.46
39	PLASTICS - MIXED	2	lbs	13.04
98	CLASS A COMBUSTIBLE SOLIDS	26	lbs	62.42
118	ZERO COMBUSTIBLES	0	lbs	0.00

Max load = 120,000 Current load = 8,610.65 Trans load = 111,389

FA/FZ ID	OB-FZ-22B	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	2,545	ft	1,197.37
7	CABLE INSULATION - POWER	550	ft	1,572.88
8	CABLE INSULATION - CONTROL	796	ft	2,276.38
118	ZERO COMBUSTIBLES	0		0.00

Max load = 40,000 Current load = 5,046.63 Trans load = 34,953

FA/FZ ID	OB-FZ-22C	AMOUNT	UNITS	FIRELOAD
6	CABLE INSULATION - INSTRUMENT	1,776	ft	835.57
7	CABLE INSULATION - POWER	300	ft	857.93
8	CABLE INSULATION - CONTROL	885	ft	2,530.89
118	ZERO COMBUSTIBLES	0		0.00

Max load = 40,000 Current load = 4,224.39 Trans load = 35,775

FA/FZ ID	OB-FZ-22D	AMOUNT	UNITS	FIRELOAD
118	ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 0.00 Trans load = 120,000

FA/FZ ID	OG-FA-21	AMOUNT	UNITS	FIRELOAD
7	CABLE INSULATION - POWER	315	ft	271.90
9	CLOTH (RAG, ETC.)	75	lbs	148.11
26	NEOPRENE FOAM	0	lbs	1.45
35	OIL - LUBRICATING-MINERALS	5	gal	191.34
37	PAPER	20	lbs	40.28

SECTION 8.0
OYSTER CREEK FIRELOADING
(by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
39 PLASTICS - MIXED	40	lbs	161.13
42 PLASTICS - POLYETHYLENE	1	lbs	7.55
46 RUBBER - ISOPRENE (NATURAL)	40	lbs	196.25
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	107.00
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	50	lbs	110.71
66 PHENOL	1	lbs	4.39
69 CABLE INSULLATION-GENERAL	5,490	lbs	1,359.51
98 CLASS A COMBUSTIBLE SOLIDS	500	lbs	1,007.05
102 INITIAL LOAD CHARCOALS	48,000	lbs	157,099.70
118 ZERO COMBUSTIBLES	0		0.00

Max load = 240,000 Current load = 160,706.37 Trans load = 79,293

FA/FZ ID OR-FA-19

6 CABLE INSULATION - INSTRUMENT	20	ft	0.87
7 CABLE INSULATION - POWER	5,550	ft	1,468.89
35 OIL - LUBRICATING-MINERALS	2,850	gal	36,984.54
37 PAPER	1,000	lbs	683.00
39 PLASTICS - MIXED	600	lbs	819.60
40 PLASTICS - NYLON	151	lbs	176.62
42 PLASTICS - POLYETHYLENE	450	lbs	768.38
46 RUBBER - ISOPRENE (NATURAL)	1,400	lbs	2,329.31
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	1,550	lbs	1,163.85
57 ACRYLIC FIBER	150	lbs	169.68
98 CLASS A COMBUSTIBLE SOLIDS	157	lbs	107.74
101 INITIAL LOAD ION EXCHANGE RESIN	200	cuft	8,537.52
118 ZERO COMBUSTIBLES	0		0.00
121 ABSORBENT, DRI-ZORB	400	lbs	269.79

Max load = 120,000 Current load = 53,479.79 Trans load = 66,520

FA/FZ ID OR-FA-33

118 ZERO COMBUSTIBLES	0		0.00
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Max load = 0 Current load = 0.00 Trans load = 0

FA/FZ ID PH-FA-25

7 CABLE INSULATION - POWER	100	ft	1,550.00
37 PAPER	20	lbs	800.00
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 2,350.00 Trans load = 117,650

FA/FZ ID RB-FA-02

6 CABLE INSULATION - INSTRUMENT	7,340	ft	1,345.58
7 CABLE INSULATION - POWER	545	ft	607.30
8 CABLE INSULATION - CONTROL	1,260	ft	1,404.03
17 FELPRO (GREASE)	22	lbs	153.26
20 GREASE	2	lbs	17.42
39 PLASTICS - MIXED	9	lbs	54.64
42 PLASTICS - POLYETHYLENE	0	lbs	3.59
46 RUBBER - ISOPRENE (NATURAL)	853	lbs	5,975.29
57 ACRYLIC FIBER	2,184	lbs	10,401.87
69 CABLE INSULLATION-GENERAL	30,000	ft	10,783.61
98 CLASS A COMBUSTIBLE SOLIDS	2,660	lbs	7,649.17
118 ZERO COMBUSTIBLES	0		0.00

Max load = 120,000 Current load = 38,395.76 Trans load = 81,604

FA/FZ ID RB-FZ-01A

SECTION 8.0
OYSTER CREEK FIRE LOADING
(by material)

	AMOUNT	UNITS	FIRELOAD
6 CABLE INSULATION - INSTRUMENT	1,000	ft	32.26
7 CABLE INSULATION - POWER	485	ft	95.08
8 CABLE INSULATION - CONTROL	665	ft	130.36
29 OIL - CRUDE	0	gal	0.00
35 OIL - LUBRICATING-MINERALS	16	gal	12.52
37 PAPER	20	lbs	10.12
39 PLASTICS - MIXED	105	lbs	106.24
40 PLASTICS - NYLON	847	lbs	730.45
41 PLASTICS - POLYVINYL CHLORIDE	32	lbs	15.63
42 PLASTICS - POLYETHYLENE	325	lbs	411.05
46 RUBBER - ISOPRENE (NATURAL)	80	lbs	98.59
48 RUBBER - TIRE	100	lbs	88.69
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	26.88
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	200	lbs	111.24
64 LEXAN (POLYCARBONATE)	43	lbs	36.42
98 CLASS A COMBUSTIBLE SOLIDS	150	lbs	75.89
109 PLEXIGLASS/ACRYLIC/POLYMETHYL METHACRYLA	1,600	lbs	1,165.02
118 ZERO COMBUSTIBLES	0	lbs	0.00

Max load = 120,000 Current load = 3,146.44 Trans load = 116,853

FA/FZ ID RB-FZ-01B

6 CABLE INSULATION - INSTRUMENT	3,116	ft	153.10
7 CABLE INSULATION - POWER	864	ft	258.05
8 CABLE INSULATION - CONTROL	1,861	ft	555.79
21 HYDROGEN	0	cuft	0.01
35 OIL - LUBRICATING-MINERALS	20	gal	292.87
37 PAPER	20	lbs	15.41
39 PLASTICS - MIXED	263	lbs	406.01
41 PLASTICS - POLYVINYL CHLORIDE	5	lbs	3.72
46 RUBBER - ISOPRENE (NATURAL)	270	lbs	506.92
52 TAPE (CLOTH)	31	lbs	23.29
54 TRASH - HIGH COMB. PAPER, ETC.	150	lbs	122.83
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	500	lbs	423.65
64 LEXAN (POLYCARBONATE)	100	lbs	128.44
69 CABLE INSULATION-GENERAL	23,400	ft	2,254.34
98 CLASS A COMBUSTIBLE SOLIDS	1,312	lbs	1,011.17
114 PLASTICS - POLYESTER UNSATURATED	200	lbs	247.01
118 ZERO COMBUSTIBLES	0		0.00
120 CHEMELEX HEAT TRACE	180	ft	4.34

Max load = 40,000 Current load = 6,406.95 Trans load = 33,593

FA/FZ ID RB-FZ-01C

6 CABLE INSULATION - INSTRUMENT	2,589	ft	113.28
7 CABLE INSULATION - POWER	2,346	ft	623.98
8 CABLE INSULATION - CONTROL	2,951	ft	784.90
21 HYDROGEN	454	cuft	12.44
37 PAPER	20	lbs	13.73
39 PLASTICS - MIXED	409	lbs	562.16
40 PLASTICS - NYLON	60	lbs	70.20
42 PLASTICS - POLYETHYLENE	254	lbs	436.29
46 RUBBER - ISOPRENE (NATURAL)	278	lbs	464.84
52 TAPE (CLOTH)	31	lbs	20.75
54 TRASH - HIGH COMB. PAPER, ETC.	100	lbs	72.93
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	400	lbs	301.84
64 LEXAN (POLYCARBONATE)	20	lbs	22.88
69 CABLE INSULATION-GENERAL	70,000	ft	6,006.01
98 CLASS A COMBUSTIBLE SOLIDS	1,781	lbs	1,222.48
101 INITIAL LOAD ION EXCHANGE RESIN	241	cuft	10,379.67

SECTION 8.0
OYSTER CREEK FIRE LOADING
(by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
108 CABLE - FIBER OPTIC INSTRUMENT	75	ft	4.12
109 PLEXIGLASS/ACRYLIC/POLYMETHYL METHACRYLA	45	lbs	44.25
118 ZERO COMBUSTIBLES	250		0.00
121 ABSORBENT, DRI-ZORB	200	lbs	135.56

Max load = 40,000 Current load = 21,292.31 Trans load = 18,707

FA/FZ ID RB-FZ-01D

6 CABLE INSULATION - INSTRUMENT	2,123	ft	118.98
7 CABLE INSULATION - POWER	3,189	ft	1,086.37
8 CABLE INSULATION - CONTROL	872	ft	297.05
21 HYDROGEN	0	cuft	0.03
37 PAPER	200	lbs	175.82
39 PLASTICS - MIXED	338	lbs	595.51
42 PLASTICS - POLYETHYLENE	55	lbs	121.16
46 RUBBER - ISOPRENE (NATURAL)	302	lbs	647.81
54 TRASH - HIGH COMB. PAPER, ETC.	100	lbs	93.41
64 LEXAN (POLYCARBONATE)	40	lbs	58.60
65 PLASTICS - HYPALON (SPECIAL APPLICATION)	6	ft	21.10
69 CABLE INSULATION-GENERAL	160,000	ft	17,582.42
98 CLASS A COMBUSTIBLE SOLIDS	2	lbs	1.76
105 INITIAL LOAD PLASTIC TUBING, 1/4" DIA.	60	ft	0.52
117 THERMOLAG FIRE BARRIER	190	lbs	146.16
118 ZERO COMBUSTIBLES	100		0.00

Max load = 40,000 Current load = 20,946.70 Trans load = 19,053

FA/FZ ID RB-FZ-01E

6 CABLE INSULATION - INSTRUMENT	3,109	ft	130.60
7 CABLE INSULATION - POWER	3,198	ft	816.62
8 CABLE INSULATION - CONTROL	741	ft	189.22
21 HYDROGEN	0	cuft	0.00
36 PAINT	0	gal	1.27
37 PAPER	40	lbs	26.36
39 PLASTICS - MIXED	231	lbs	304.59
40 PLASTICS - NYLON	10	lbs	11.23
42 PLASTICS - POLYETHYLENE	79	lbs	130.65
46 RUBBER - ISOPRENE (NATURAL)	40	lbs	64.21
47 RUBBER - LATEX FOAM	50	lbs	71.94
54 TRASH - HIGH COMB. PAPER, ETC.	100	lbs	70.02
65 PLASTICS - HYPALON (SPECIAL APPLICATION)	35	ft	92.26
69 CABLE INSULATION-GENERAL	252,028	ft	20,780.89
98 CLASS A COMBUSTIBLE SOLIDS	9	lbs	5.93
117 THERMOLAG FIRE BARRIER	2,796	lbs	1,612.19
118 ZERO COMBUSTIBLES	0		0.00

Max load = 40,000 Current load = 24,307.98 Trans load = 15,692

FA/FZ ID RB-FZ-01F1

98 CLASS A COMBUSTIBLE SOLIDS	0	lbs	0.00
118 ZERO COMBUSTIBLES	0		0.00

Max load = 40,000 Current load = 0.00 Trans load = 40,000

FA/FZ ID RB-FZ-01F2

7 CABLE INSULATION - POWER	4	ft	22.14
42 PLASTICS - POLYETHYLENE	1	lbs	35.71
98 CLASS A COMBUSTIBLE SOLIDS	0	lbs	0.00
117 THERMOLAG FIRE BARRIER	6	lbs	81.25
118 ZERO COMBUSTIBLES	0		0.00

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
Max load =	40,000	Current load =	139.10
		Trans load =	39,860
FA/FZ ID RB-FZ-01F3			
9 CLOTH (RAG, ETC.)		9 lbs	126.06
39 PLASTICS - MIXED		1 lbs	28.57
98 CLASS A COMBUSTIBLE SOLIDS		0 lbs	0.00
118 ZERO COMBUSTIBLES		0	0.00
Max load =	40,000	Current load =	154.63
		Trans load =	39,845
FA/FZ ID RB-FZ-01F4			
98 CLASS A COMBUSTIBLE SOLIDS		0 lbs	0.00
118 ZERO COMBUSTIBLES		0	0.00
Max load =	40,000	Current load =	0.00
		Trans load =	40,000
FA/FZ ID RB-FZ-01F5			
6 CABLE INSULATION - INSTRUMENT		810 ft	36.08
39 PLASTICS - MIXED		521 lbs	728.03
42 PLASTICS - POLYETHYLENE		2,180 lbs	3,807.86
98 CLASS A COMBUSTIBLE SOLIDS		0 lbs	0.00
118 ZERO COMBUSTIBLES		0	0.00
Max load =	40,000	Current load =	4,571.97
		Trans load =	35,428
FA/FZ ID RB-FZ-01G			
7 CABLE INSULATION - POWER		100 ft	192.67
20 GREASE		44 lbs	529.97
37 PAPER		20 lbs	99.44
69 CABLE INSULATION-GENERAL		3,000 ft	1,864.51
98 CLASS A COMBUSTIBLE SOLIDS		550 lbs	2,734.62
114 PLASTICS - POLYESTER UNSATURATED		1,500 lbs	11,951.52
118 ZERO COMBUSTIBLES		0	0.00
Max load =	40,000	Current load =	17,372.73
		Trans load =	22,627
FA/FZ ID RB-FZ-01H			
6 CABLE INSULATION - INSTRUMENT		890 ft	856.42
35 OIL - LUBRICATING-MINERALS		4 gal	1,221.74
118 ZERO COMBUSTIBLES		0	0.00
Max load =	40,000	Current load =	2,078.16
		Trans load =	37,921
FA/FZ ID TB-FA-03A			
7 CABLE INSULATION - POWER		20 ft	198.72
21 HYDROGEN		0 cuft	0.15
37 PAPER		20 lbs	512.82
39 PLASTICS - MIXED		55 lbs	2,825.64
69 CABLE INSULATION-GENERAL		0 ft	0.00
98 CLASS A COMBUSTIBLE SOLIDS		10 lbs	256.41
118 ZERO COMBUSTIBLES		0	0.00
Max load =	120,000	Current load =	3,793.74
		Trans load =	116,206
FA/FZ ID TB-FA-03B			
7 CABLE INSULATION - POWER		20 ft	184.53
21 HYDROGEN		0 cuft	0.14
37 PAPER		20 lbs	476.19
39 PLASTICS - MIXED		54 lbs	2,576.19

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

	AMOUNT	UNITS	FIRELOAD
69 CABLE INSULLATION-GENERAL	0	ft	0.00
118 ZERO COMBUSTIBLES	0		0.00
Max load = 120,000 Current load = 3,237.05 Trans load = 116,762			
FA/FZ ID TB-FA-26			
37 PAPER	20	lbs	1,142.86
69 CABLE INSULLATION-GENERAL	300	ft	2,142.86
84 INITIAL LOAD BATTERY CASES1	50	lbs	2,857.14
118 ZERO COMBUSTIBLES	0		0.00
Max load = 120,000 Current load = 6,142.86 Trans load = 113,857			
FA/FZ ID TB-FZ-11A			
6 CABLE INSULATION - INSTRUMENT	290	ft.	7.12
7 CABLE INSULATION - POWER	600	ft	89.48
21 HYDROGEN	14,820	cuft	227.43
35 OIL - LUBRICATING-MINERALS	15,000	gal	109,683.94
37 PAPER	20	lbs	7.70
39 PLASTICS - MIXED	0	lbs	0.38
48 RUBBER - TIRE	250	lbs	168.66
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	200	lbs	84.62
98 CLASS A COMBUSTIBLE SOLIDS	500	lbs	192.43
118 ZERO COMBUSTIBLES	0		0.00
Max load = 120,000 Current load = 110,461.76 Trans load = 9,538			
FA/FZ ID TB-FZ-11B			
7 CABLE INSULATION - POWER	100	ft	97.64
21 HYDROGEN	0	cuft	0.03
22 KEROSENE	1	gal	44.31
35 OIL - LUBRICATING-MINERALS	16,000	gal	765,984.25
37 PAPER	20	lbs	50.39
39 PLASTICS - MIXED	160	lbs	807.56
46 RUBBER - ISOPRENE (NATURAL)	20	lbs	122.76
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	133.86
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)	100	lbs	277.01
69 CABLE INSULLATION-GENERAL	5,000	ft	1,574.80
118 ZERO COMBUSTIBLES	0		0.00
Max load = 770,000 Current load = 769,092.61 Trans load = 907			
FA/FZ ID TB-FZ-11C			
6 CABLE INSULATION - INSTRUMENT	1	lbs	4.80
7 CABLE INSULATION - POWER	920	ft	1,069.77
8 CABLE INSULATION - CONTROL	10,480	ft	12,186.05
21 HYDROGEN	0	cuft	0.02
37 PAPER	20	lbs	60.02
39 PLASTICS - MIXED	304	lbs	1,825.06
40 PLASTICS - NYLON	200	lbs	1,023.03
46 RUBBER - ISOPRENE (NATURAL)	20	lbs	146.20
54 TRASH - HIGH COMB. PAPER, ETC.	50	lbs	159.41
117 THERMOLAG FIRE BARRIER	26	lbs	68.26
118 ZERO COMBUSTIBLES	0		0.00
Max load = 40,000 Current load = 16,542.62 Trans load = 23,457			
FA/FZ ID TB-FZ-11D			
6 CABLE INSULATION - INSTRUMENT	2,140	ft	112.89
7 CABLE INSULATION - POWER	260	ft	83.36

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

	AMOUNT	UNITS	FIRELOAD
8 CABLE INSULATION - CONTROL		50 ft	16.03
31 OIL - FUEL #2 DIESEL		380 gal	5,699.21
35 OIL - LUBRICATING-MINERALS		933 gal	14,668.59
37 PAPER		20 lbs	16.55
39 PLASTICS - MIXED		40 lbs	66.52
40 PLASTICS - NYLON		15 lbs	21.16
41 PLASTICS - POLYVINYL CHLORIDE		156 lbs	125.17
42 PLASTICS - POLYETHYLENE		305 lbs	630.95
46 RUBBER - ISOPRENE (NATURAL)		290 lbs	584.55
56 WOOD-UNTREATED (AVG. FOR ALL SPECIES)		80 lbs	62.31
69 CABLE INSULATION-GENERAL	100,000	ft	10,343.40
98 CLASS A COMBUSTIBLE SOLIDS	1,985	lbs	1,642.54
108 CABLE - FIBER OPTIC INSTRUMENT		80 ft	5.30
117 THERMOLAG FIRE BARRIER		372 lbs	269.71
118 ZERO COMBUSTIBLES		0	0.00

Max load = 120,000 Current load = 34,348.24 Trans load = 85,651

FA/FZ ID TB-FZ-11E

6 CABLE INSULATION - INSTRUMENT		6,950 ft	134.12
7 CABLE INSULATION - POWER		300 ft	35.19
35 OIL - LUBRICATING-MINERALS		5 gal	28.76
37 PAPER		20 lbs	6.05
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)		200 lbs	66.56
69 CABLE INSULATION-GENERAL	170,000	ft	6,432.81
114 PLASTICS - POLYESTER UNSATURATED		20,250 lbs	9,823.48
118 ZERO COMBUSTIBLES		0	0.00

Max load = 40,000 Current load = 16,526.97 Trans load = 23,473

FA/FZ ID TB-FZ-11F

6 CABLE INSULATION - INSTRUMENT		40 ft	3.62
7 CABLE INSULATION - POWER		323 ft	177.22
8 CABLE INSULATION - CONTROL		10 ft	5.49
21 HYDROGEN		0 cuft	0.01
35 OIL - LUBRICATING-MINERALS		135 gal	3,631.85
37 PAPER		20 lbs	28.32
39 PLASTICS - MIXED		61 lbs	174.44
40 PLASTICS - NYLON		15 lbs	37.56
41 PLASTICS - POLYVINYL CHLORIDE		247 lbs	337.58
42 PLASTICS - POLYETHYLENE		54 lbs	191.61
46 RUBBER - ISOPRENE (NATURAL)		20 lbs	68.98
54 TRASH - HIGH COMB. PAPER, ETC.		50 lbs	75.22
55 WOOD-CHEM.TREATED (AVG. FOR ALL SPECIES)		40 lbs	62.27
108 CABLE - FIBER OPTIC INSTRUMENT		127 ft	14.39
118 ZERO COMBUSTIBLES		0	0.00

Max load = 40,000 Current load = 4,808.56 Trans load = 35,191

FA/FZ ID TB-FZ-11G

6 CABLE INSULATION - INSTRUMENT		84 ft	7.16
7 CABLE INSULATION - POWER		509 ft	263.55
9 CLOTH (RAG, ETC.)		100 lbs	131.02
21 HYDROGEN		0 cuft	0.03
35 OIL - LUBRICATING-MINERALS		10 gal	253.88
37 PAPER		20 lbs	26.72
39 PLASTICS - MIXED		289 lbs	772.61
40 PLASTICS - NYLON		100 lbs	227.78
42 PLASTICS - POLYETHYLENE		208 lbs	695.68
46 RUBBER - ISOPRENE (NATURAL)		50 lbs	162.75

SECTION 8.0
OYSTER CREEK FIRE LOADING
 (by material)

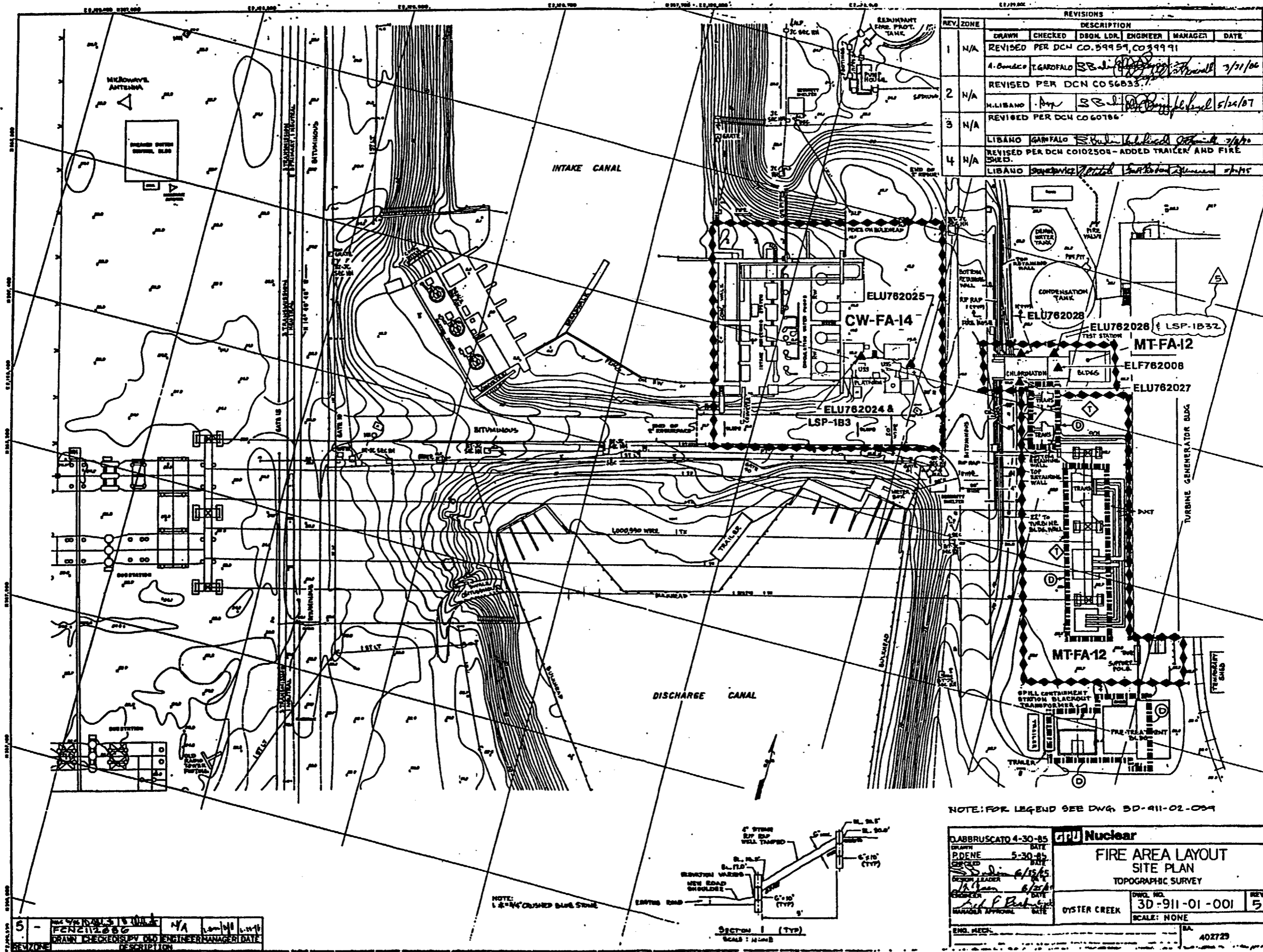
	<u>AMOUNT</u>	<u>UNITS</u>	<u>FIRELOAD</u>
98 CLASS A COMBUSTIBLE SOLIDS		100 lbs	133.62
108 CABLE - FIBER OPTIC INSTRUMENT		120 ft	12.83
118 ZERO COMBUSTIBLES		0	0.00

