INDEPENDENT DESIGN REVIEW
of the
PALO VERDE NUCLEAR GENERATING STATION
FIRE PROTECTION SYSTEM

Before the

FIRE PROTECTION SYSTEM REVIEW BOARD

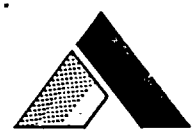
VOLUME II OF II

A P P E N D I X

Phoenix, Arizona
February 25, 1981

GRUMLEY REPORTERS
PHOENIX, ARIZONA

PALO VERDE NUCLEAR GENERATING STATION
FIRE PROTECTION REVIEW BOARD



PHOENIX, AZ
FEBRUARY 25, 1981

FIRE PROTECTION SYSTEM INDEPENDENT DESIGN REVIEW

2/25/81	BOARD CONVENES FOR BECHTEL PRESENTATION
3/04/81	APS LICENSING REVIEWS TRANSCRIPT
3/11/81	FINAL TRANSCRIPT SENT TO NRC, REVIEW BOARD, AND BECHTEL
3/25/81	BECHTEL'S DRAFT RESPONSE SENT TO APS FOR INFORMAL REVIEW
4/01/81	APS COMMENTS ON DRAFT RESPONSE SENT TO BECHTEL
4/15/81	BECHTEL SENDS RESPONSES TO BOARD
4/22/81	APS SENDS BOARD'S COMMENTS ON RESPONSES TO BECHTEL
4/29/81	THOSE BOARD MEMBERS WITH COMMENTS WILL RECONVENE TO MEET WITH BECHTEL*
5/06/81	LETTER TO NRC CLOSING OUT REVIEW