Max load = 40,000 Current load = 2,687.63 Trans load = 37,312

FA/FZ ID TB-FZ-11H

1 ACETONE		0 lbs	0.84
6 CABLE INSULATION - INSTRUMENT		120 ft	15.52
7 CABLE INSULATION - POWER		20 ft	15.72
39 PLASTICS - MIXED		3 lbs	12.17
41 PLASTICS - POLYVINYL CHLORIDE		50 lbs	97.90
42 PLASTICS - POLYETHYLENE		28 lbs	141.99
98 CLASS A COMBUSTIBLE SOLIDS		0 lbs	0.00
108 CABLE - FIBER OPTIC INSTRUMENT		100 ft	16.23
118 ZERO COMBUSTIBLES		0	0.00

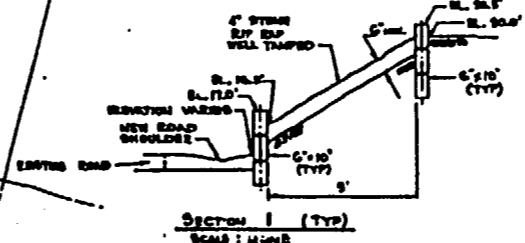
Max load = 40,000 Current load = 300.37 Trans load = 39,699



REVISIONS					
REV.	ZONE	DESCRIPTION	DRAWN	CHECKED	DATE
1	N/A	REVISED PER DCN CO. 59957, CO 59991	A. Combes	T. GAROFALO	3/31/06
2	N/A	REVISED PER DCN CO 56833	M. LIBANO	Ann	5/24/07
3	N/A	REVISED PER DCN CO 60786			
4	N/A	REVISED PER DCN CO 02508 - ADDED TRAILER AND FIRE SHEDS.	LIBANO	GARFALO	7/17/0
		LIBANO	SENEVICI		

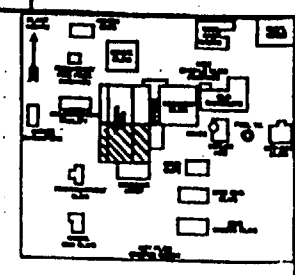
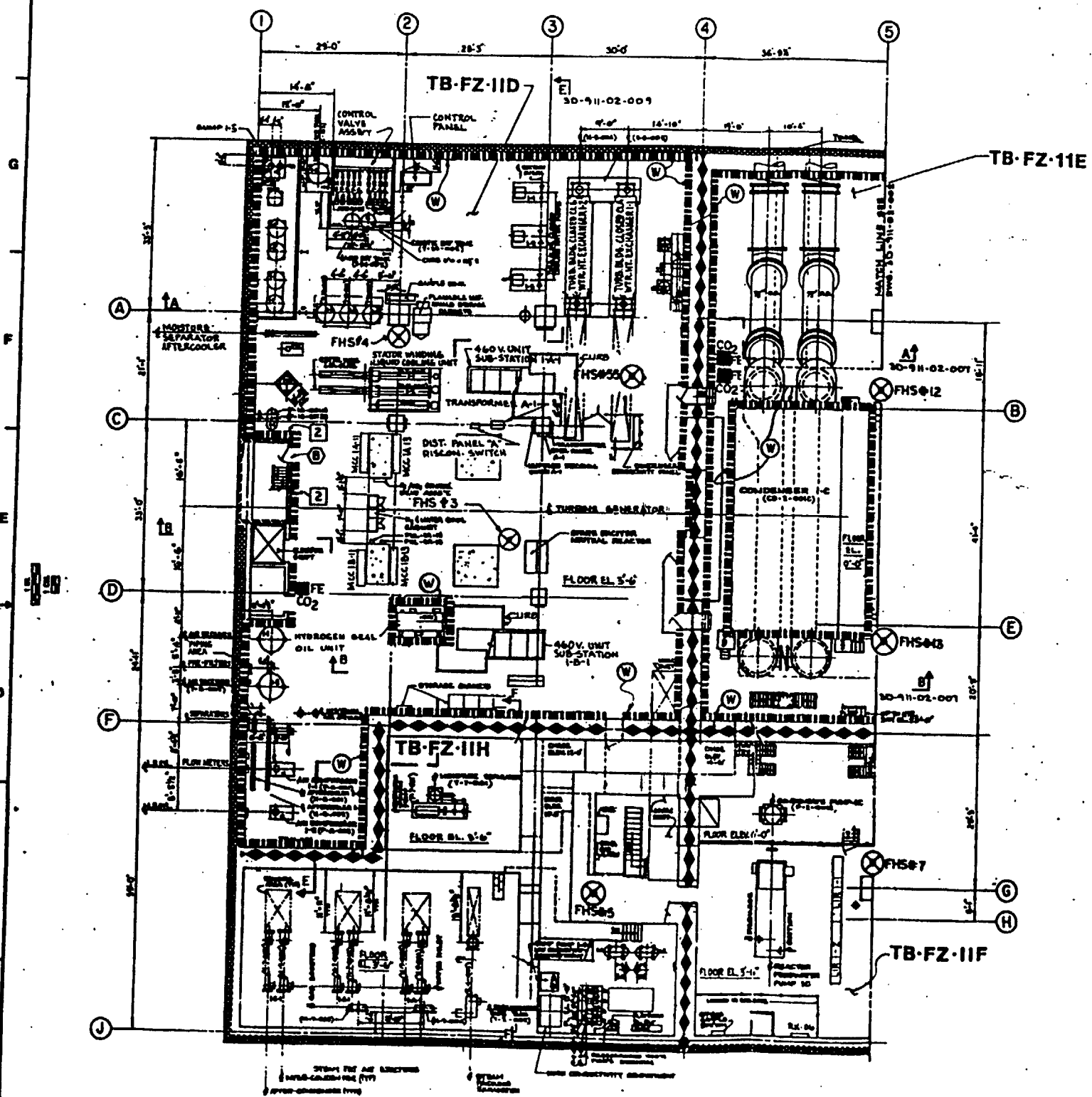
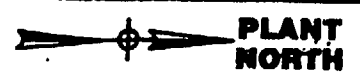
NOTE: FOR LEGEND SEE DWG. 3D-911-02-009

DABBRUSCATO 4-30-85		Nuclear	
DATE	5-30-85	FIRE AREA LAYOUT	
DRAWN	PDENE	SITE PLAN	
CHECKED	6/15/85	TOPOGRAPHIC SURVEY	
DESIGN LEADER	6/25/85	DWG. NO.	3D-911-01-001
ENGINEER	6/25/85	REV.	5
MANAGER APPROVAL		SCALE:	NONE
		ENG. NO.	402729



5	REVISED PER DCN CO. 59957, CO 59991	N/A	Ann	5/24/07
REV. ZONE	DESCRIPTION	DRAWN	CHECKED	DATE

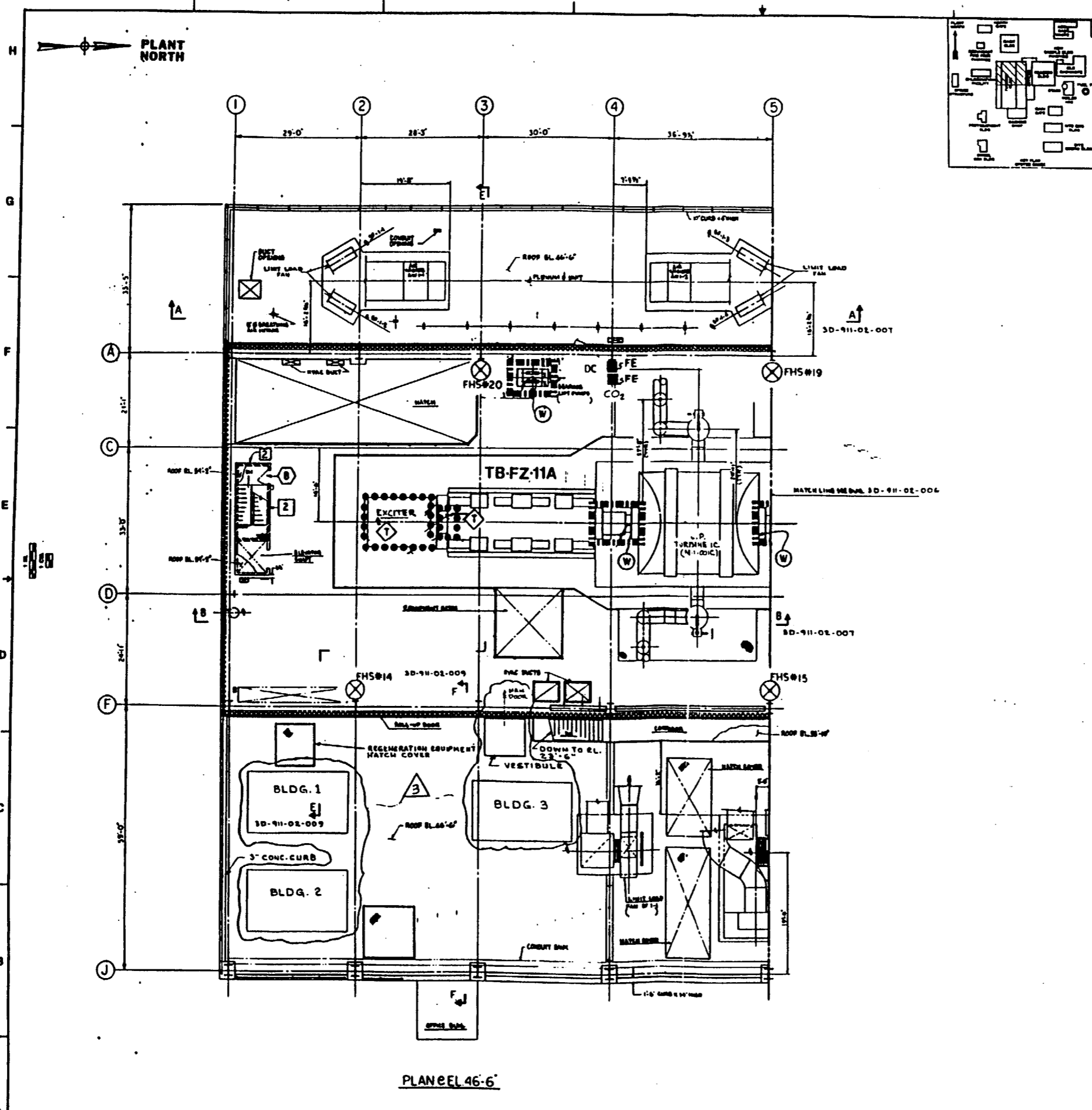
3D-911-01-001



REV. ZONE		REVISIONS						
REV.	ZONE	DESCRIPTION	DRWN	CHECKED	DESK LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN CO99959, CO99991	A. B. ...	T. GARDALO	S.B. ...	J.P. ...	J.P. ...	7/1/86
2	N/A	REVISED PER DCNS, CO69052, CO 63048	A. B. ...	A. HERTZ	S.B. ...	J.P. ...	J.P. ...	11/1/86
3	G-6	REVISED PER DCN-C111730	J.M. ...	G. ...	J.P. ...	J.P. ...	J.P. ...	11/1/87

NOTES:
1. FOR LEGEND SEE DWG 30-911-02-001

LIBANO	4-30-85	GPU Nuclear
PDENE	5-30-85	FIRE AREA LAYOUT
		TURBINE BUILDING
		BASEMENT FLOOR PLAN
OYSTER CREEK	30-911-02-002	REV. 3
SCALE: NONE		
402729		



REVISIONS								
REV	ZONE	DESCRIPTION	DRAWN	CHECKED	DSGN. LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN CO 28931	A. BOMBICO	S. SHERPALE	S. P. ...	...	...	7/1/86
2	N/A	REVISED PER DCN CO 63052	BOMBICO	A. HERTZ	S. P. ...	...	...	11/1/88
3	NA	REVISED PER DCN N° CO 102401	LIBANO	SPANKIEWICZ	W. P. ...	...	...	5/14/95

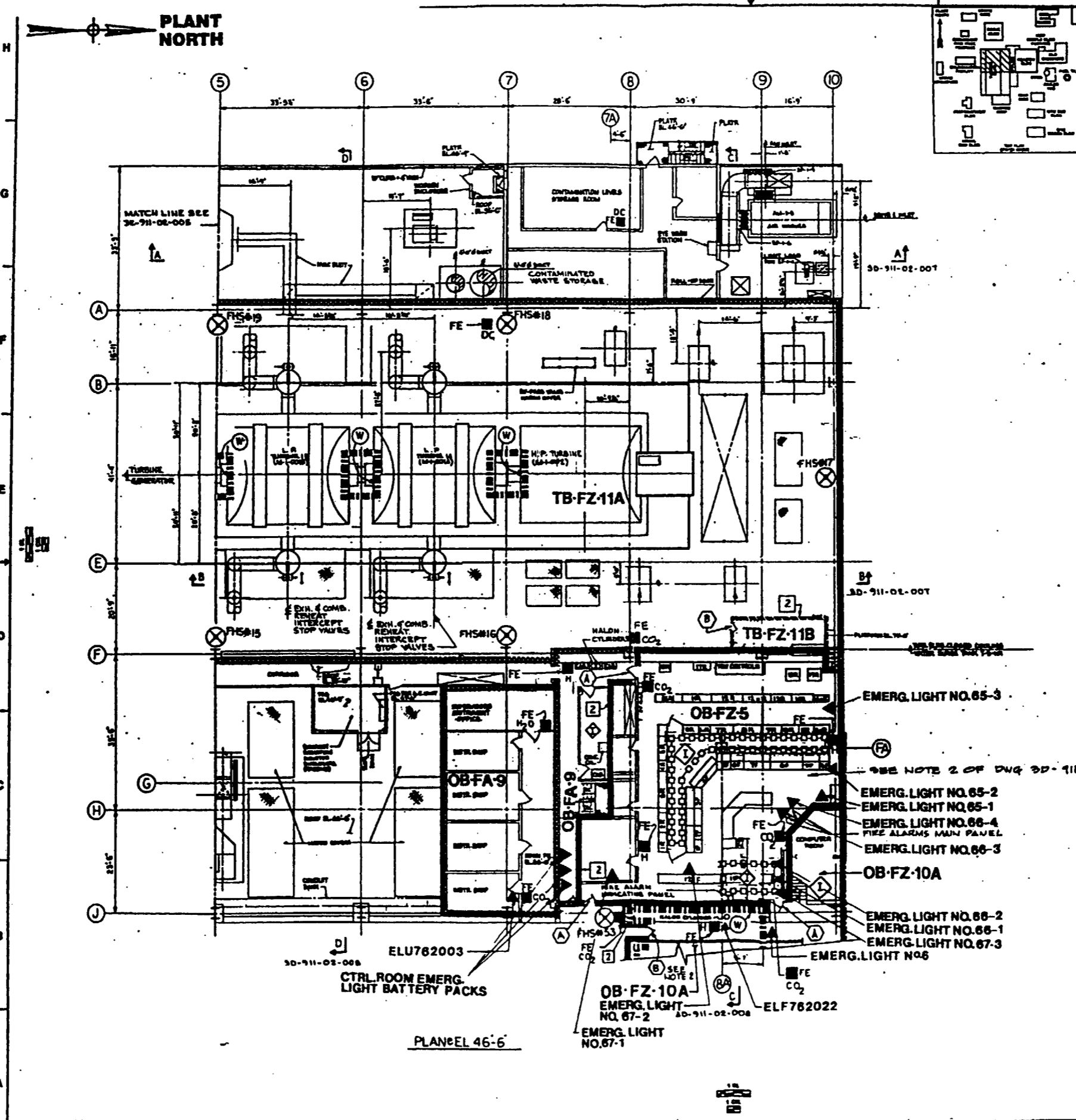
NOTES:
 1. FOR LEGEND SEE DWG. 3D-911-02-039

(U) ABBRUSCATO 4-30-85 DRAWN DATE P. DENE 5-30-85 CHECKED DATE DESIGN LEADER DATE OWNER DATE MANAGER APPROVAL DATE	GPU Nuclear FIRE AREA LAYOUT TURBINE BUILDING OPERATING FLOOR OYSTER CREEK SCALE: NONE	DWG. NO. 3D-911-02-005 REV. 3
--	--	--

PLAN EEL 46-6

3D-911-02-005

A



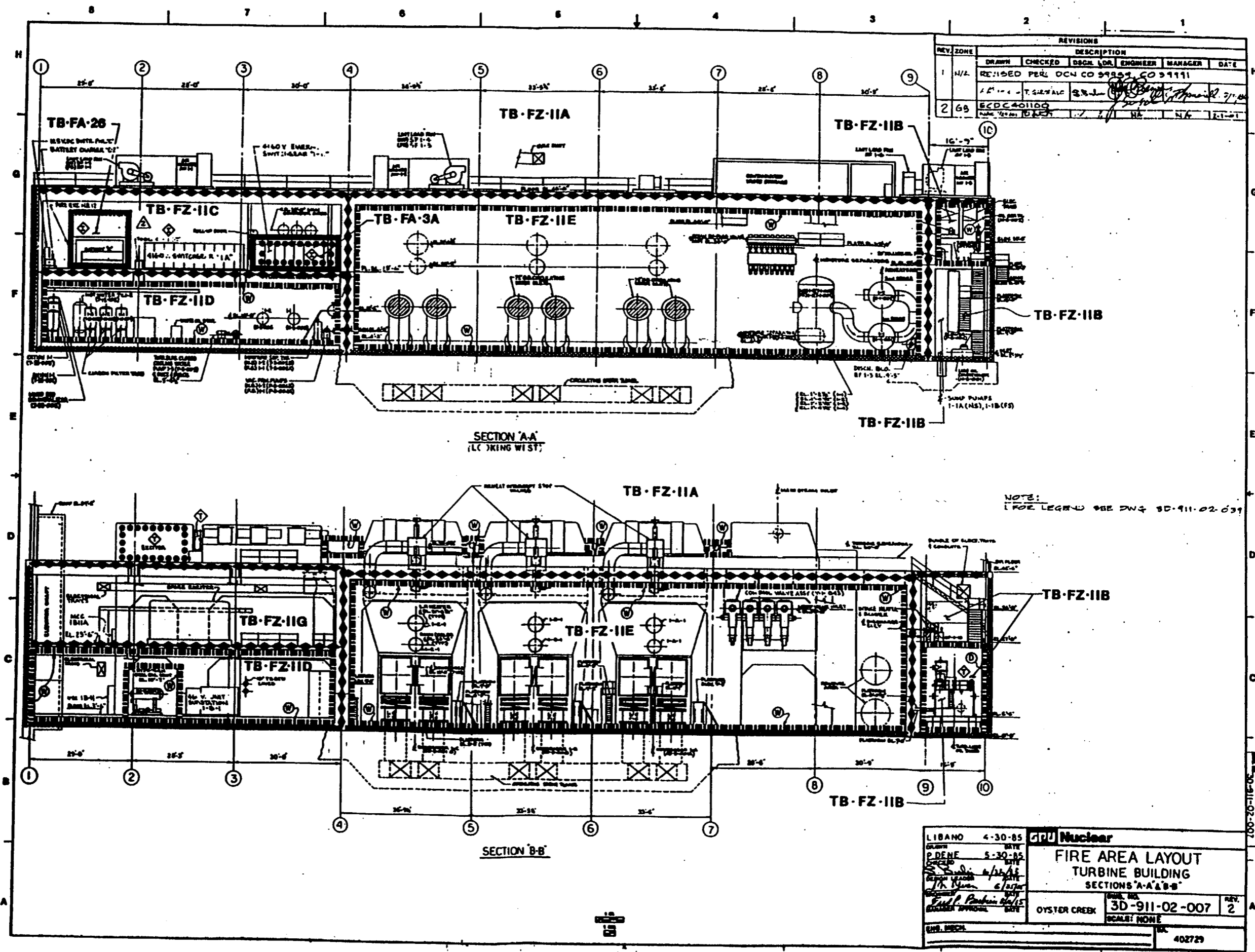
REVISIONS								
REV	ZONE	DESCRIPTION	DRAWN	CHECKED	DESIGN LDR	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN CO 39959, CO 39991	A. BOND CO	T. GARFALO	S. J. ...	[Signature]	[Signature]	7/1/86
2	N/A	REVISED PER DCN CO 56833	LIBANO	[Signature]	[Signature]	[Signature]	[Signature]	5/25/87
3	N/A	REVISED PER DCN CO 56833, CO 63052	BOND CO	R. MATE	[Signature]	[Signature]	[Signature]	7/1/87
4	N/A	REVISED PER ECD-C208004, P. 4 OF 6	J. M. ESPOSITO	[Signature]	[Signature]	[Signature]	[Signature]	7/5/87

NOTES:
 1. FOR LEGEND SEE DWG 3D-911-02-029
 2. THE WALL ABOVE THIS DOOR IS NOT RATED, BUT IS SEALED WITH NON-COMBUSTIBLE MATERIAL.

SEE NOTE 2 OF DWG 3D-911-02-004

D. ABBUSCATO 4-30-85		CPN Nuclear	
DATE	5-30-85	FIRE AREA LAYOUT	
P. DENE	5-30-85	TURBINE BUILDING	
CHECKED	6/25/85	OPERATING FLOOR	
DATE	6/25/85	OSYER CREEK	3D-911-02-006
SCALE: NONE	4	SCALE: NONE	
402729			

PLAN EEL 46-6



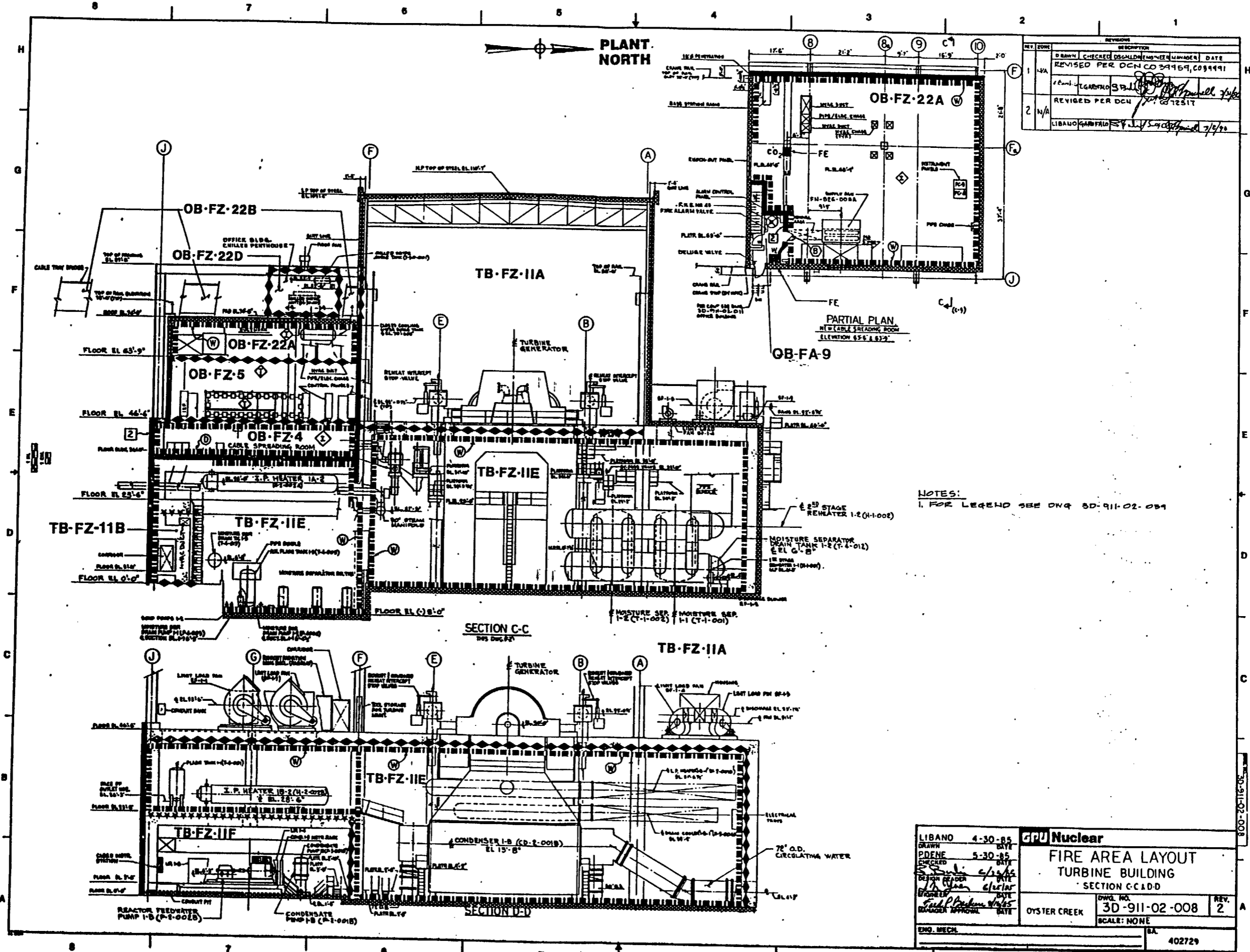
REV. ZONE		DESCRIPTION					
REV.	ZONE	DRAWN	CHECKED	DESIGN LDR.	ENGINEER	MANAGER	DATE
1	N/A						REVISED PER DCN CO 39959, CO 39911
2	GB	ECDC401100					

SECTION 'A-A'
(LC) KING WEST

SECTION 'B-B'

NOTE:
FOR LEGEND SEE DWG 3D-911-02-039

LIBANO	4-30-85	
P. DENE	5-30-85	
FIRE AREA LAYOUT TURBINE BUILDING SECTIONS 'A-A' & 'B-B'		OYSTER CREEK 3D-911-02-007 SCALE: NONE
REV. 2 DATE: 5/15/85		402729



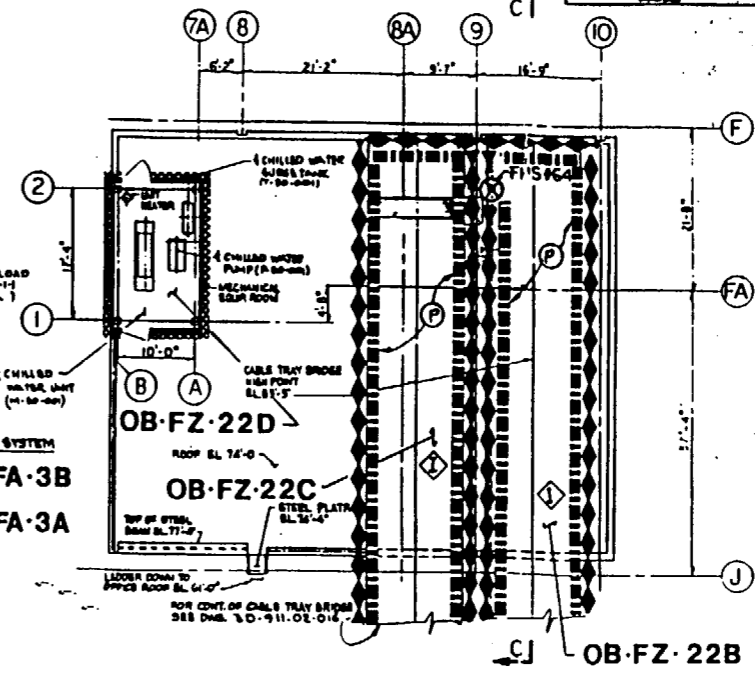
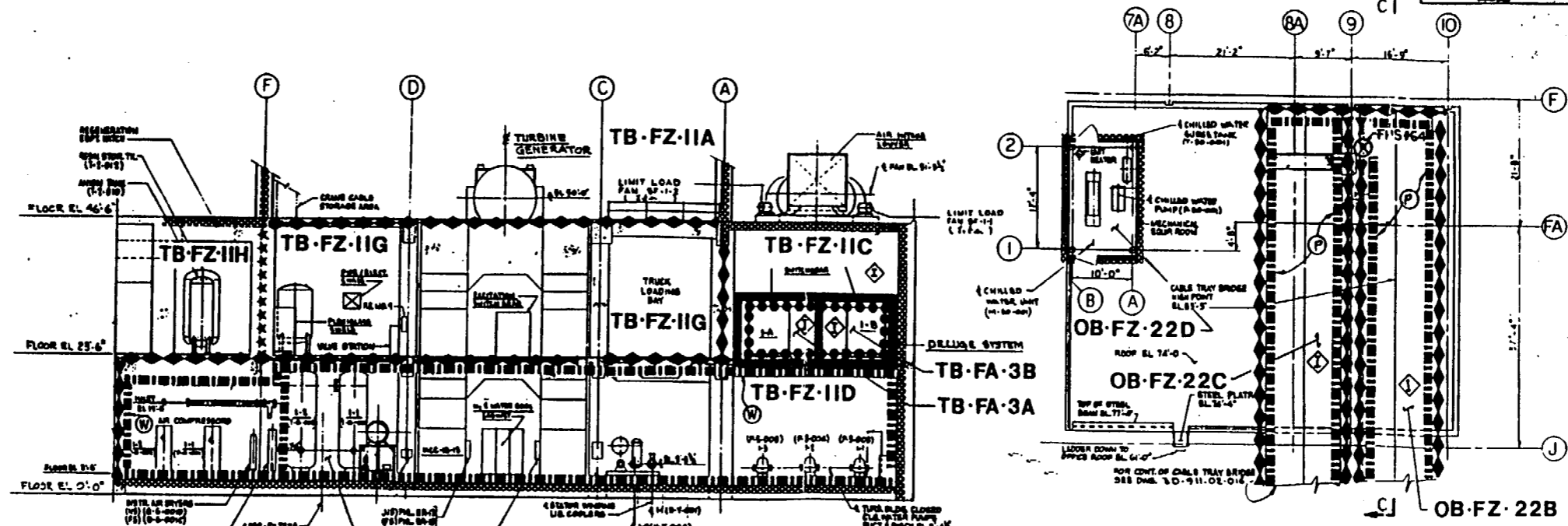
REV.	DATE	DESCRIPTION
1	4/14/85	REVISED PER DCN CO 39469, CO 39491
2	7/15/85	REVISED PER DCN CO 12517

NOTES:
 1. FOR LEGEND SEE DWG 3D-911-02-059

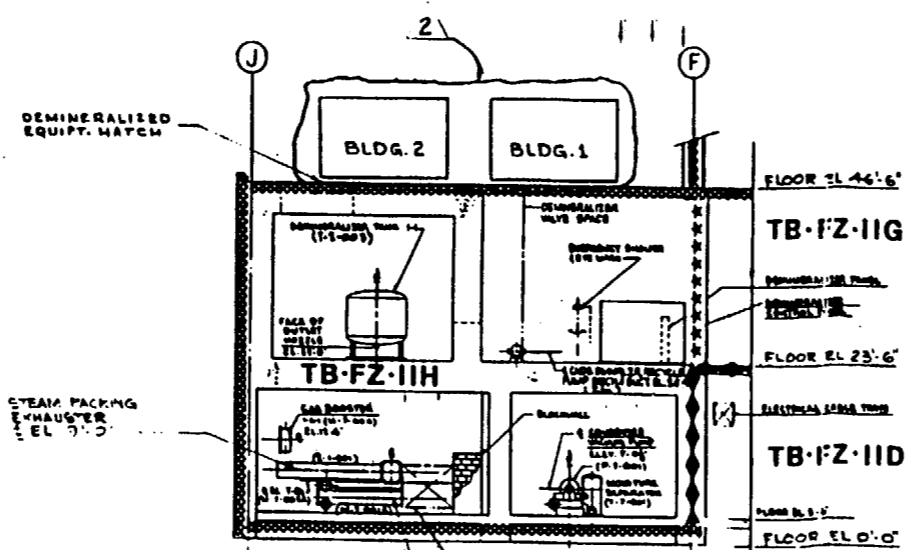
LIBANO	4-30-85	DRWN	CD Nuclear
PDENE	5-30-85	CHECKED	
FIRE AREA LAYOUT			
TURBINE BUILDING			
SECTION CCADD			
OYSTER CREEK	DWG. NO. 3D-911-02-008	REV. 2	
SCALE: NONE			
402729			



NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.
1	4/30/85	REVISION PER DCN #039959, 039991	T. GAROFALO	J. GAROFALO	
2	5/30/85	REVISION PER DCN #C0102401			

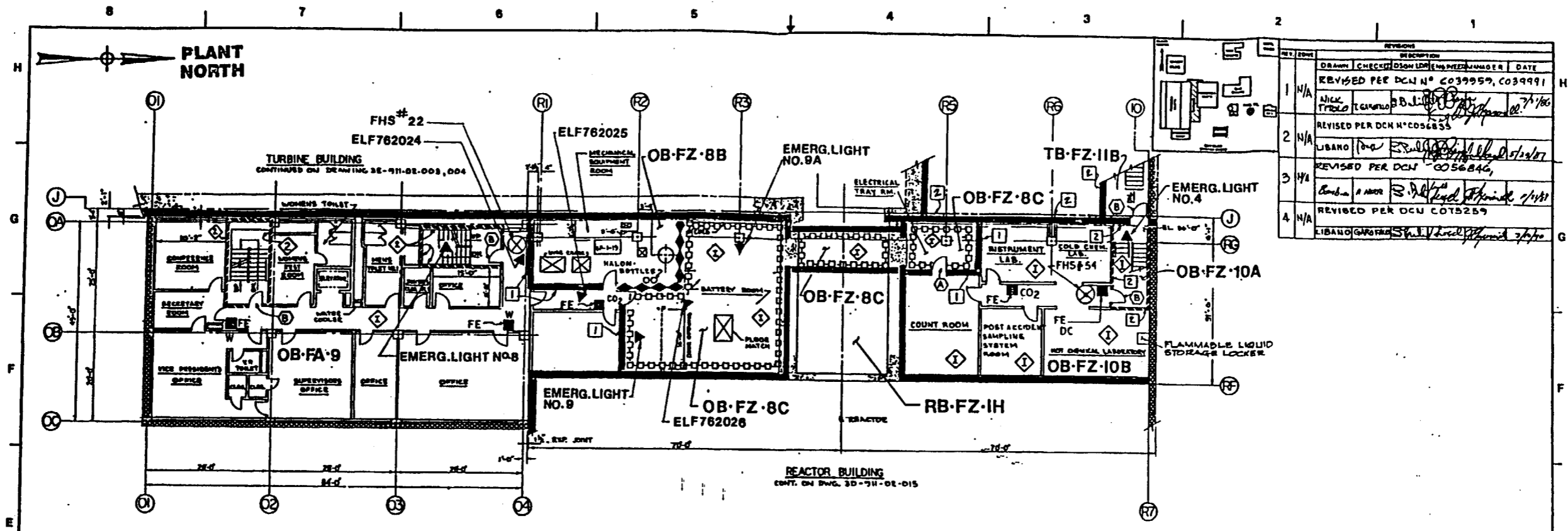


NOTES:
1. FOR LEGEND SEE DWG. 3D-911-02-039

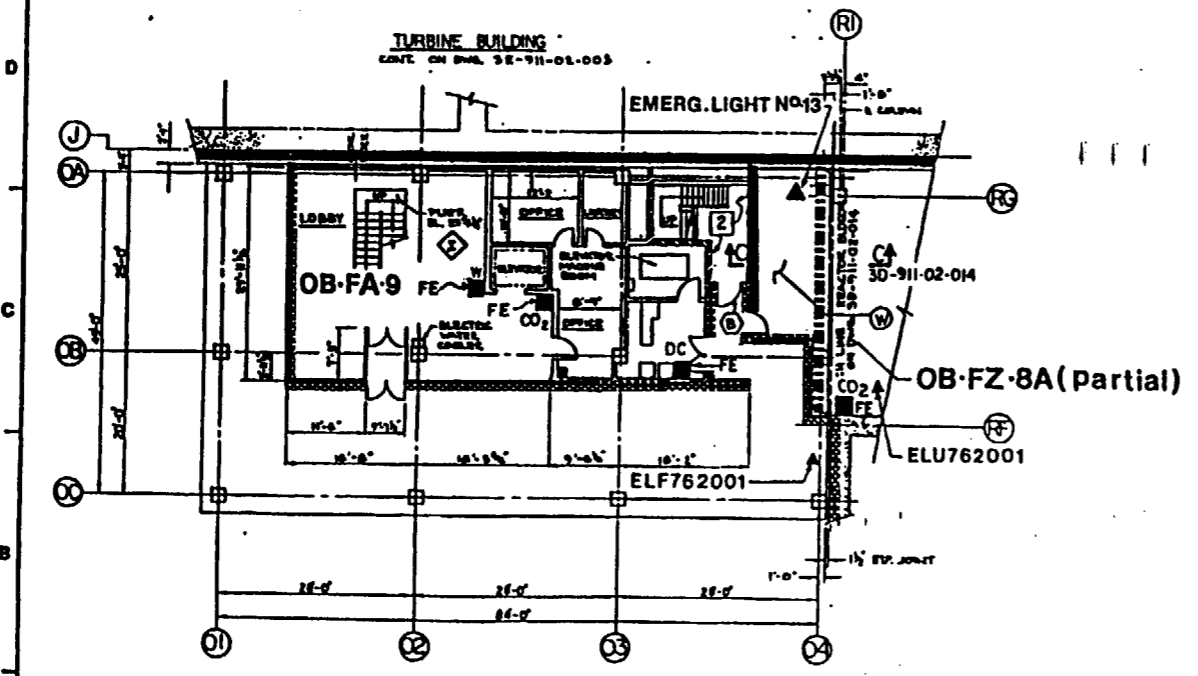


SECTION F-F
LOOKING SOUTH

LIBANO	4-30-85	
DATE		
PDENE	5-30-85	FIRE AREA LAYOUT TURBINE BLDG SECTIONS E-E & F-F
DATE		
DESIGN LEADER	6/25/85	DWG. NO. 3D-911-02-009 SCALE: NONE REV. 2
DATE		
MANAGER APPROVAL		SYSTEM CREEK L&O MECH.



SECOND FLOOR PLAN EL 35'-0"



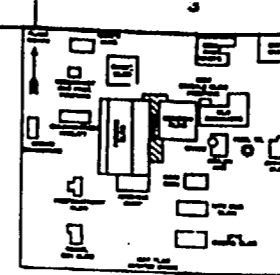
FIRST FLOOR PLAN EL 23'-6"

REV. NO.	DESCRIPTION
1	N/A
2	N/A
3	N/A
4	N/A

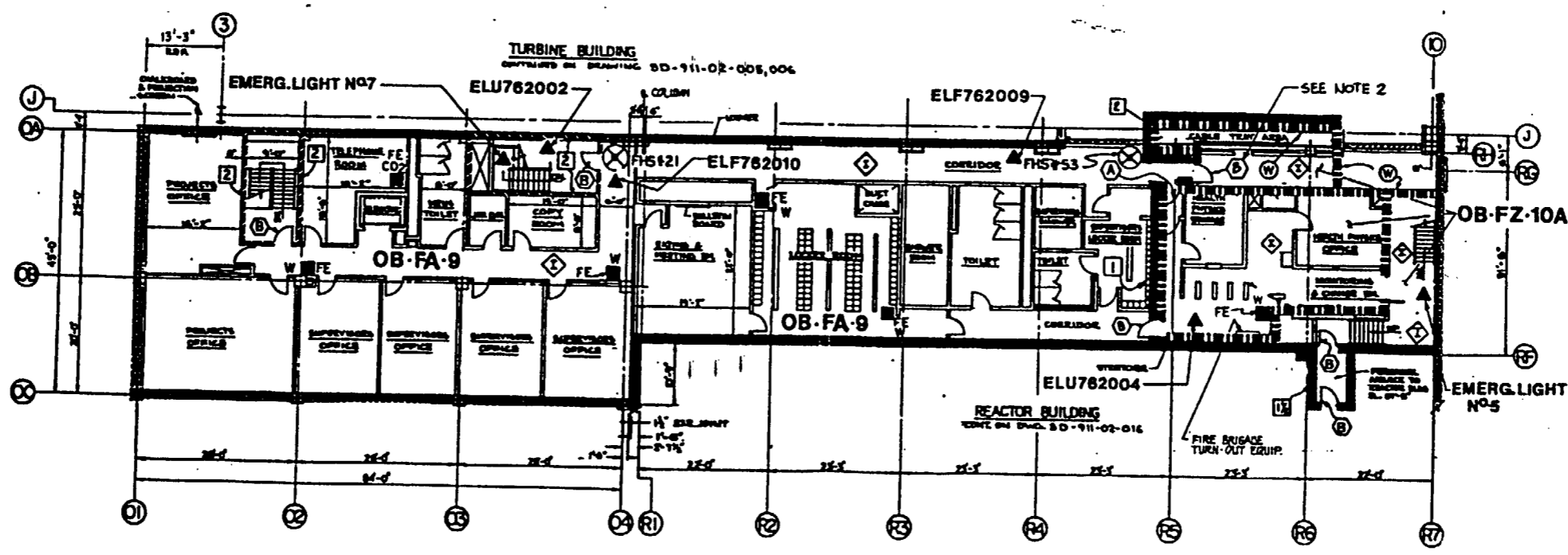
NOTES:
1. FOR LEGEND SEE DNG. 3D-911-02-039

LIBANO	4-30-85	
DATE		
DRAWN	P.DENE	FIRE AREA LAYOUT OFFICE BUILDING FIRST AND SECOND FLOOR
DATE	5-30-85	
DESIGN LEADER	M. J. YOUNG	DWG. NO. 3D-911-02-010
DATE	6/27/85	
MANAGER APPROVAL	Paul P. Padon	REV. 4
ENG. MECH.		SCALE: NONE
		402729

PLANT NORTH



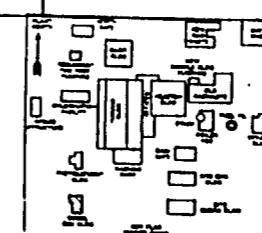
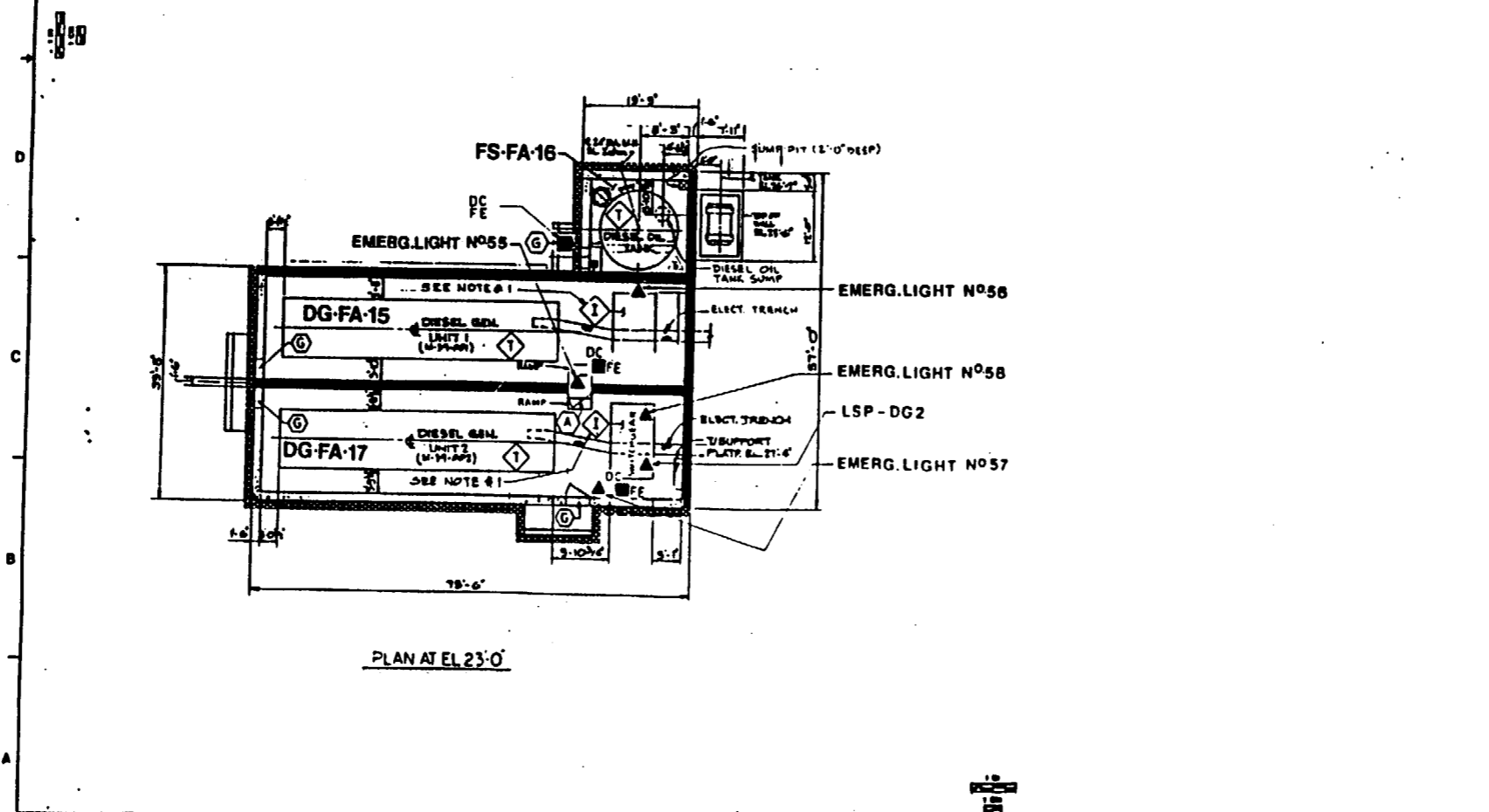
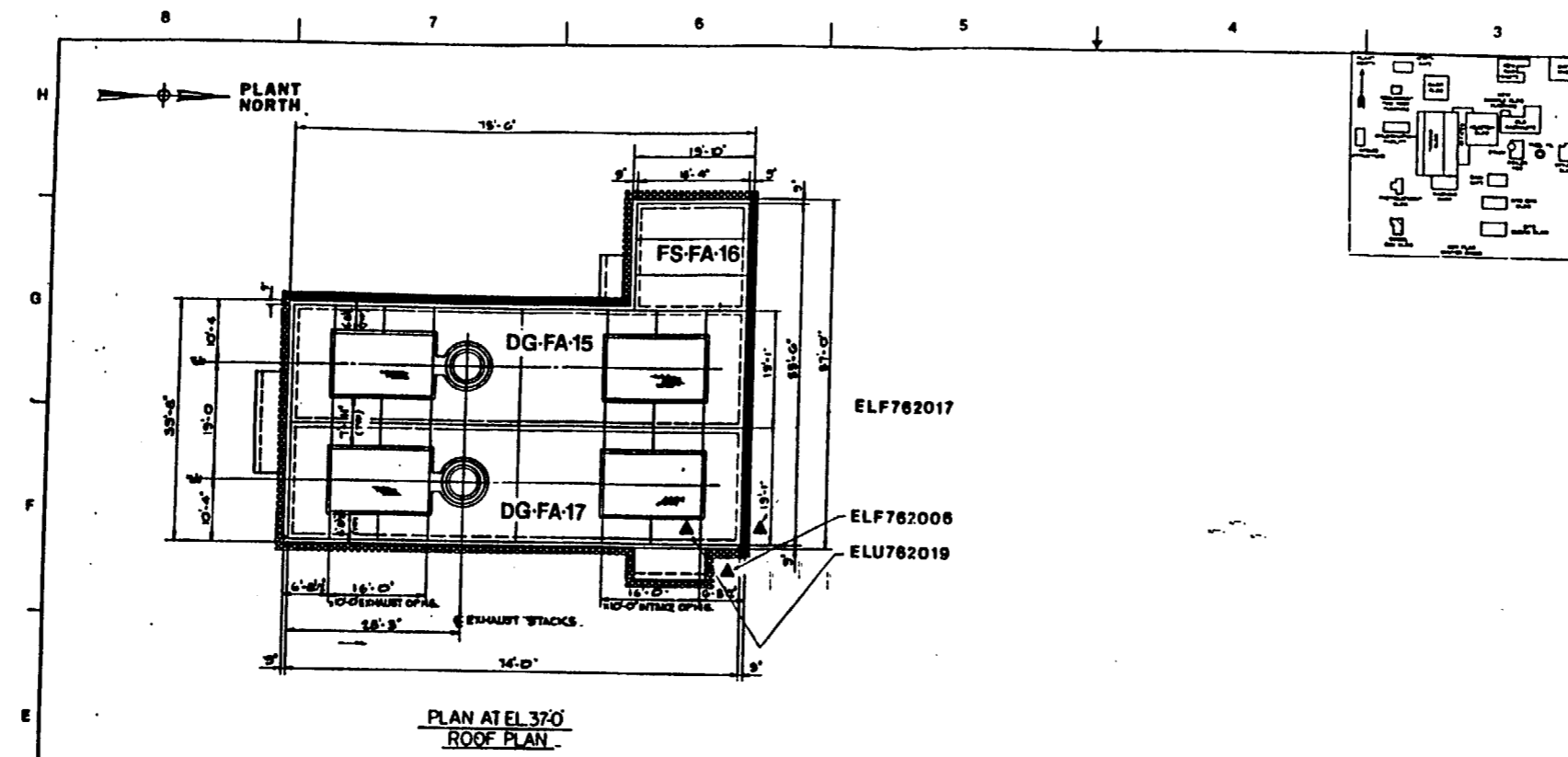
REVISIONS						
REV. NO.	ZONE	DESCRIPTION	DATE	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN C039959, C039991	7/21/06	T. GAROFALO		
2	N/A	REVISED PER DCN C056853	4/25/07			
3	E-3 RD-2	REVISED PER ECD-C208804, P. 9 OF 8	1/5/17	J.M. ESPINOZA		



NOTE:
 1. PER LEGEND SEE DWG. 3D-911-02-039
 2. THE WALL ABOVE THIS DOOR IS NOT RATED, BUT IS SEALED WITH NON-COMBUSTIBLE MATERIAL. THE REMAINDER OF THE SOUTH WALL IS 1 HR. RATED AS NOTED.