*RECONVENING MAY BE FULFILLED WITH CONFERENCE CALL

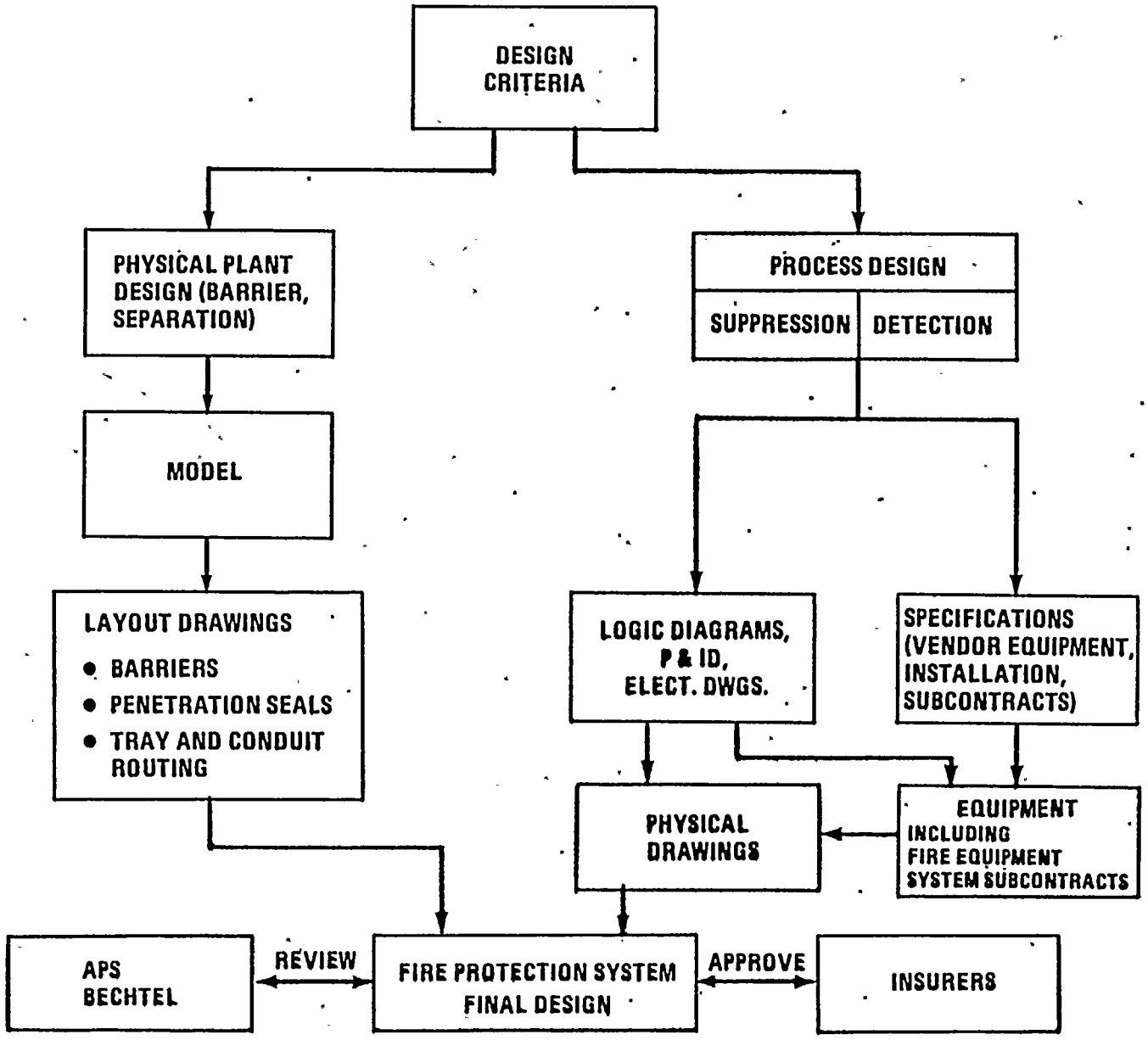
FIRE PROTECTION REVIEW BOARD
AGENDA

1. INTRODUCTION AND BACKGROUND
2. SYSTEM OVERVIEW
   - A. GENERAL
     1. DESIGN CRITERIA
   - B. SUPPRESSION SYSTEM
     1. DESIGN CRITERIA
     2. LAYOUT
     3. OPERATION
   - C. DETECTION SYSTEM
     1. DESIGN CRITERIA
     2. LAYOUT
     3. OPERATION
   - D. PASSIVE DESIGN FEATURES
     1. DESIGN CRITERIA
     2. LAYOUT
     3. MATERIAL SELECTION
3. FIRE PROTECTION EVALUATION REPORT
4. CONFORMANCE WITH REGULATORY REQUIREMENTS
   - A. SRP 9.5.1
     1. GDC 3
     2. GDC 5
     3. R.G. 1.78
     4. R.G. 1.101
     5. BTP-ASB 9.5-1, APPENDIX A
   - B. 10 CFR 50 APPENDIX R
   - C. NFPA
5. FUTURE WORK
   - A. EVALUATION OF EFFECTS OF CONTROL ROOM FIRE
   - B. RCP LUBE OIL SYSTEM
   - C. ELECTRICAL TRAIN AND CHANNEL SEPARATION

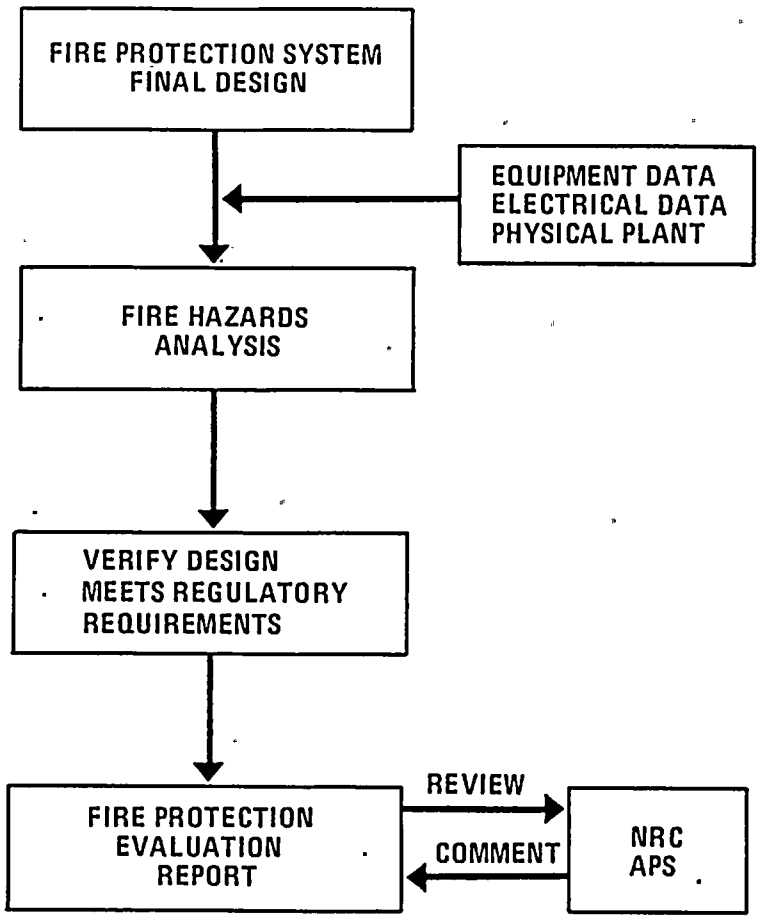
FIRE PROTECTION REVIEW SCHEDULE

FPER SUBMITTED	MAY 31, 1977
FPER AMENDMENT 1 TO NRC	AUGUST 1978
FSAR DOCKETED	JUNE 19, 1980
MEETING WITH NRC	NOVEMBER 19, 1980
APPENDIX R TO 10CFR50 ISSUED	NOVEMBER 1980
FIRE PROTECTION REVIEW BOARD	FEBRUARY 25, 1981
TRANSCRIPT TO NRC	MARCH 11, 1981 (F)
RESOLUTION OF OPEN ITEMS TO NRC	MAY 6, 1981 (F)
FPER AMENDMENT 2 TO NRC	JUNE 15, 1981 (F)
FSAR AMENDMENT TO ANSWER NRC SUPPLEMENTAL QUESTIONS	AUGUST 31, 1981 (F)
DRAFT SER SECTION	SEPTEMBER 30, 1981 (F)
NRC PLANT WALKDOWN	TO BE DETERMINED