THIRD FLOOR PLAN EL 46'-6"

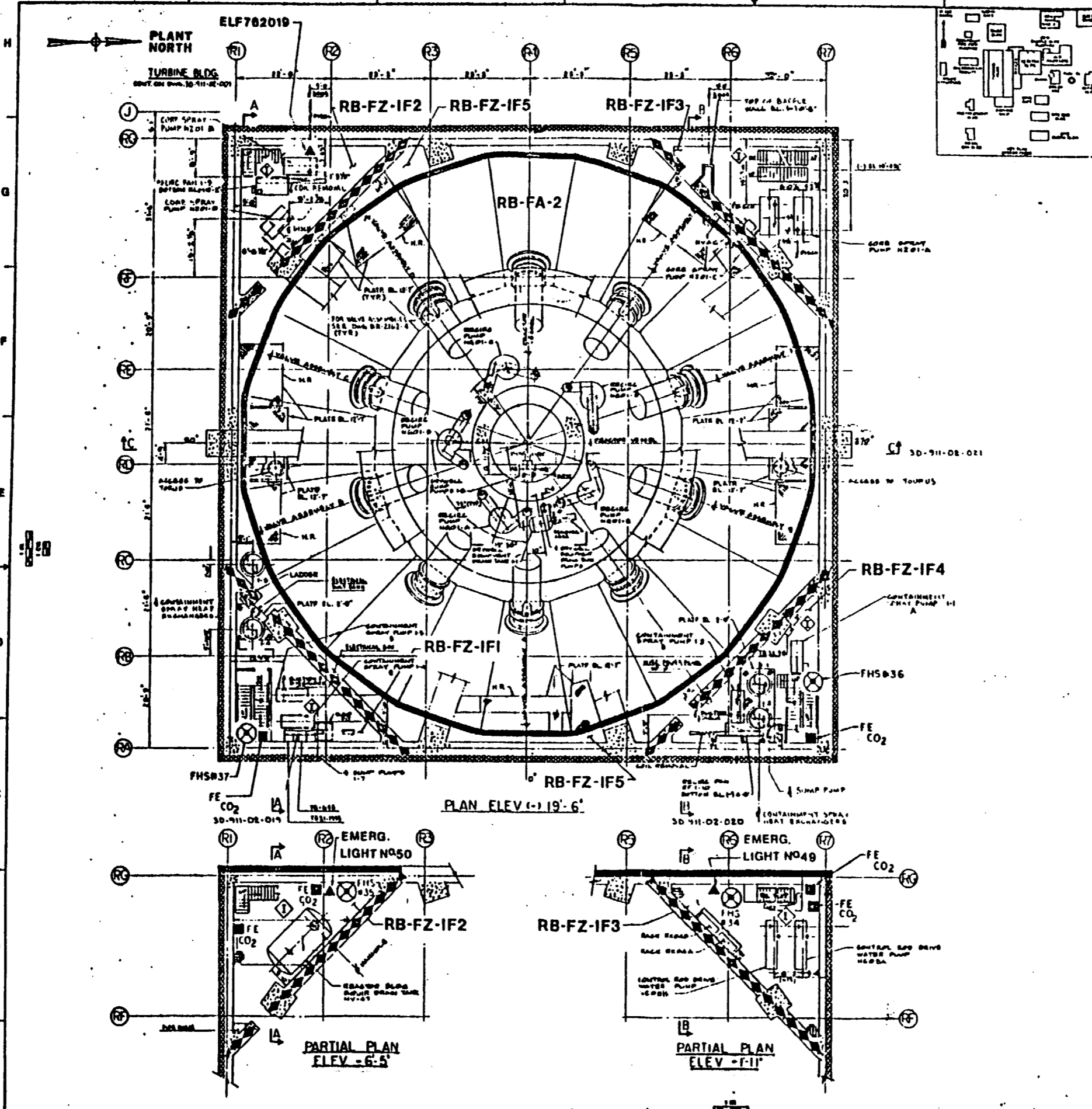
LIBANO	4-30-85		FIRE AREA LAYOUT OFFICE BUILDING THIRD FLOOR
PDENE	5-30-85		
DESIGNER: <i>[Signature]</i> CHECKED: <i>[Signature]</i> APPROVED: <i>[Signature]</i>	DATE: 1/5/17 SCALE: NONE	OYSTER CREEK 3D-911-02-011	REV. 3
402729			



REVISIONS								
REV	ZONE	DESCRIPTION	DRAWN	CHECKED	DSGN LDR	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN C0568891						
2	N/A	REVISED PER DCN C056835						
3	N/A	REVISED PER DCN C056846						
4	N/A	REVISED PER DCN C076259						
5	N/A	REVISED PER DCN C076554						

NOTES:
 1. IONIZATION DETECTION IN CONTROL CABINETS ONLY.
 2. FOR LEGEND SEE DWG. NO. 3D-911-02-039

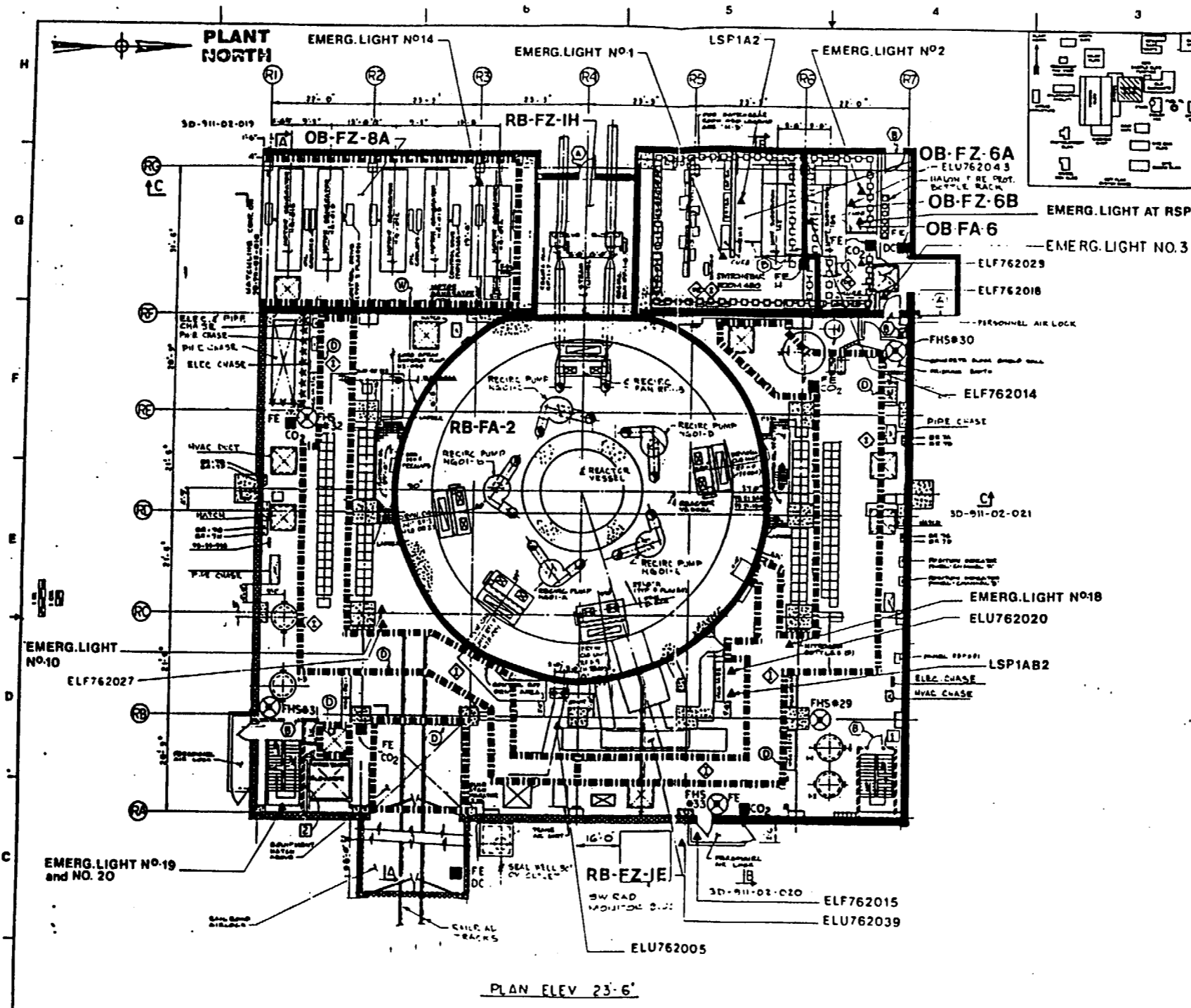
DRAWN: 4-30-85 DATE: 5-30-85 PD/E: 6/11/16 DATE: 6/11/16 CHECKED: 8/10/85 DATE: 8/10/85	GPU Nuclear FIRE AREA LAYOUT EMERGENCY DIESEL GENERATOR VAULTS PLANS, SECTIONS & DETAILS
DWG. NO. 3D-911-02-012	REV 5
CYSYER CREEK SCALE: NONE	602723



REV		DESCRIPTION					
NO.	ZONE	DRAWN	CHECKED	DESIGN LDR	ENGINEER	MANAGER	DATE
1	N/A	REVISED AS PER DCI	CO	WORK			3/21/02
2	N/A	LIBANO	LOAN				5/14/02

NZIESL
 1. FOR LEGEND SEE DWG. 30-911-02-009

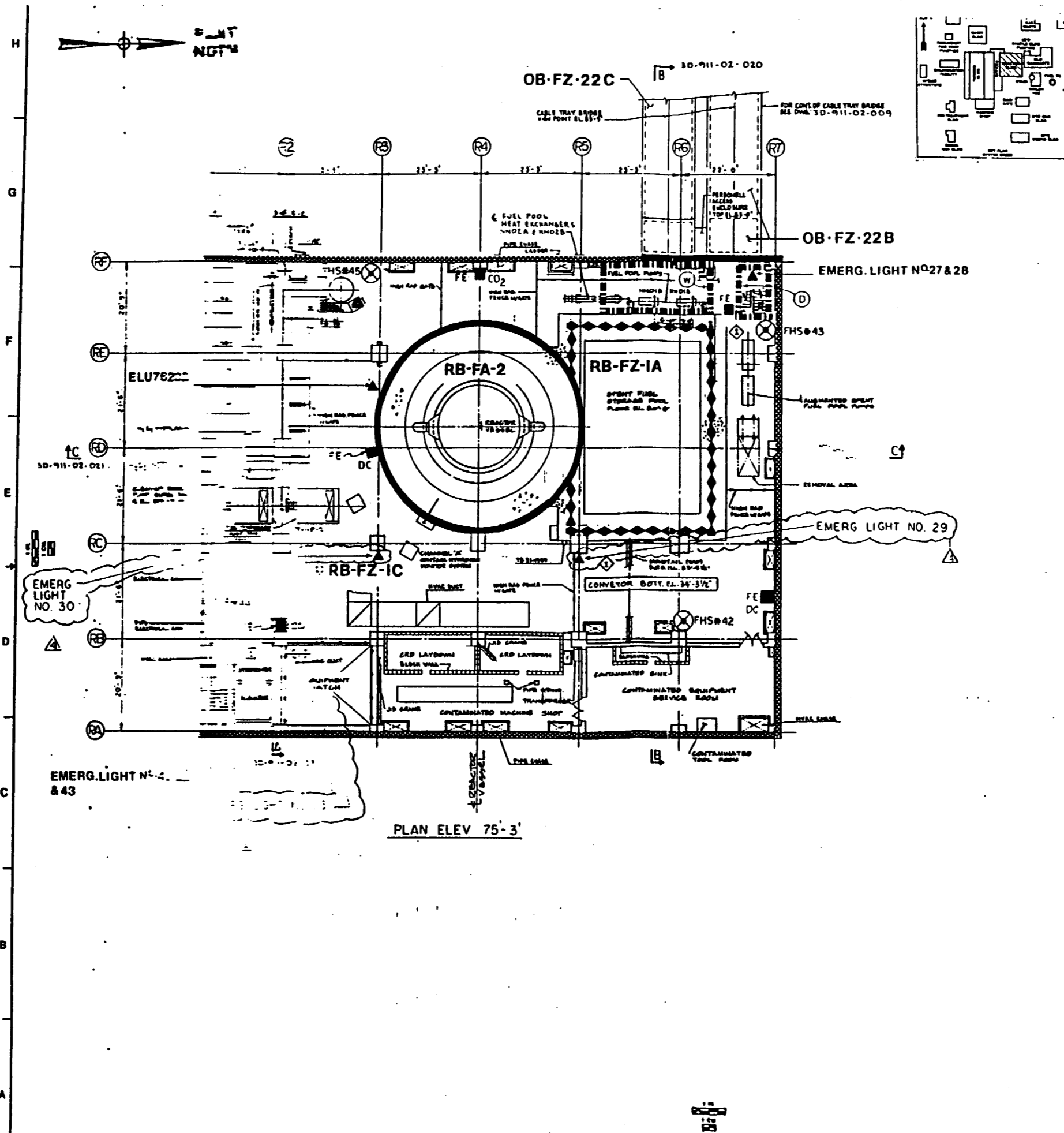
LIBANO	4-30-05	Nuclear FIRE AREA LAYOUT REAC.BLDG PLAN FLOOR ELEVATION -19'-6", -6'-5" & -1'-11" OYSTER CREEK SCALE: 1/8" = 1'-0"
DATE		
PLANNED	5-30-05	
DESIGNED	6/13/05	
CHECKED	6/13/05	
DRW. NO.	30-911-02-013	REV. 2



REV. NO.	REV. DATE	REVISIONS				
		DESCRIPTION	DESIGN LDR.	ENGINEER	MANAGER	DATE
1	4/1	REVISED PER DCU C034959 & C034971				
2	4/A	REVISED PER DCU C036853				
3	4/A	REVISED PER DCU C036878, C036899, C040052, C036853				
4	4/A	REVISED PER DCU C075247				
5	4	REVISED PER DCU C075247				

NOTES:
 1. REFER LEGEND, SEE PLAN 3D-911-02-009

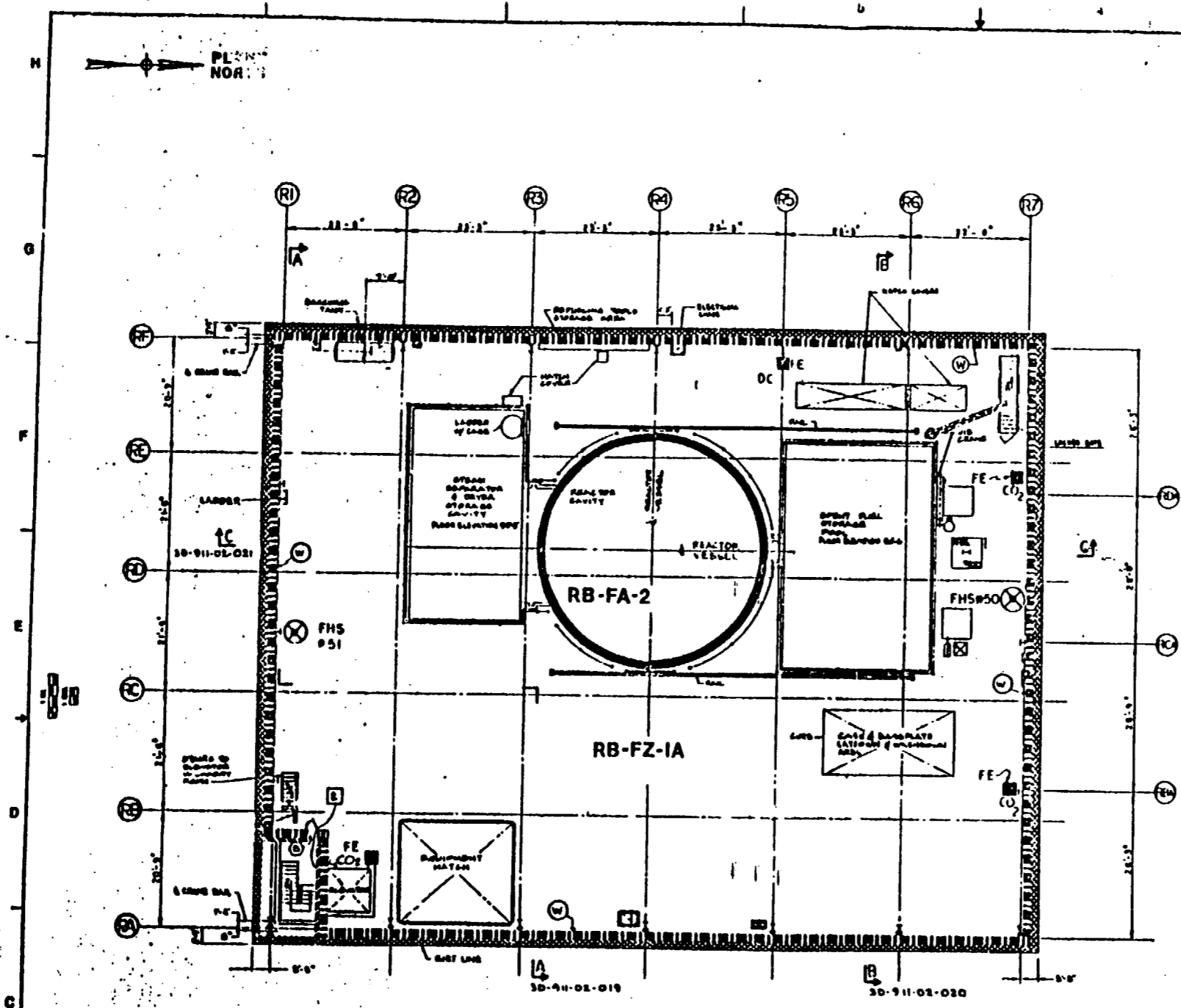
LIBANO	4-30-85	DATE	GPU Nuclear
DRONE	5-30-85	DATE	FIRE AREA LAYOUT PEAC BLDG
LIBANO	6/16/85	DATE	PLAN FLOOR ELEVATION
LIBANO	6/25/85	DATE	23'-6"
LIBANO	6/25/85	DATE	3D-91-02-014
LIBANO	6/25/85	DATE	SCALE: N/A
LIBANO	6/25/85	DATE	SYSTEM GREEN
LIBANO	6/25/85	DATE	SCALE: N/A



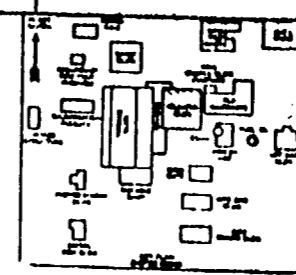
REV	ZONE	DESCRIPTION				
		DRAWN	CHECKED	DSGN. LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN C039959 C039991				
		NICK T. TOL	F. GARFALO	S. R.	[Signature]	7/2/86
2	N/A	REVISED AS PER DCN C056833				
		LIBANO	AM	S. R.	[Signature]	7/25/87
3	N/A	REVISED PER DCN C03052				
		BOMBICO	A. HARTZ	S. R.	[Signature]	1/4/88
4	C.1 D.B	REVISED PER DCN C076107				
		DISP. TO	Z. K. KORN	[Signature]	[Signature]	5/16/95

NOTES:
1. FOR LEGEND SEE DWG. 30-911-02-039

LIBANO	4-30-85	DATE	GPU Nuclear FIRE AREA LAYOUT REAC BLDG PLAN FLOOR ELEVATION 75'-3"
PDENE	5-30-85	DATE	
CHECKED	[Signature]	DATE	DWG. NO. 30-911-02-016
DESIGN LEADER	[Signature]	DATE	
APPROVED	[Signature]	DATE	OYSTER CREEK SCALE: NONE
MANAGER APPROVAL	[Signature]	DATE	
END. MECH			REV. 4



PLAN ELEV 119-3

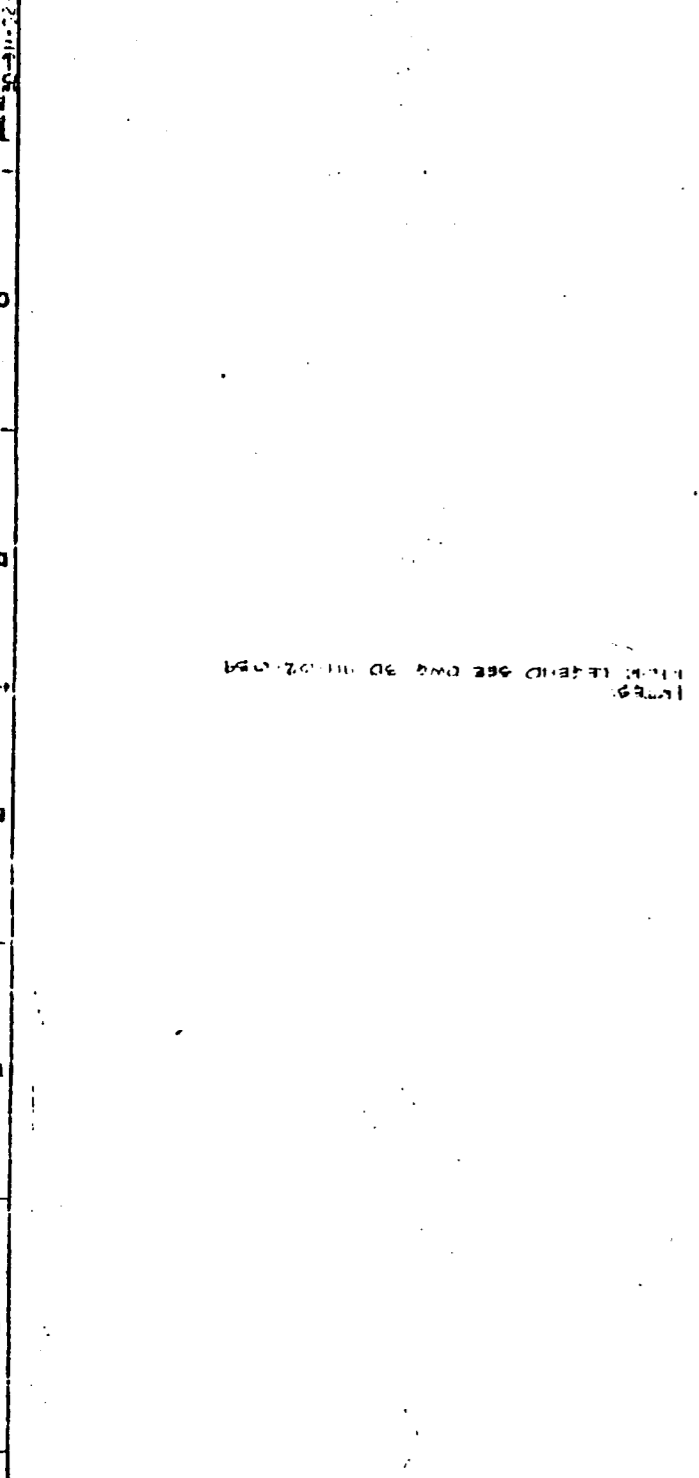


REVISIONS							
REV	ZONE	DRAWN	CHECKED	DSGN LDR	ENGINEER	MANAGER	DATE
1	1/4	REVISED PER DC 11 CO 3/11/11					
2	1/4	REVISED PER DC 11 CO 3/11/11					

NOTES:
1 FOR LEGEND SEE DWG. 3D-911-02-014

LIBANO	4-30-05	DU Nuclear	FIRE AREA LAYOUT REAC. BLDG PLAN FLOOR ELEVATION 119-3
P. DENE	5-30-05		
DESIGNED BY	4/18/15	OYSTER CREEK	3D-911-02-018
CHECKED BY		SCALE: NONE	REV. 2

LIBANO 4-30-85
GPU Nuclear
FIRE AREA LAYOUT
 REACTOR BUILDING
 SECTION A-A
 P.DEN 5-30-85
 C.HECKED
 D.ESIGN L.AYOUT
 L.H. 1/17
 DATE
 O.P.Y.S.T.E.M. C.H.E.K.E.D.
 3D-911-02-019
 SCALE: NONE
 D.W.G. NO. 1



PLEASE REFER TO SHEET 3D-911-02-024

REV	ZONE	DATE	DESCRIPTION
1	N/A		
2			
3			
4			
5			
6			
7			
8			
9			
10			

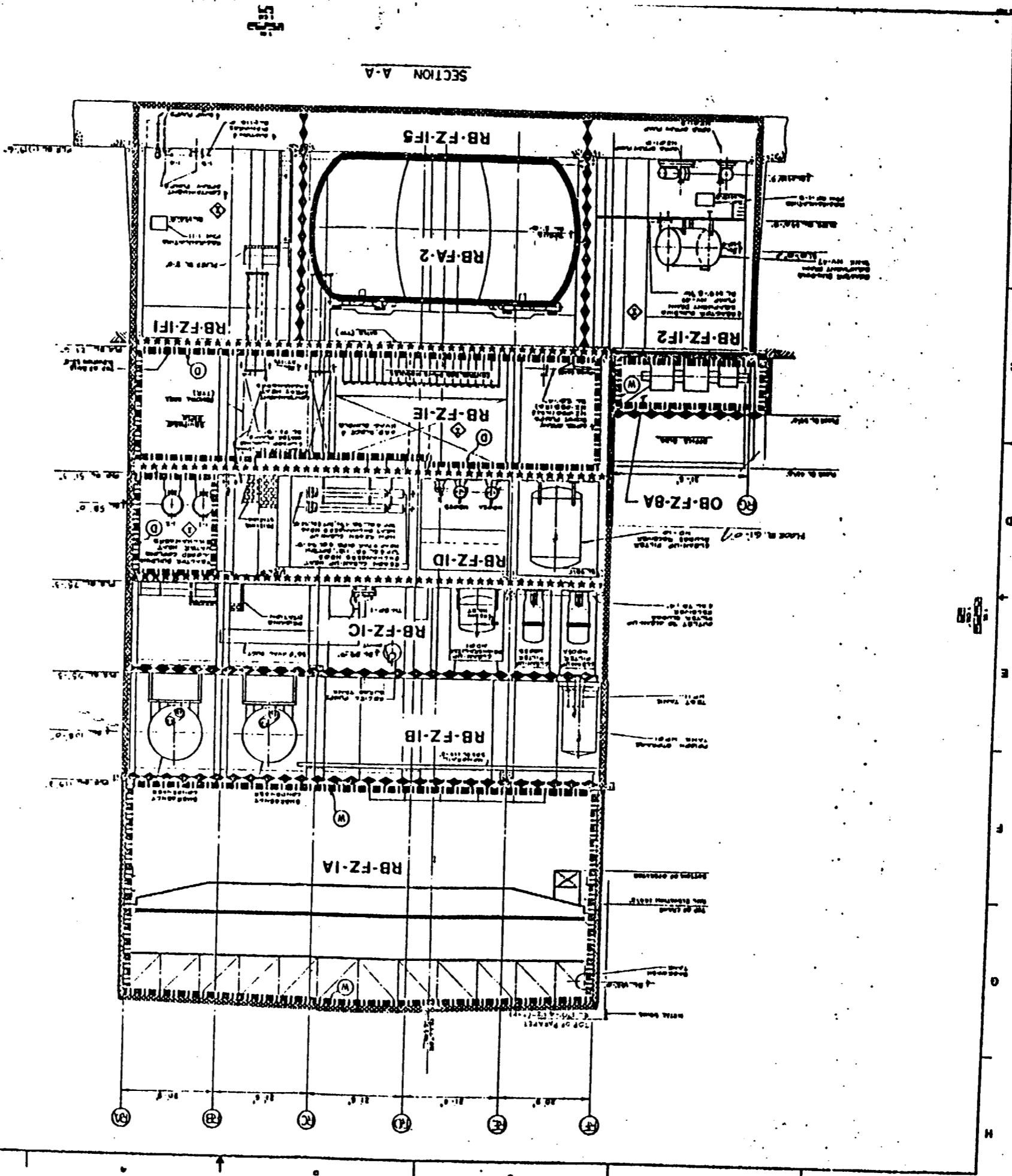
REVISIONS

DRAWN: [Name] CHECKED: [Name] DESIGN: [Name] ENGINEER: [Name] MANAGER: [Name] DATE: [Date]

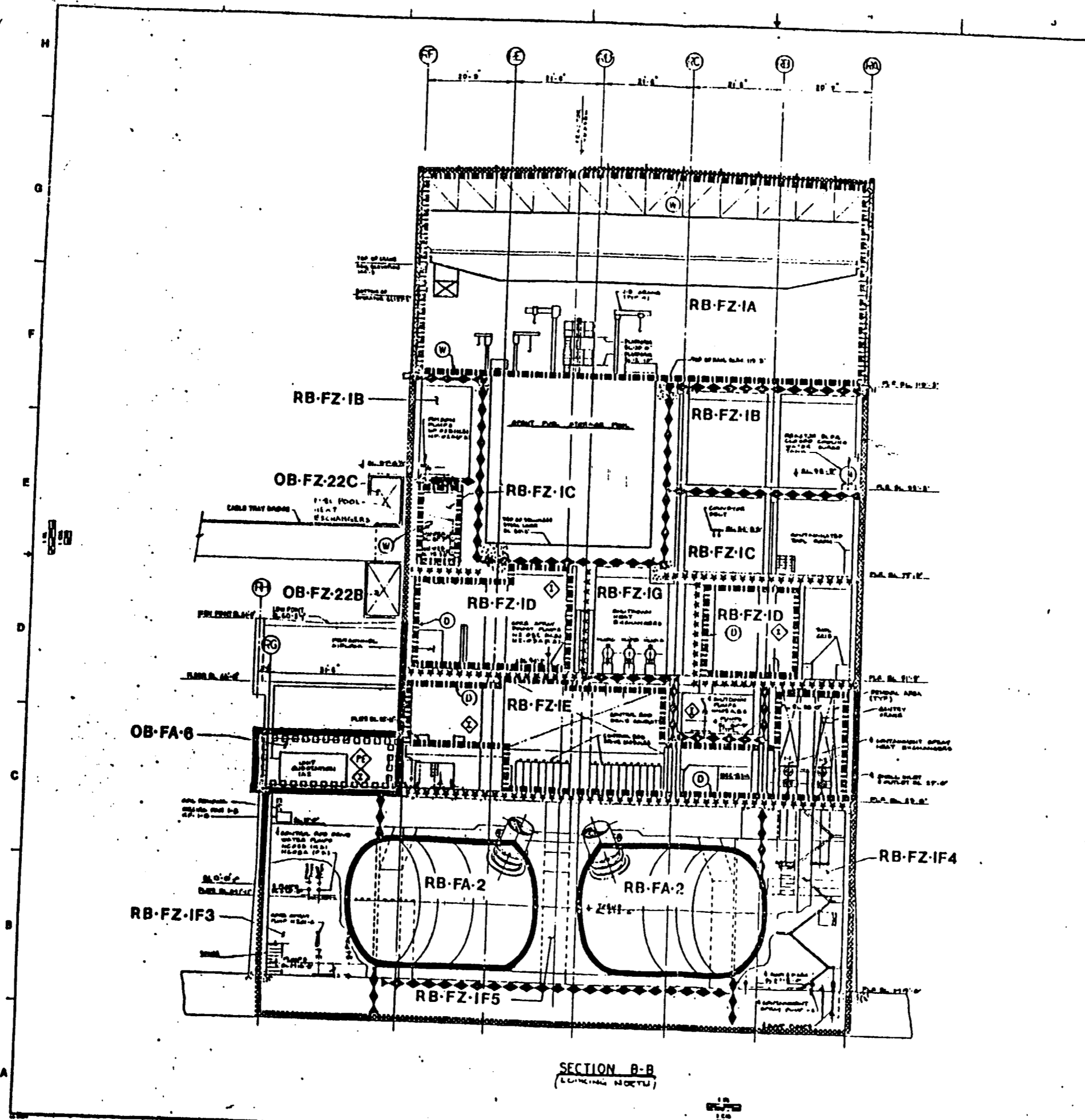
DESIGNED BY: [Name] DATE: [Date]

APPROVED BY: [Name] DATE: [Date]

SECTION A-A

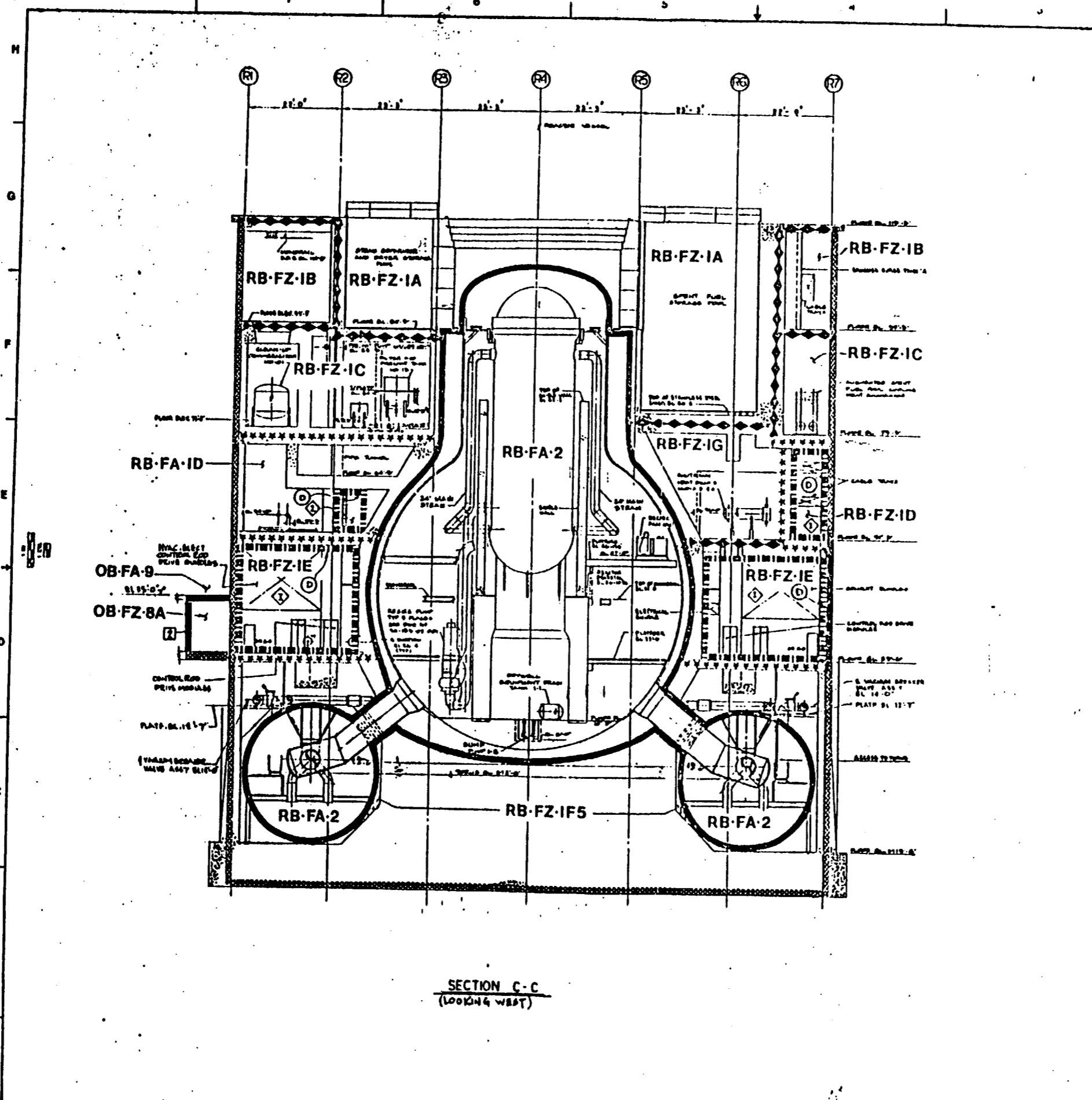


SECTION A-A



REVISIONS					
REV	DATE	DESCRIPTION	DESIGN	ENGINEER	MANAGER
1		REVISED FOR DEN... CO... CO... CO...			
2		REVISED FOR DEN... CO... CO... CO...			

LIBANO	4-30-82	GCU Nuclear
DESIGN	DATE	
POENE	5-30-82	FIRE AREA LAYOUT REACTOR BUILDING SECTION B-B
CHECKED	DATE	
APPROVED	6/15/82	OYSTER CREEK
DATE	DATE	
3D-911-02-020	REV. 2	SCALE: NONE

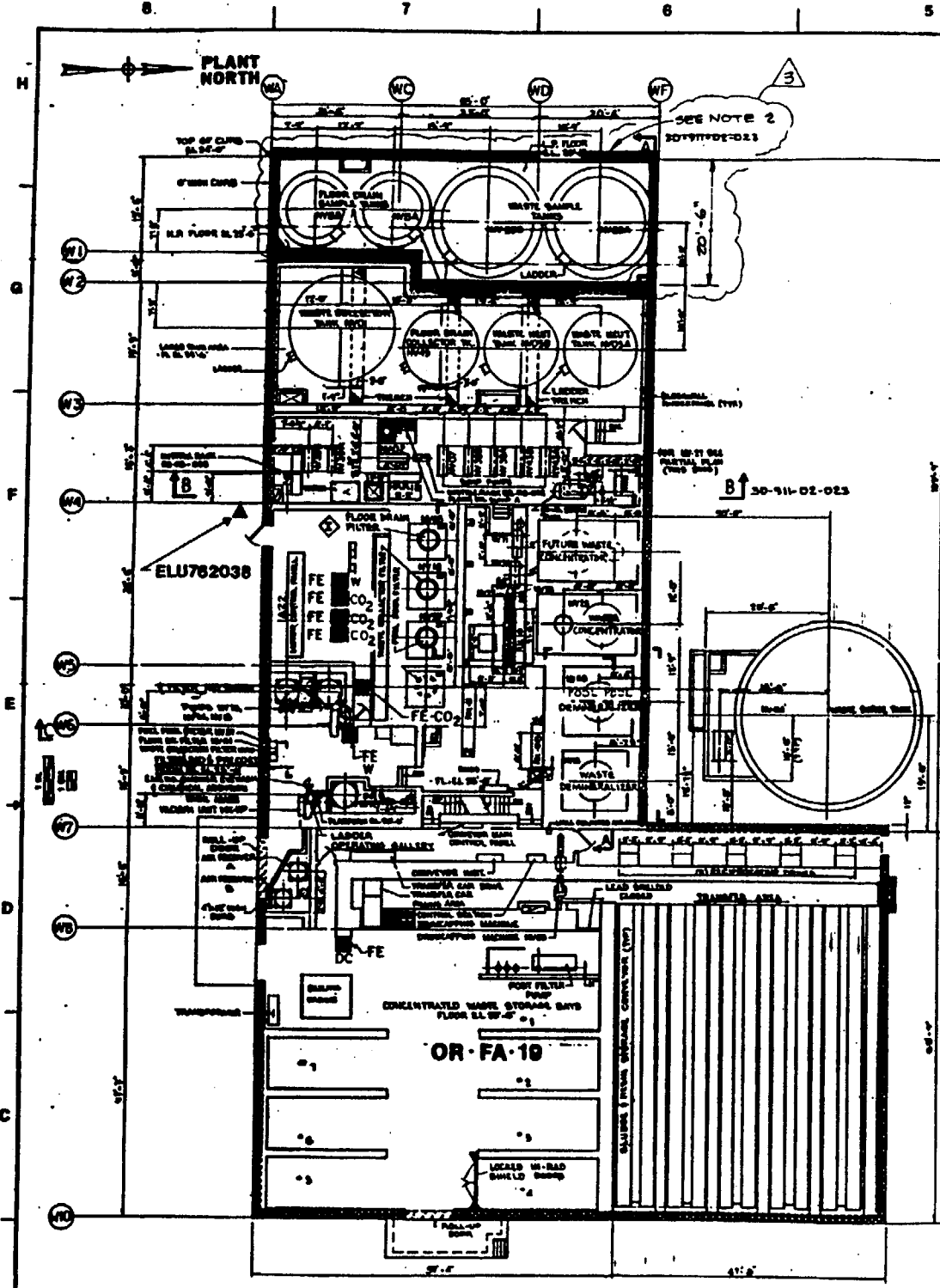


REV. ZONE		REVISIONS					
REV.	ZONE	DESCRIPTION	DESIGN	ENGINEER	MANAGER	DATE	
1	N/A	REVISED PER DCN NO. 000448, 000449, 000450					
2	N/A	REVISED PER DCN NO. 000451					

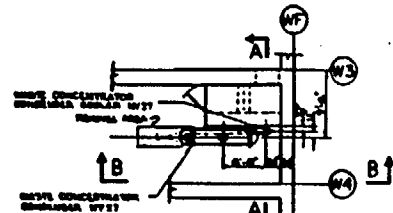
NOTES:
1. FOR LEGEND SEE DWG. 3D-911-02-034

SECTION C-C
(LOOKING WEST)

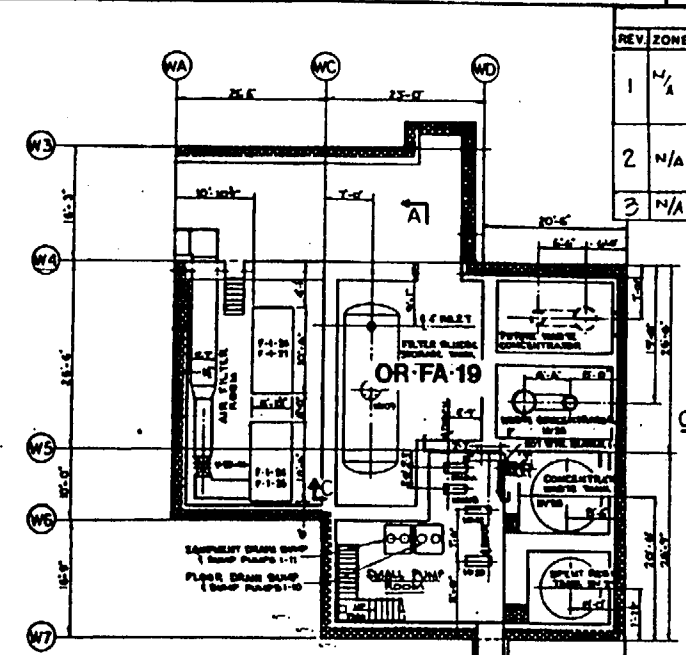
LIBANO	4-30-85	DATE	Nuclear
GROUP	5-30-85	DATE	
EXTEND	6/15/85	DATE	FIRE AREA LAYOUT REACTOR BLDG. SECTION C-C
DESIGN LEADER	6/25/85	DATE	
DR. BY	6/25/85	DATE	OYSTER CREEK
MANAGER APPROVAL		DATE	
3D-911-02-021		REV. 2	SCALE: NONE



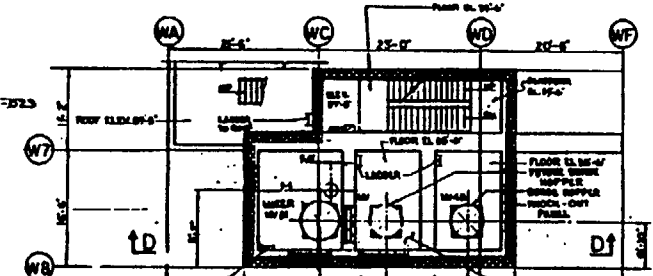
PLAN ELEV 22'-0", 23'-6" & 25'-6"



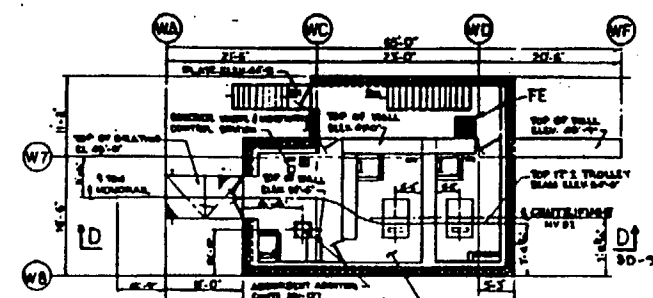
PARTIAL PLAN ELEV 22'-0"



PLAN ELEV 6'-6"



PLAN ELEV 34'-6" & 35'-6"

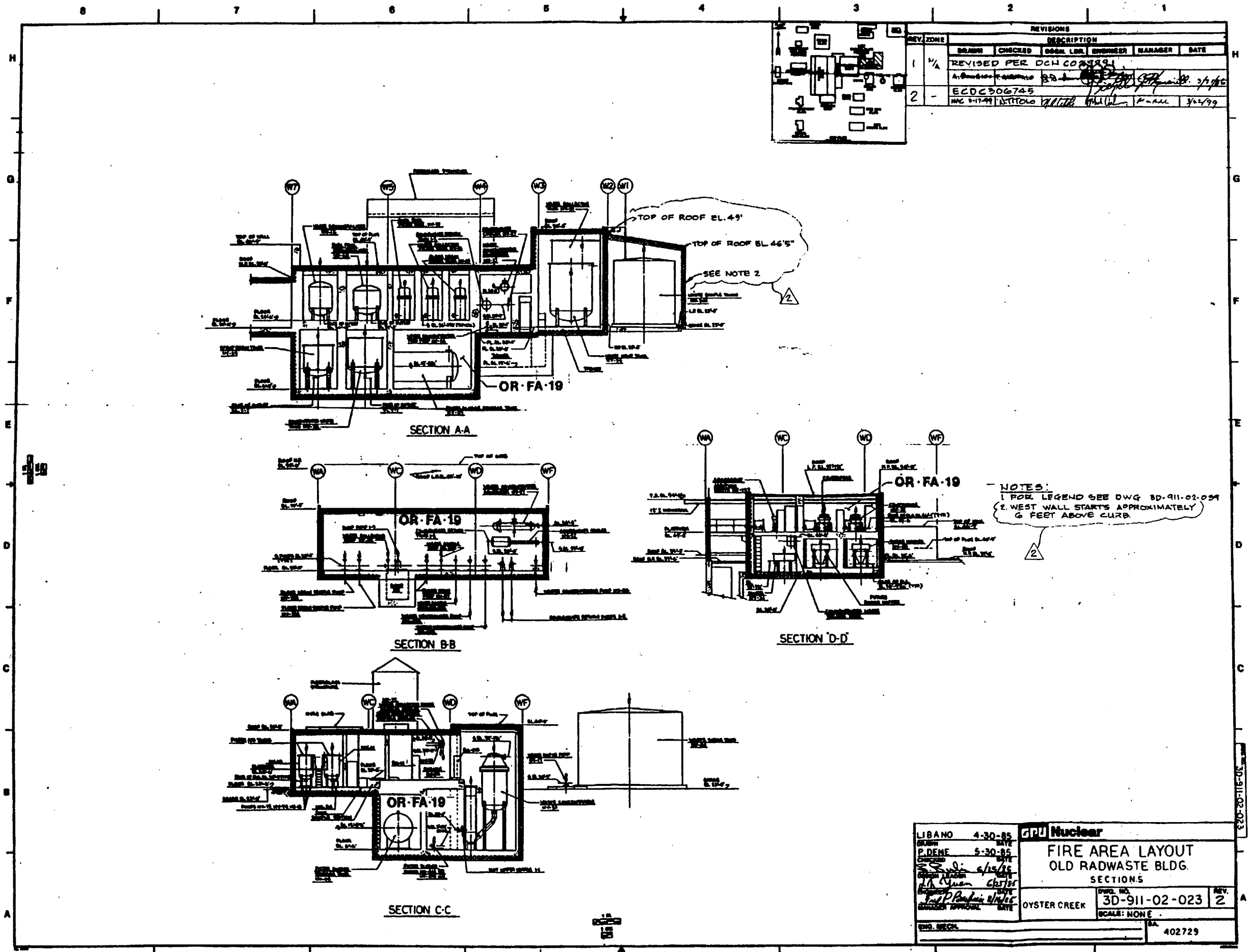


PLAN ELEV 45'-6"

REV. ZONE		DESCRIPTION					
REV.	ZONE	DRAWN	CHECKED	DSGN. LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN CO 32291					
		A. DOMINGO	T. GARIBAY				7/1/86
2	N/A	REVISED PER DCN NYCOB6653					
		LIBANO					5/25/87
3	N/A	ECDC 306745					
		NYC 3-11-91 1111110					3/22/99

NOTES:
 1. REE. LEGEND SEE DWG. 30-911-02-029
 2. WEST WALL STARTS APPROXIMATELY 6 FEET ABOVE CURB.

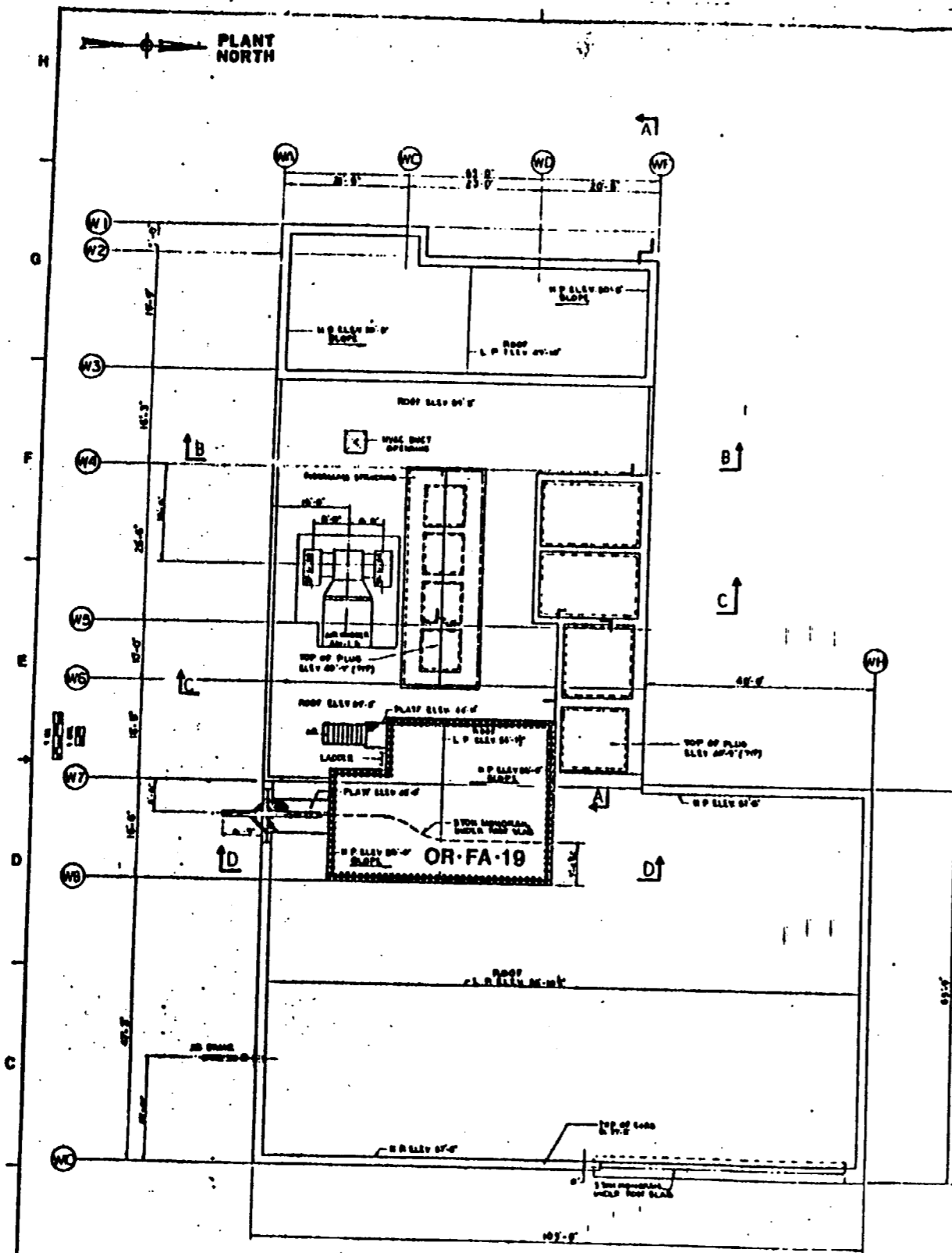
LIBANO	4-30-85	DATE	GRU Nuclear
PROJ. NO.	5-30-85	DATE	
CHECKED	6/25/85	DATE	FIRE AREA LAYOUT OLD RADWASTE BLDG.
DESIGN LEADER	6/25/85	DATE	
APPROVED	6/25/85	DATE	PLANS 30-911-02-022
MANAGER APPROVAL		DATE	
ENG. MECH.			DOYSTER CREEK
			SCALE: NONE
			REV. 3
			402729



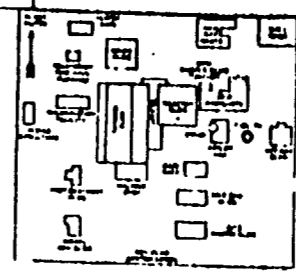
REVISIONS					
REV	ZONE	DESCRIPTION	DESIGNER	MANAGER	DATE
1	1/4	REVISED PER DCH COMMENTS			
2	-	ECDC306745			3/1/86
		WAC 8-17-99	NTTDOLO	WALLEN	3/22/99

NOTES:
 1 FOR LEGEND SEE DWG 3D-911-02-004
 2 WEST WALL STARTS APPROXIMATELY 6 FEET ABOVE CURB.

LIBANO	4-30-85		FIRE AREA LAYOUT OLD RADWASTE BLDG. SECTIONS
GRUPP	5-30-85		
P. DEME	5-30-85		
DATE	5/15/86		
BY	6/27/85		
DATE	6/27/85		
DATE			
OYSTER CREEK		DWG. NO.	3D-911-02-023
SCALE: NONE		REV.	2
402729			



ROOF PLAN



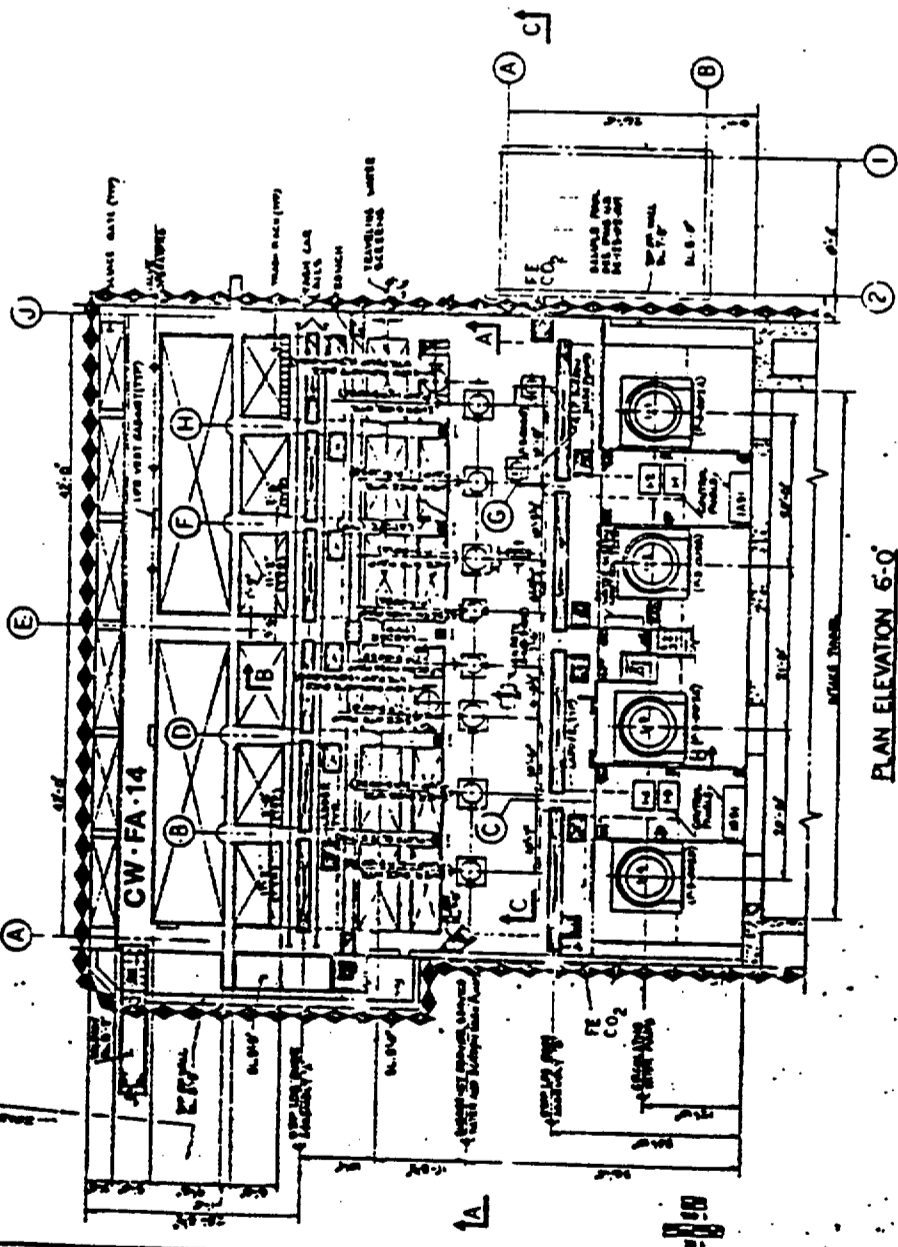
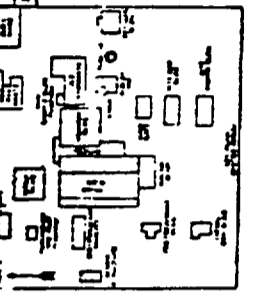
REV. NO.		REVISIONS			
NO.	DATE	DESCRIPTION	ENGINEER	MANAGER	DATE
1	5-30-82	REVISED PER...			
2	6/18/85	...			
3	6/18/85	...			

NOTES:
1. FOR LEGEND, SEE DWG. 30-111-02-021

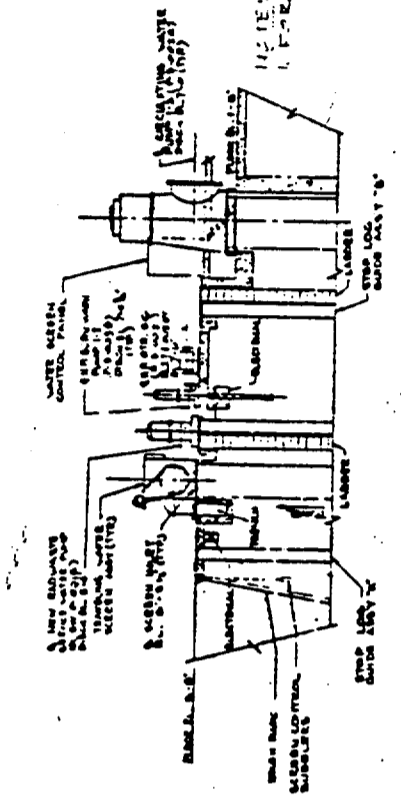
LIBANO	4-30-85	Nuclear
PCENE	5-30-82	
CHECKED		FIRE AREA LAYOUT OLD RADWASTE BLDG ROOF PLANS
DRAWN		
DATE		DATE
BY		REV
BY		30-911-02-024
BY		SCALE NONE

REV	DATE	DESCRIPTION	BY	CHKD
1	4-30-85	REVISED FIELD DESIGN	...	...
2	5-30-85	...	...	...

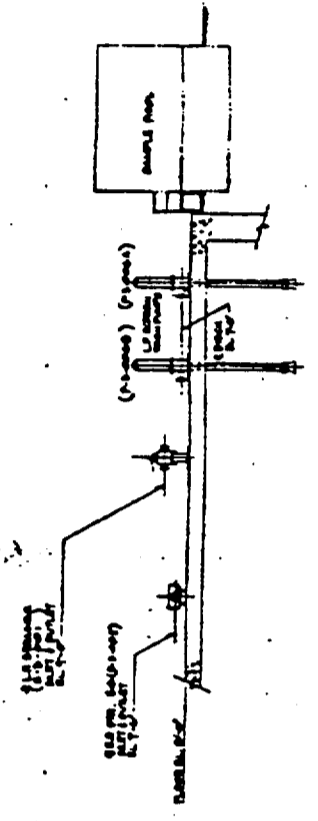
REVISIONS	DESCRIPTION	DESIGNER	CHECKED	DATE
1	REVISED FIELD DESIGN	...	...	...
2	...	...	...	...



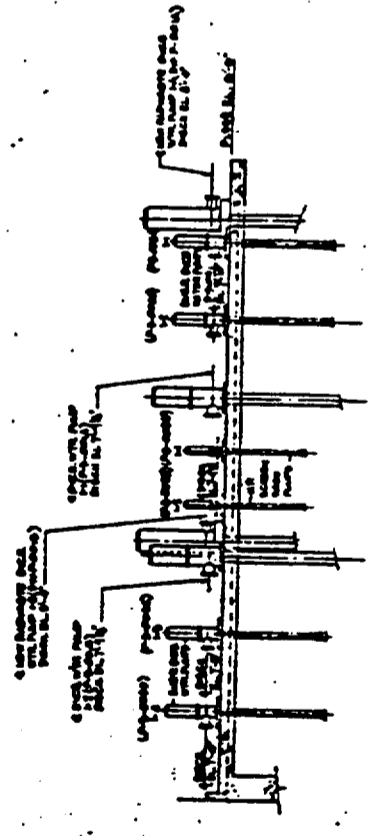
PLAN ELEVATION 6-0



SECTION B-B

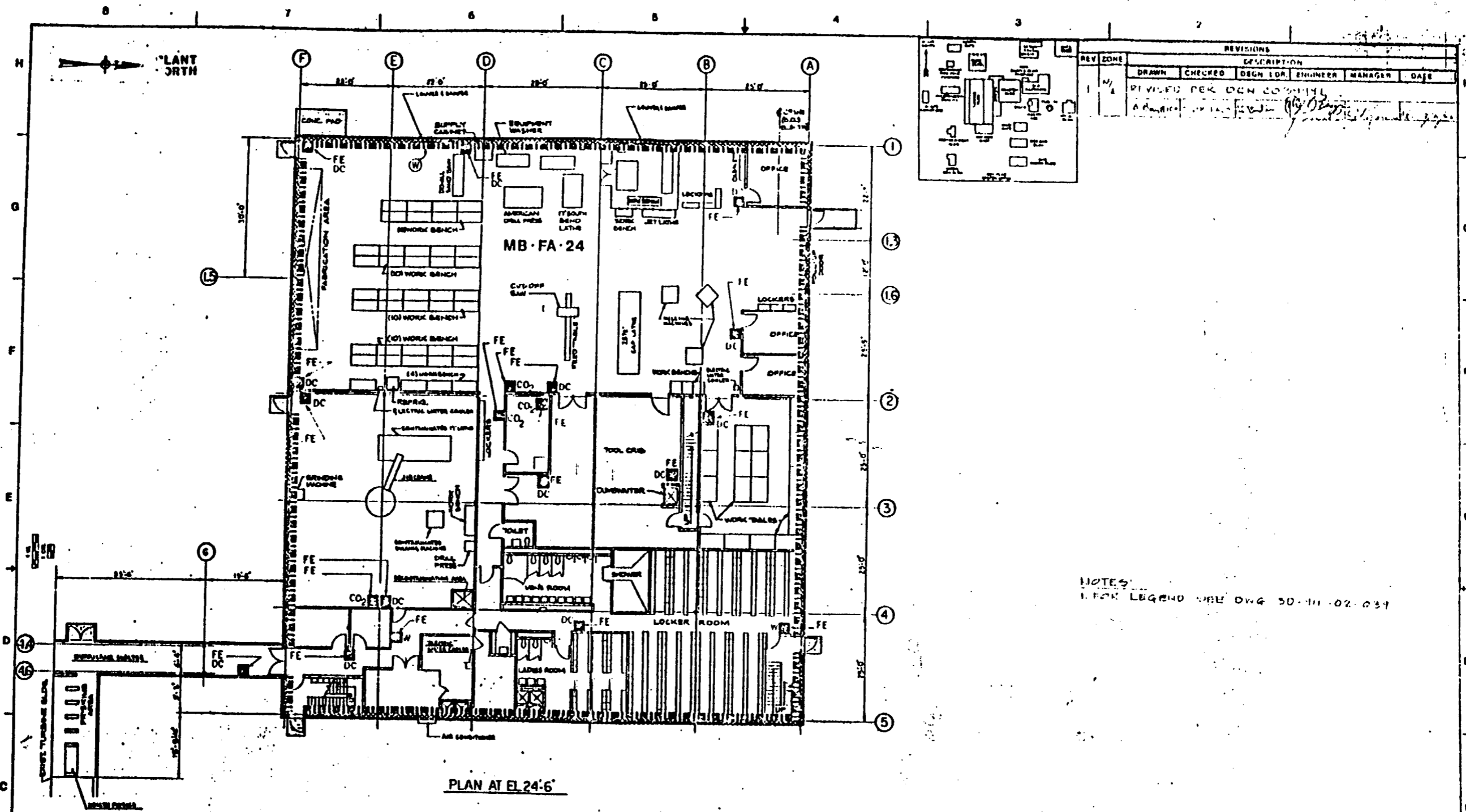


SECTION C-C



SECTION A-A

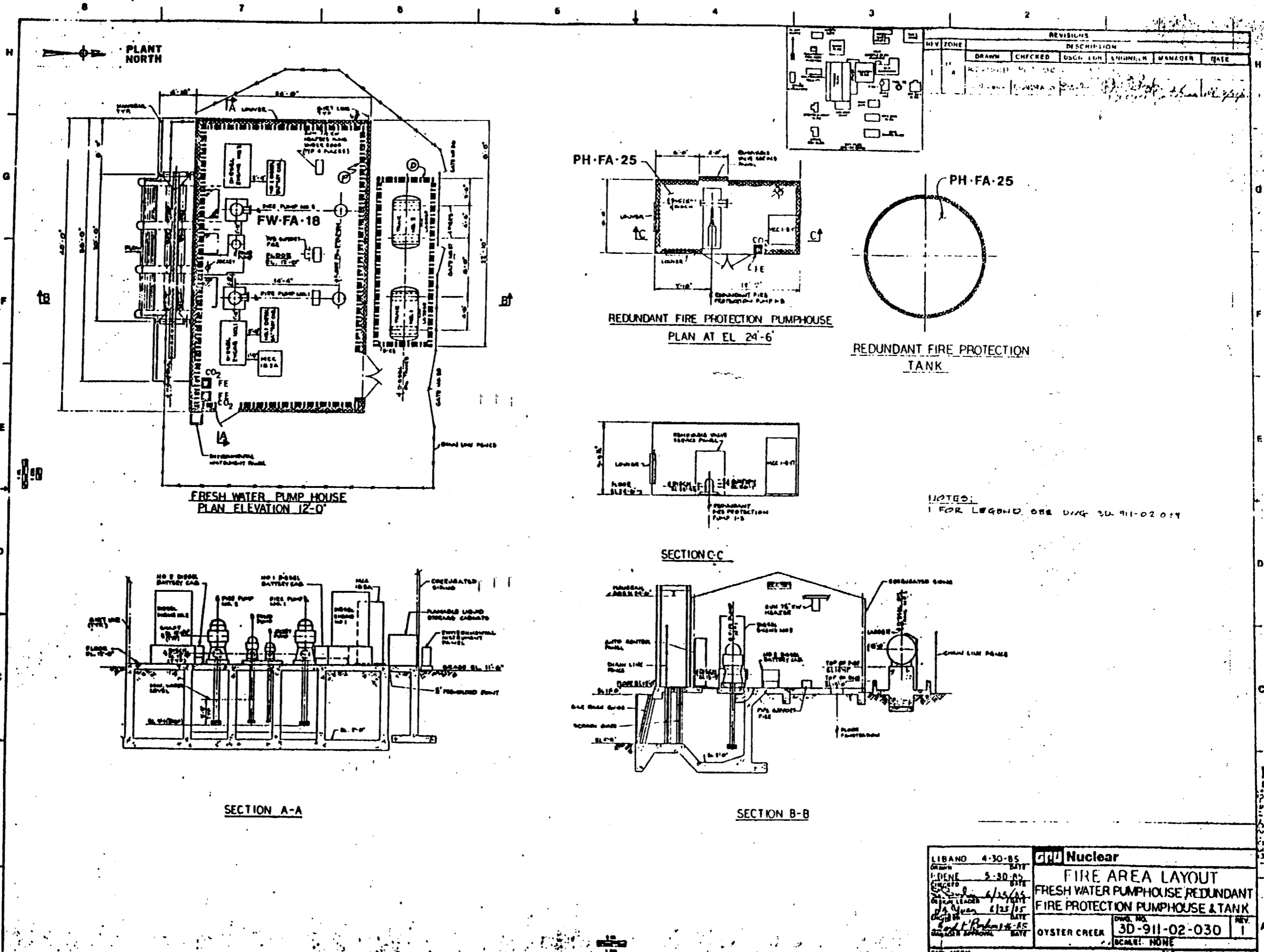
LIBA110 4-30-85		GPJ Nuclear
DESIGN	4-30-85	
P. DEWE	5-30-85	FIRE AREA LAYOUT INTAKE STRUCTURE
...	...	
OYSTER CREEK		PLANS & SECTIONS
...	...	
...	...	30-911-02-025
...	...	SCALE: NONE



REV. ZONE		REVISIONS			
NO.	DATE	DESCRIPTION	ENGR.	CHKD.	DATE
1		REVISED PER DCN 20-11-14			

NOTES:
1. FOR LEGEND SEE DWG 30-11-02-031

LIBANO	4-30-85	
DATE		
DESIGN	5-30-85	FIRE AREA LAYOUT MAINTENANCE BLDG. PLAN EL 24'-6"
DATE		
DESIGN	6/15/85	OYSTER CREEK 30-11-02-028 SCALE: NONE
DATE		
DESIGN	6/15/85	REV. 1
DATE		

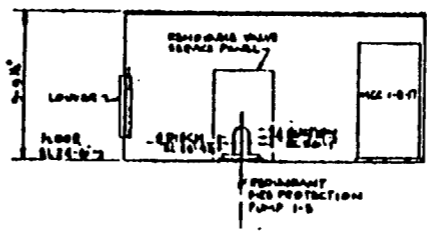


REVISIONS						
REV	ZONE	DESCRIPTION	DATE	ENGINEER	MANAGER	DATE
1	A	AS SHOWN	4/25/85			

FRESH WATER PUMP HOUSE
PLAN ELEVATION 12'-0"

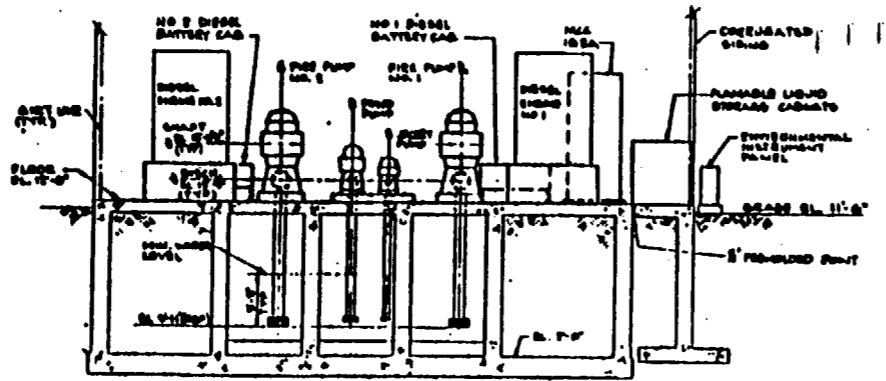
PH-FA-25
REDUNDANT FIRE PROTECTION PUMPHOUSE
PLAN AT EL 24'-6"

PH-FA-25
REDUNDANT FIRE PROTECTION TANK

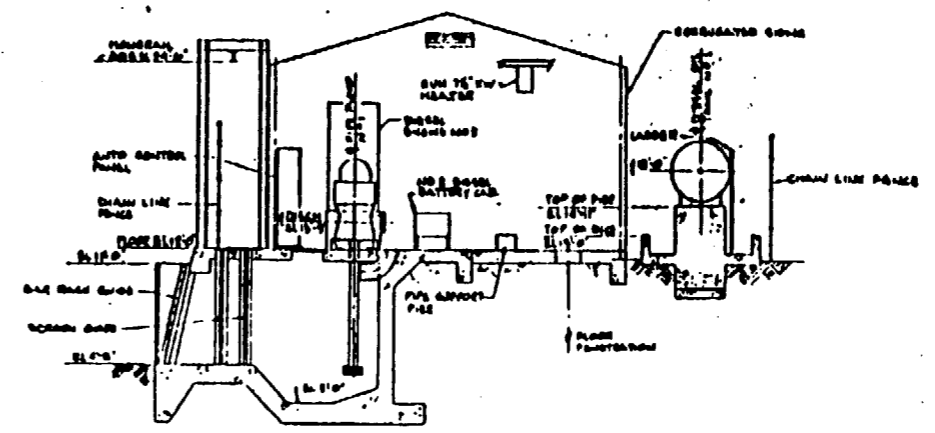


NOTED:
1 FOR LEGEND, SEE DWG 30-911-02-014

SECTION C-C



SECTION A-A

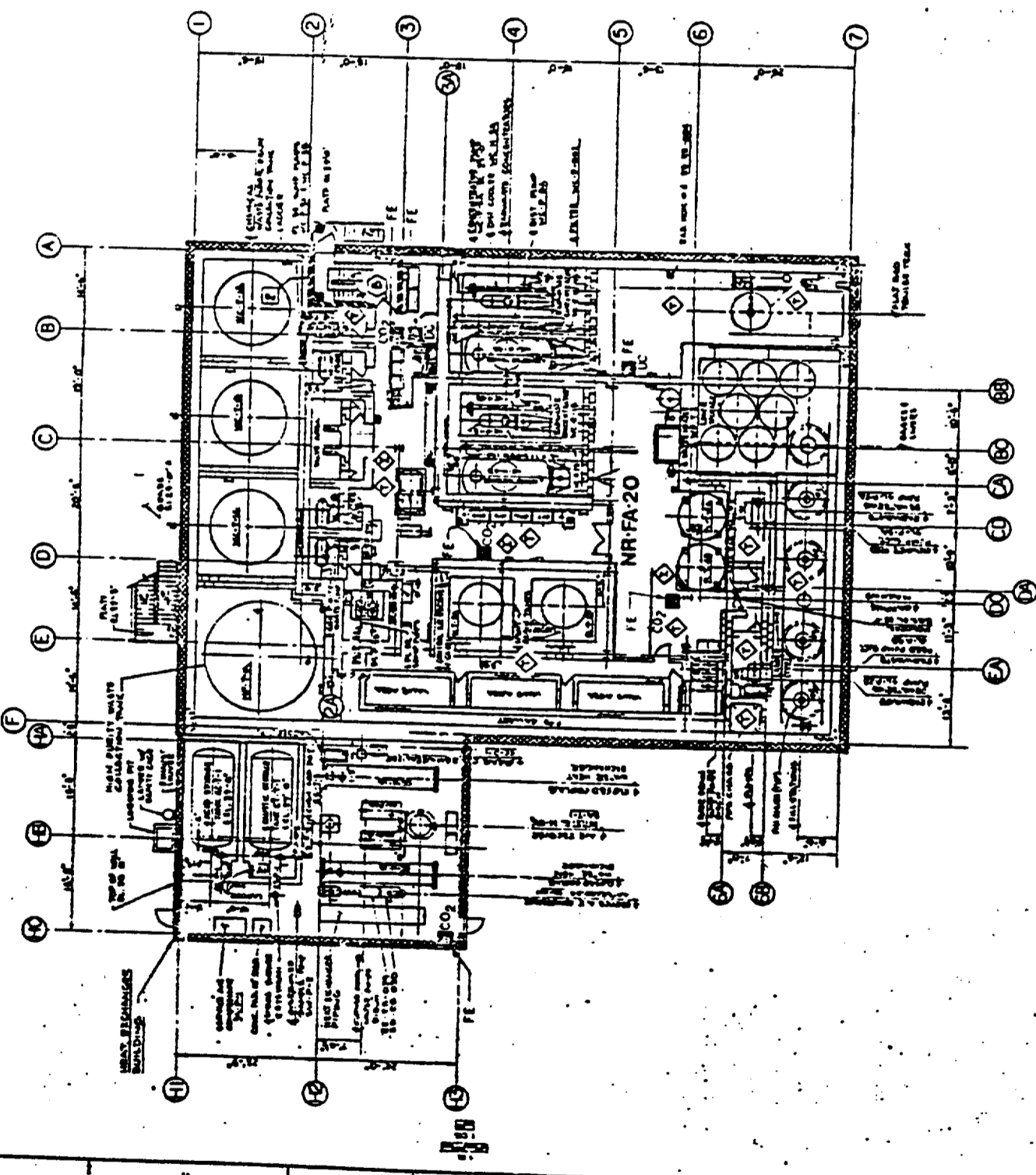


SECTION B-B

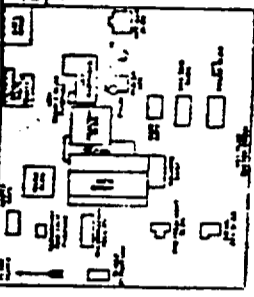
LIBANO 4-30-85	DATE	Nuclear	FIRE AREA LAYOUT FRESH WATER PUMPHOUSE REDUNDANT FIRE PROTECTION PUMPHOUSE & TANK
5-30-85	DATE		
4/25/85	DATE	OYSTER CREEK	30-911-02-030
6/25/85	DATE	SCALE: NONE	REV. 1

PLANT NORTH

PART. PLAN ELEV. 32'-0"



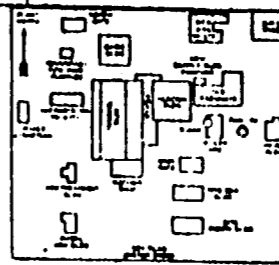
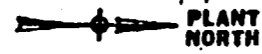
PLAN ELEVATION 23'-6"



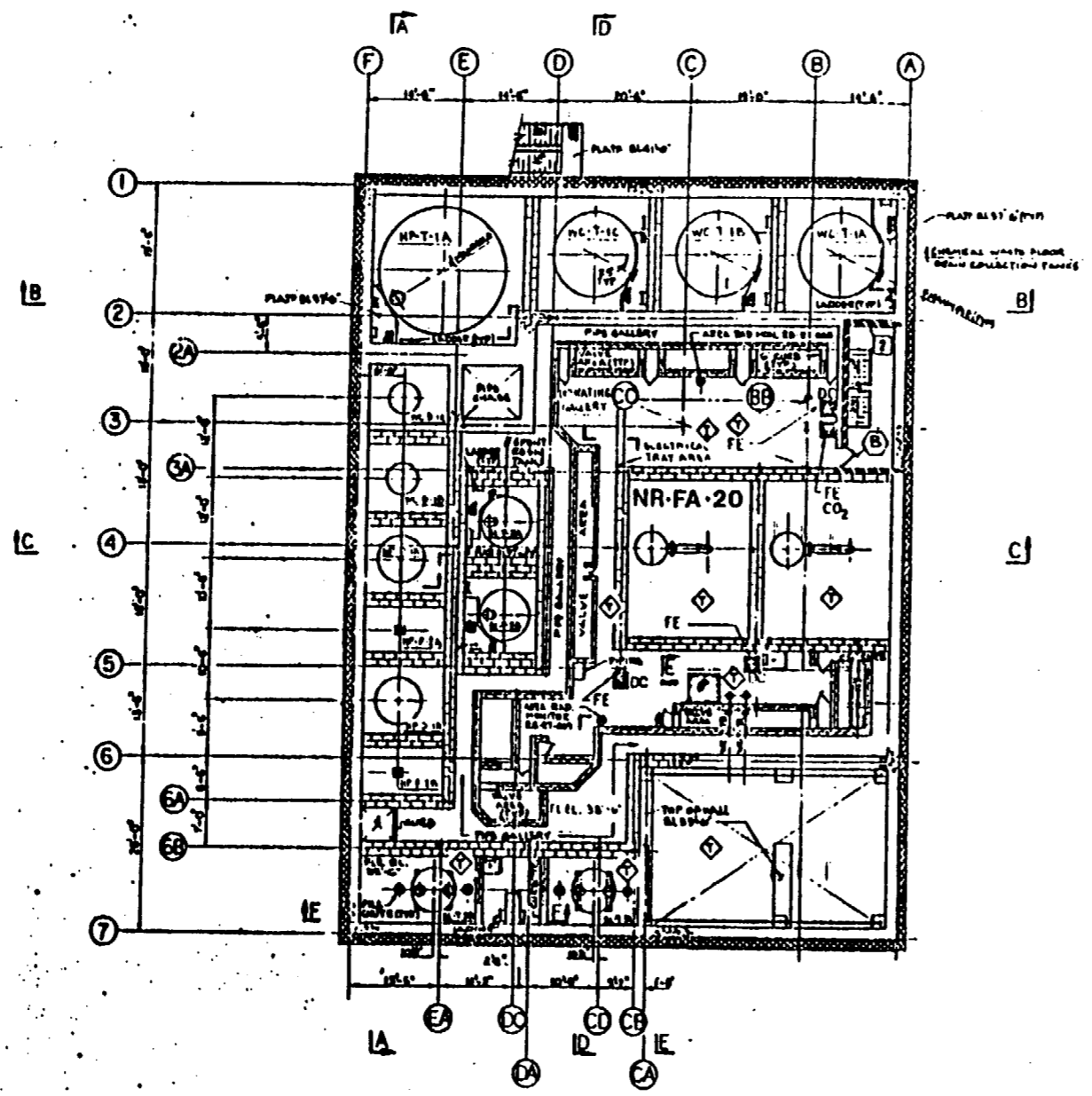
NOTE: 5:
 1. FOR LEGEND SEE DWG 30-111-02-039

REV. LINE	DESCRIPTION	DESIGNER	ENGINEER	MANAGER	DATE
1					
2					

30-111-02-031 NUCLEAR FIRE AREA LAYOUT NEW RADWASTE BLDG PLAN FL. EL. 23'-6"		OYSTER CREEK SCALE: NONE REV. 1
LIBANO 4-30-82 DRAWN	CHENE 5-20-82 CHECKED	OYSTER CREEK 30-111-02-031 SCALE: NONE REV. 1



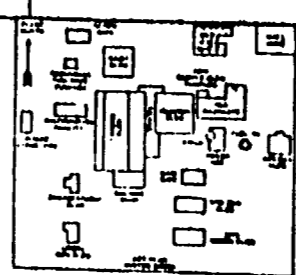
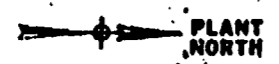
REVISIONS					
REV	ZONE	DESCRIPTION	ENGINEER	MANAGER	DATE
1	A	REVISED THIS DRAWING			
2	A	REVISED THIS DRAWING			



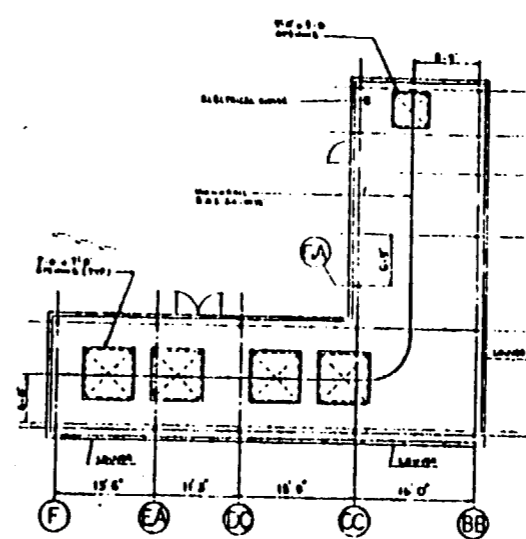
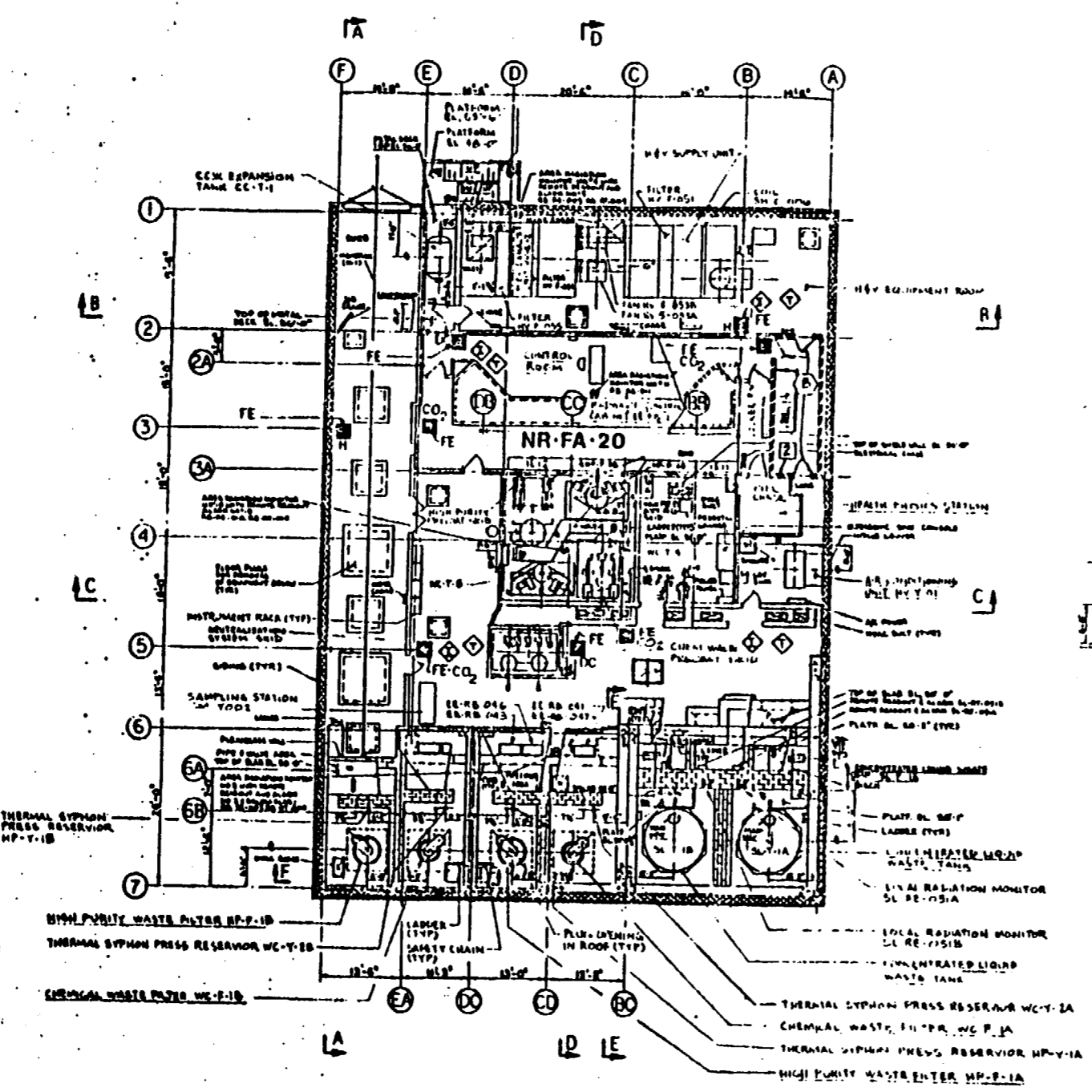
PLAN ELEVATION 33'-0" 35'-6" & 38'-6"

NOTES:
1 FOR LEGEND SEE DWG 30-911-02-032

LIBANO	4-30-85	Nuclear
DATE		
P. DENE	5-30-85	FIRE AREA LAYOUT NEW RADWASTE BLDG. PLAN FL EL 33'-0" 35'-6" & 38'-6"
DATE		
3D-911-02-032		OYSTER CREEK
SCALE: NONE		
3D-911-02-032		



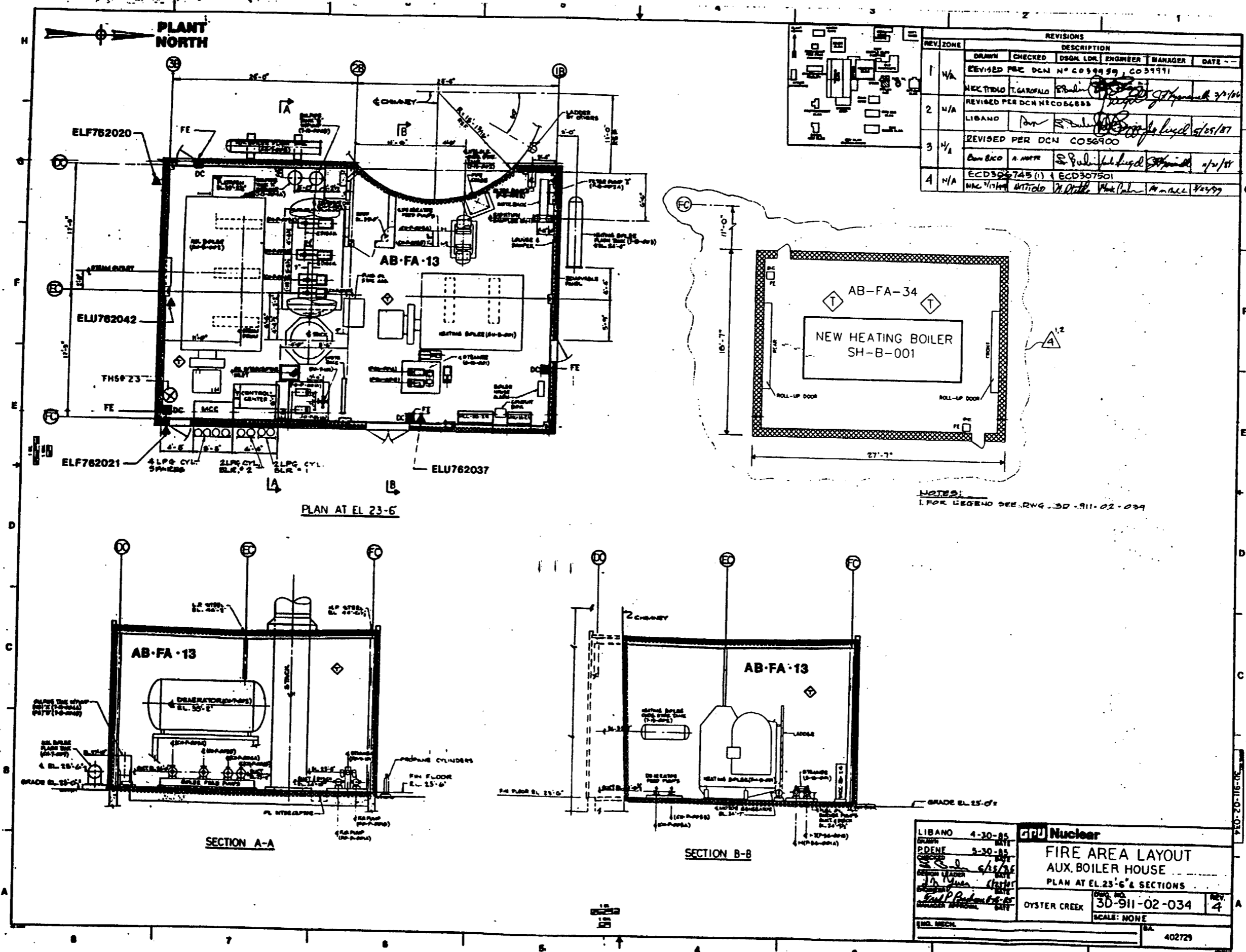
REVISIONS						
REV	DATE	DESCRIPTION	DRAWN	CHECKED	BY	DATE
1	4/11/85	REVISED FOR NEW EQUIPMENT				
2	4/11/85	REVISED FOR NEW EQUIPMENT				



NOTES:
1. FOR LEGEND SEE DWG 3D-911-02-039

PLAN ELEVATION 48'-0"

LIBANO 4-30-85	BY	Nuclear
COENE 5-30-85	DATE	
FIRE AREA LAYOUT		
NEW RADWASTE BLDG		
PLAN FLOOR ELEVATION 48'-0"		
OYSTER CREEK	DWG. NO. 3D-911-02-033	REV. 2
SCALE: NONE		

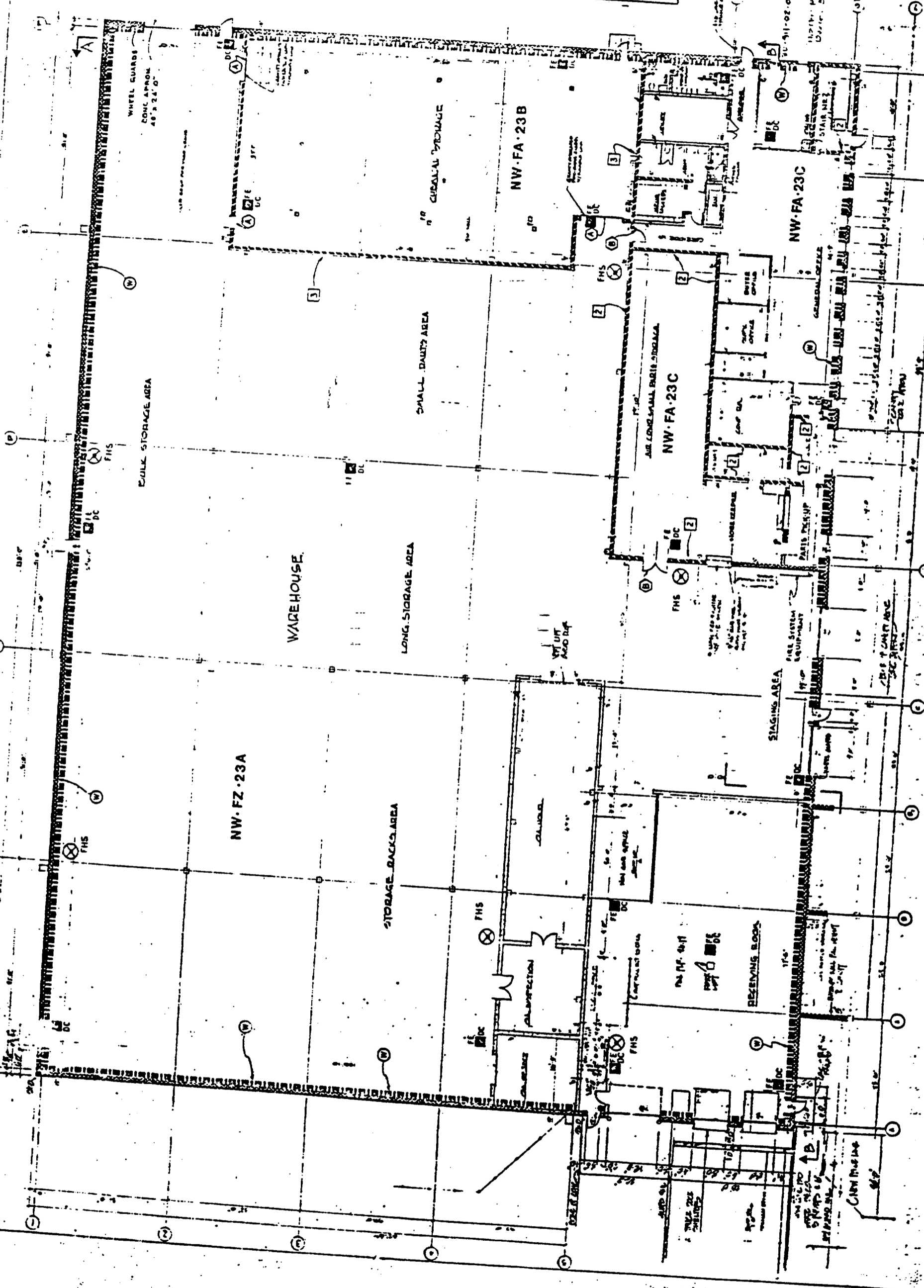


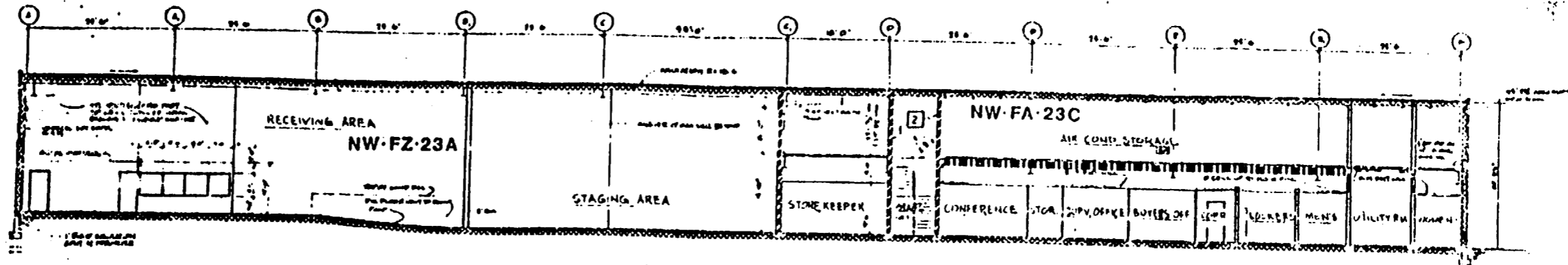
REVISIONS						
REV. NO.	ZONE	DESCRIPTION	DESIGN LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN N° C039959, C039991				
2	N/A	REVISED PER DCN N° C036688				
3	N/A	REVISED PER DCN C056900				
4	N/A	ECDS 745 (1) + ECDS 7501				

NOTES:
1. FOR LEGEND SEE DWG. 3D-911-02-034

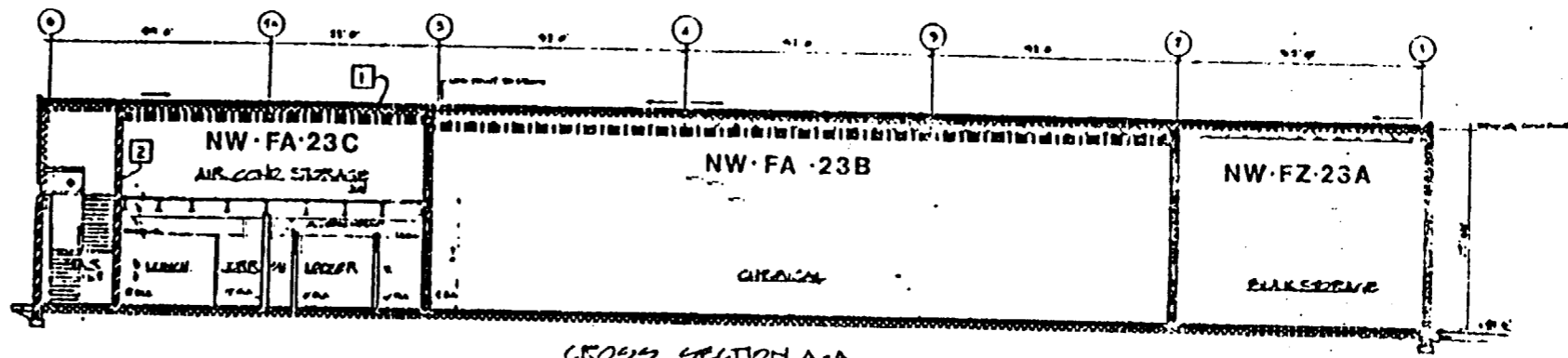
LIBANO	4-30-85	Nuclear
PDENE	3-30-85	
FIRE AREA LAYOUT AUX. BOILER HOUSE PLAN AT EL. 23'-6" & SECTIONS		OYSTER CREEK 3D-911-02-034 SCALE: NONE
402729		

REVISIONS	NO.	DESCRIPTION	DATE
1	1	ISSUED FOR CONSTRUCTION	11-11-02
2	2	ISSUED FOR CONSTRUCTION	11-11-02
3	3	ISSUED FOR CONSTRUCTION	11-11-02
4	4	ISSUED FOR CONSTRUCTION	11-11-02
5	5	ISSUED FOR CONSTRUCTION	11-11-02
6	6	ISSUED FOR CONSTRUCTION	11-11-02
7	7	ISSUED FOR CONSTRUCTION	11-11-02
8	8	ISSUED FOR CONSTRUCTION	11-11-02
9	9	ISSUED FOR CONSTRUCTION	11-11-02
10	10	ISSUED FOR CONSTRUCTION	11-11-02
11	11	ISSUED FOR CONSTRUCTION	11-11-02
12	12	ISSUED FOR CONSTRUCTION	11-11-02
13	13	ISSUED FOR CONSTRUCTION	11-11-02
14	14	ISSUED FOR CONSTRUCTION	11-11-02
15	15	ISSUED FOR CONSTRUCTION	11-11-02
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17	17	ISSUED FOR CONSTRUCTION	11-11-02
18	18	ISSUED FOR CONSTRUCTION	11-11-02
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20	20	ISSUED FOR CONSTRUCTION	11-11-02
21	21	ISSUED FOR CONSTRUCTION	11-11-02
22	22	ISSUED FOR CONSTRUCTION	11-11-02
23	23	ISSUED FOR CONSTRUCTION	11-11-02
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26	26	ISSUED FOR CONSTRUCTION	11-11-02
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38	38	ISSUED FOR CONSTRUCTION	11-11-02
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61	61	ISSUED FOR CONSTRUCTION	11-11-02
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64	64	ISSUED FOR CONSTRUCTION	11-11-02
65	65	ISSUED FOR CONSTRUCTION	11-11-02
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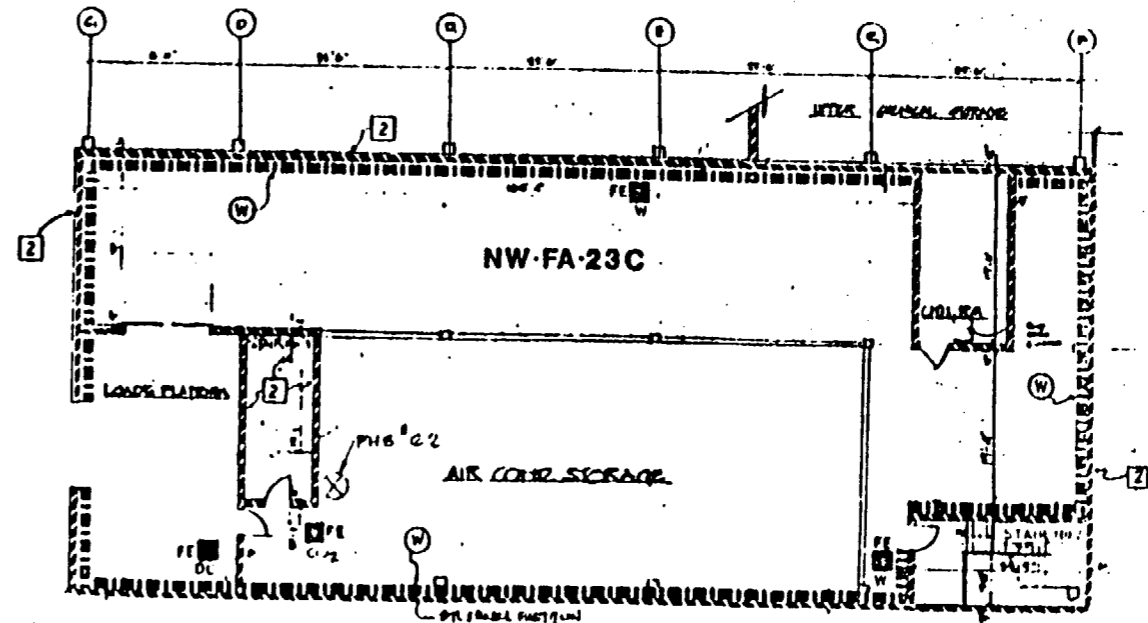


CROSS SECTION B-B



CROSS SECTION A-A

NOTES:
1. FOR LEGEND SEE DRAWING 3D-911-02-036

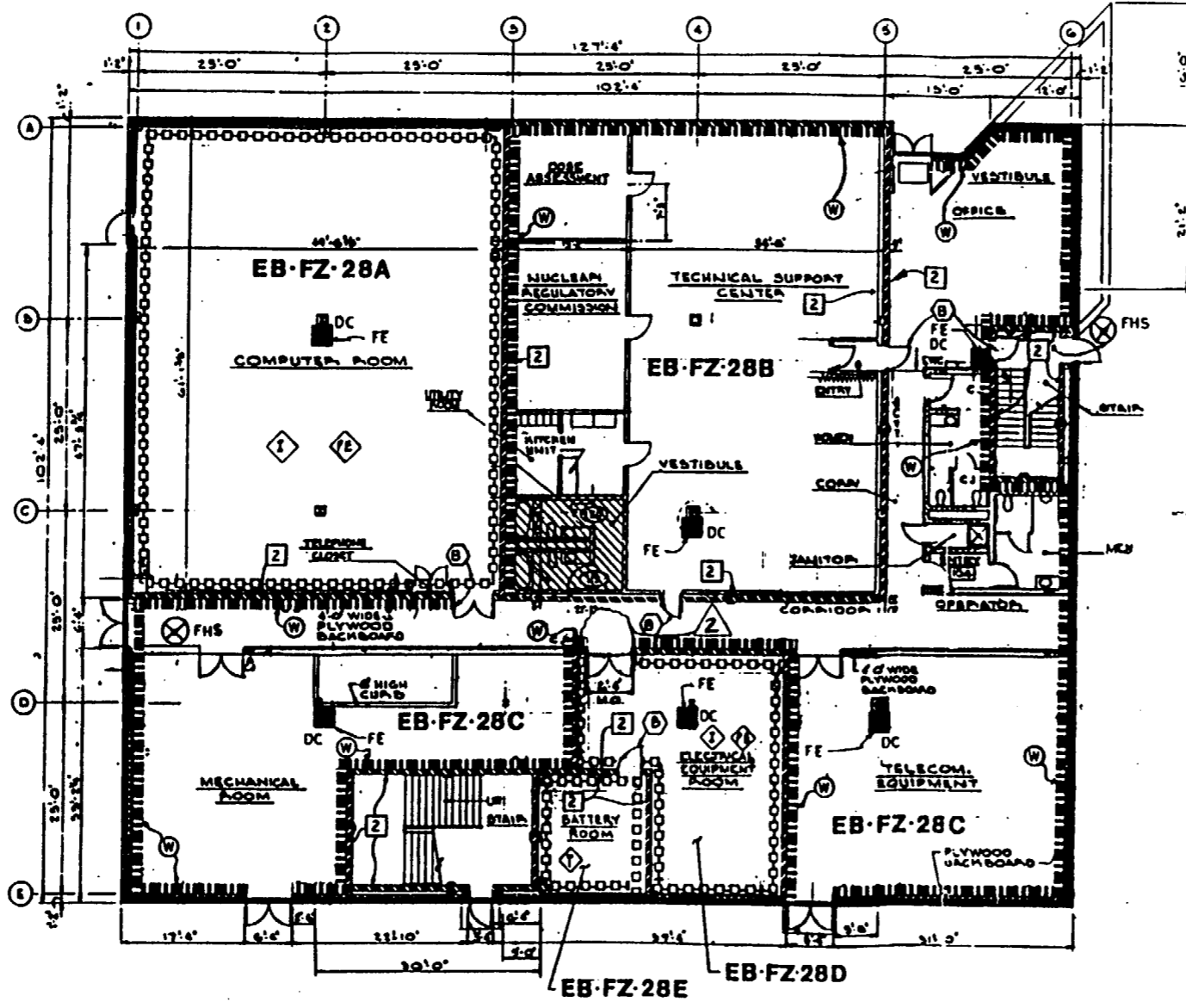


SECOND FLOOR PLAN

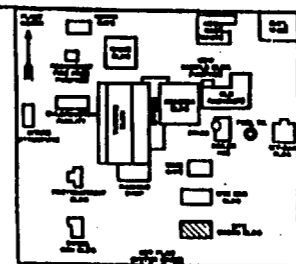
REVISIONS						LIBANO 4-30-85		Nuclear	
REV	ZONE	DESCRIPTION	DRAWN	CHECKED	UPON FOR	EMERGER	MANAGER	DATE	
1	WA	REVISED PER DCN CO 79969, CO89991						3-30-85	FIRE AREA LAYOUT NEW WAREHOUSE (CROSS SECTIONS & 2ND FL. PLAN)
2	WA	REVISED PER DCN CO 86866						4-27-85	

OSTER CHEN 3D-911-02-036 2

PLANT NORTH



FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



REV		REVISIONS					
REV	ZONE	UNAWN	CHECKED	DSGN. LDR.	ENGINEER	MANAGER	DATE
1	N/A	REVISED PER DCN NO C030170, C030991					
2	N/A	REVISED PER DCN NO C03103					
		LIBANO	STANKIEWICZ	W. R. ...	...	...	5/14/95

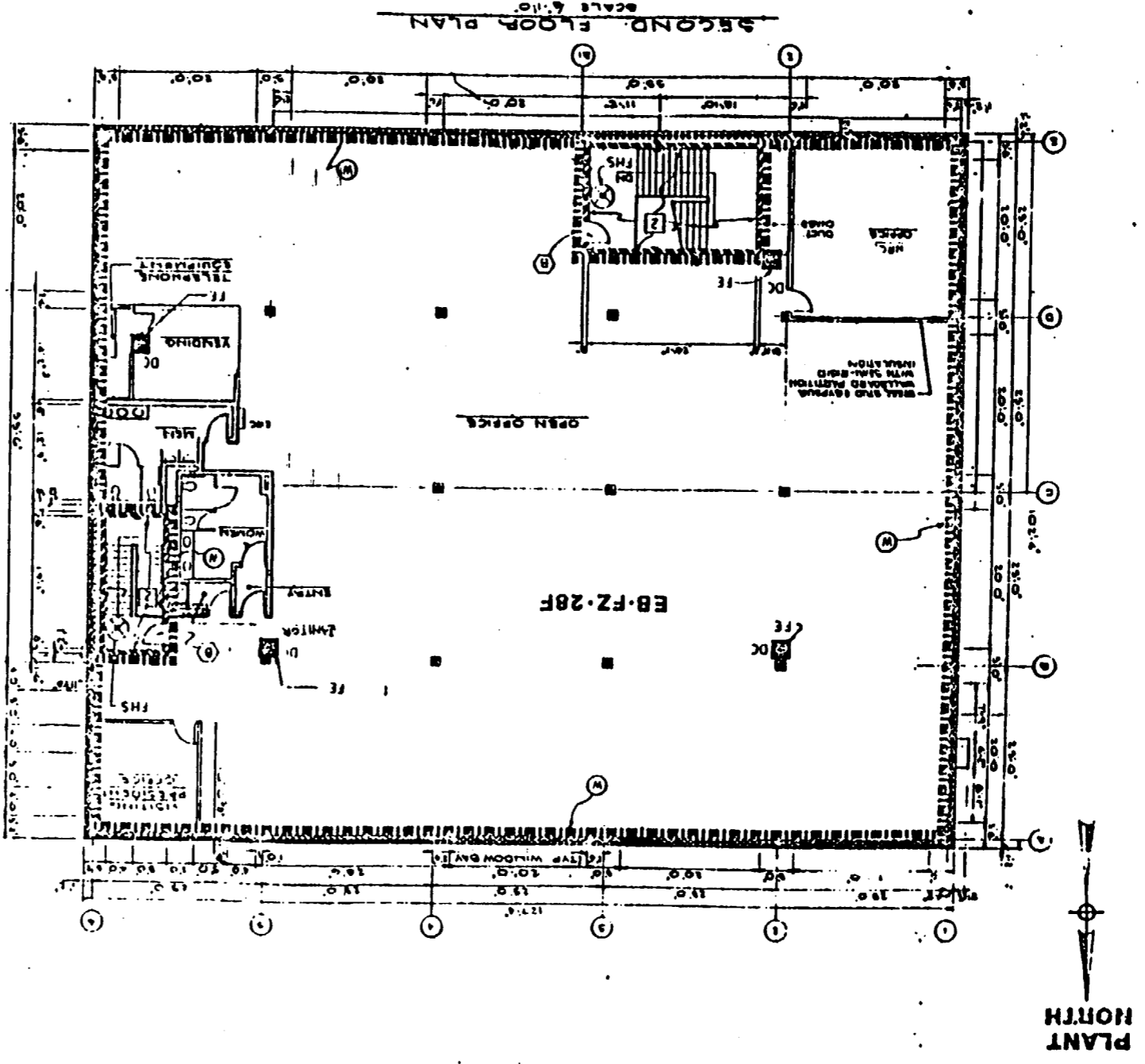
NOTES:
1 FOR LEGEND SEE DWG 30-911-02-039

LIBANO	4-30-85		FIRE AREA LAYOUT SITE EMERGENCY BLDG FIRST FLOOR PLAN
CDR/INT	DATE		
PD/ENE	5-30-85		
DESIGNER	6/13/85		
DESIGN LEADER	6/25/85		
MANAGER APPROVAL	8/17/85	OYSTER CREEK	DWG. NO. 30-911-02-037
REV. 2	SCALE: NOT TO SCALE		

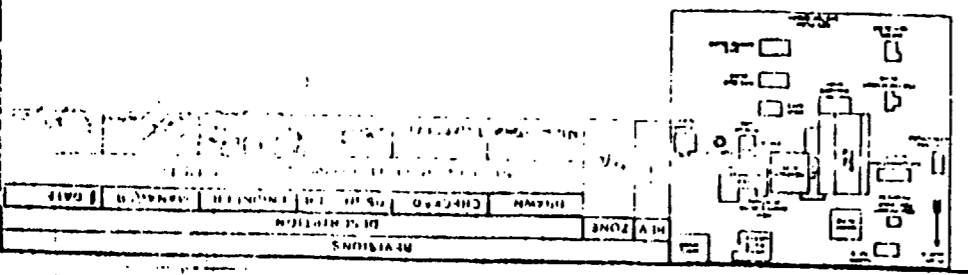
NO.	DWG. NO.	TITLE
		REFERENCES



DRU Nuclear 4-30-82 P. DENE 3-30-82 DATE		124 1980 30-911-02 (38) OSTER CHLIM SCALE: 1/8" = 1'-0"
FIRE AREA LAYOUT SITE EMERGENCY BLDG SECOND FLOOR PLAN		



WORK LEADUP ON DWG NO 911-02 (38)



REVISIONS NO. | DATE | BY | DESCRIPTION	CHECKED BY: [] DESIGNED BY: [] DRAWN BY: []
--	--

TEC NO 30-911-02-039

REV	ZONE	DESCRIPTION					
		UNDRN	CHEKED	DESIG LDR	ENGINEER	MANAGER	DATE
1	NA	REVISED PER DCM NICO SUBS					
2	N/A	REVISED PER DCM NICO SUBS					

LEGEND:

1. 3 HR. FIRE BARRIER (TECH SPEC.)
2. FIRE BARRIER RATING 2 OR 1 1/2 HR. (TECH SPEC.)
3. NO RATING
4. FIRE BARRIER (NON TECH SPEC) RATING 3, 2 OR 1 1/2 HR.
5. FIRE ZONE BOUNDARY
6. 3HR. RATED DOOR
7. 1 1/2 HR. RATED DOOR
8. GATE
9. FIRE HOSE STATION
10. FE = FIRE STATIONS (EXTINGUISHERS)
CO2 = CARBON DIOXIDE
H = HALON
DC = DRY CHEMICALS
W = WATER
11. FIRE DETECTORS
THERMAL
IONIZATION
PHOTO ELECTRIC
12. FIRE PROTECTION SYSTEMS
DELUGE OR SPRINKLER SYSTEM (ARROW SIDE IS PROTECTED SIDE)
D = DELUGE
W = WET PIPE (SPRINKLER)
P = PREACTION
CO2 SYSTEM
HALON SYSTEM
13. FIRE AREA DESIGNATION
-FA-NUMBER
BLDG. DESIGNATION
14. FIRE ZONE DESIGNATION
-FZ-NUMBER
BLDG. DESIGNATION
15. SEALED FIRE ZONE BOUNDARY (TECH. SPEC.)

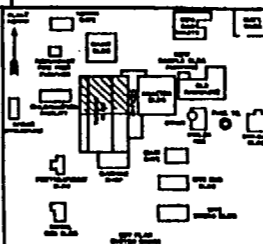
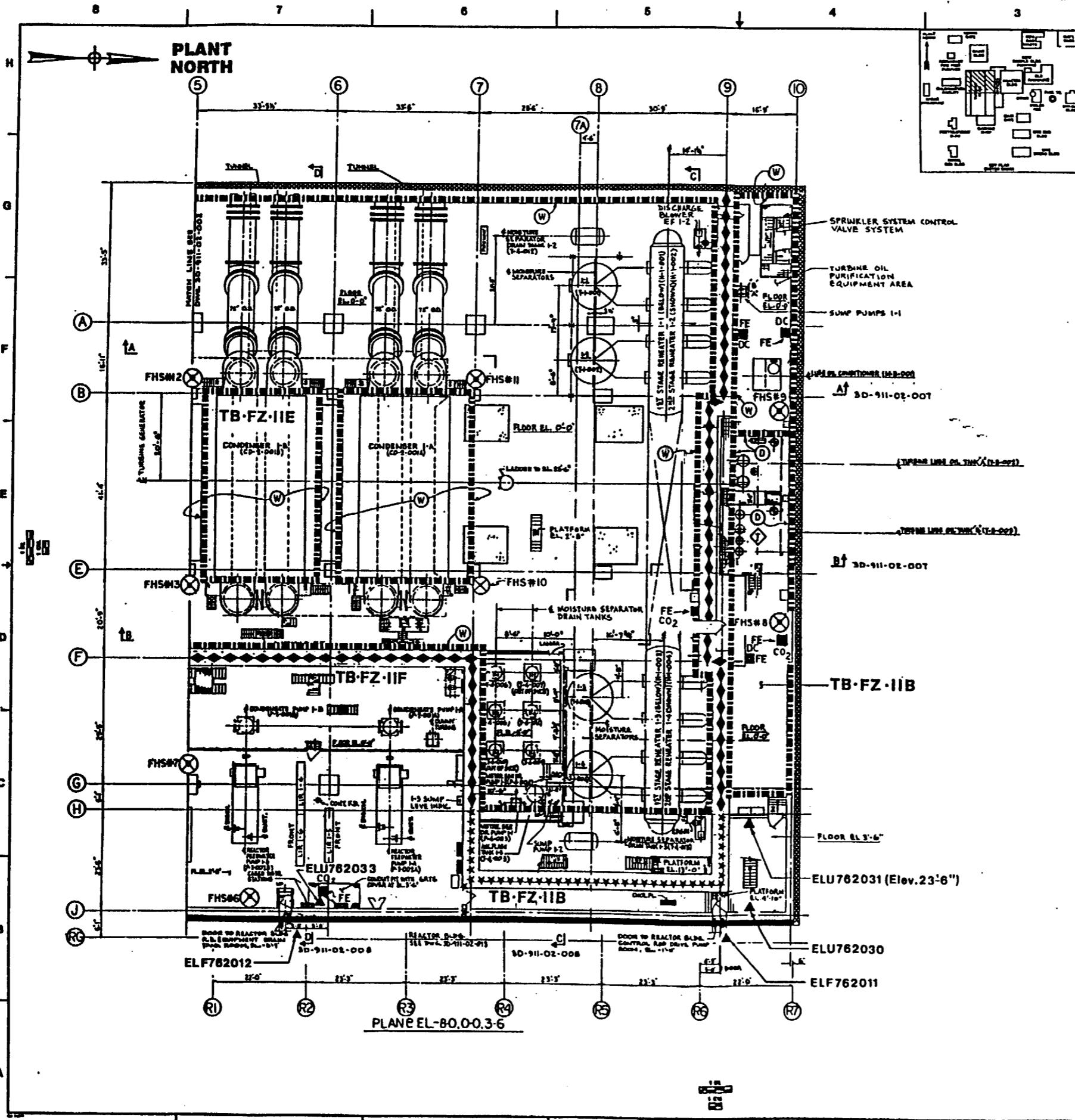
16. BUILDING DESIGNATION
AB - AUXILIARY BOILER HOUSE
CW - CIRC. WATER INTAKE AREA
DG - DIESEL GENERATOR BUILDING
EB - SITE EMERGENCY BUILDING
FS - EMERGENCY DIESEL GENERATOR FUEL STORAGE
FW - FIRE WATER PUMP HOUSE
MB - MAINTENANCE BUILDING
MT - MAIN TRANSFORMER AND CONDENSATE AREA
NR - NEW RADWASTE BUILDING
NW - NEW WAREHOUSE
OB - OFFICE BUILDING
OG - AUGMENTED OFF-GAS BUILDING
OR - OLD RADWASTE BUILDING
PH - NEW FIRE PUMPHOUSE
RB - REACTOR BUILDING
TB - TURBINE BUILDING
17. LOCATION FOR:
ELU - EMERGENCY LIGHTING BATTERY UNIT
ELF - EMERGENCY LIGHTING FLOOD LAMP
LSP - EMERGENCY LIGHTING UNIT AT LOCAL SHUTDOWN PANEL
RSD - EMERGENCY LIGHTING UNIT AT REMOTE SHUTDOWN PANEL

D. ABBRUSCATO 4-30-85		Nuclear	
UNDRN	DATE	FIRE AREA LAYOUT	
EDENE	5-30-85	LEGEND AND NOTES	
CHEKED	DATE	SYSTEM CREEK	30-911-02-039
DESIGN LDR	DATE	SCALE: NONE	REV ?
MANAGER APPROVAL	DATE		

1 IN
1 CM

NO DWS. NO. TITLE

402724



REV	ZONE	REVISIONS				
		DESCRIPTION	DATE	MANAGER	ENGINEER	DRN. LDR.
1	N/A	REVISED PER DCN 009959, 009991	7/1/86			
2	N/A	REVISED PER DCN 006683B	5/6/87			
3	N/A	REVISED PER DCN 003052	1/1/87			
4	N/A	REVISED PER DCN 007629	7/8/88			

NOTE:
1. FOR LEGEND SEE DWG. 3D-911-02-001

LIBANO	4-30-85	
DATE		
DRAWN	5-30-85	FIRE AREA LAYOUT TURBINE BUILDING BASEMENT FLOOR PLAN
DATE		
DESIGN LEADER	6/15/85	
DATE		
MANAGER APPROVAL	DATE	OYSTER CREEK 3D-911-02-001 SCALE: NONE
REV. 4		
ENG. MECH.		402729