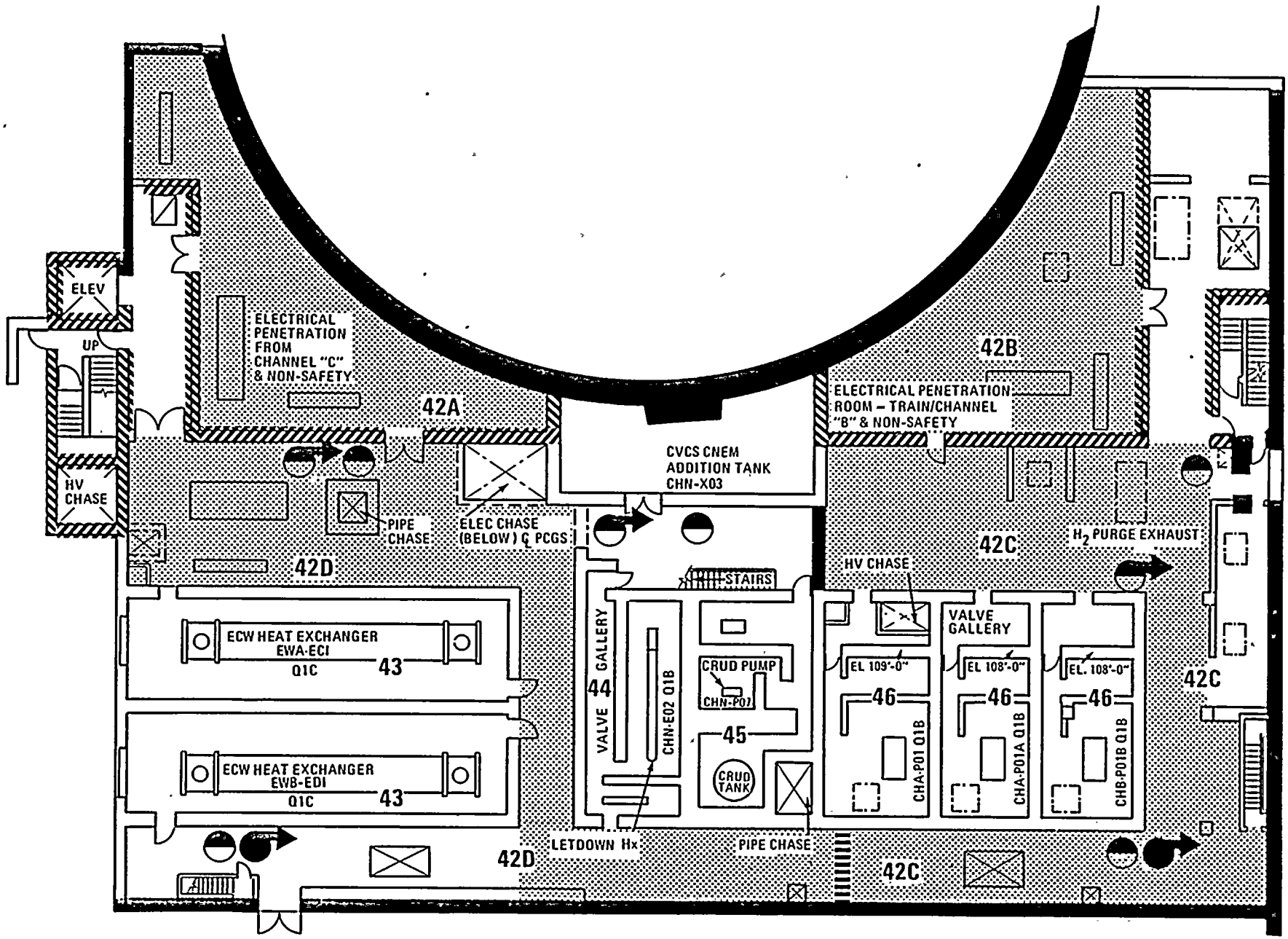
FIGURE 1



SYSTEM DESIGN DERIVATION PROCESS
FIGURE 2



DESIGN VALIDATION PROCESS
FIGURE 3



AUXILIARY BUILDING, ELEVATION 100 FT.
FIGURE 4

CABLE SEPARATION STUDY FOR NRC

A. ESSENTIAL CABLE SEPARATION FOR SAFE SHUTDOWN EQUIPMENT.

1. IDENTIFY EQUIPMENT AND INSTRUMENTS REQUIRED FOR HOT AND COLD SHUTDOWN, INCLUDING SUPPORT EQUIPMENT
2. IDENTIFY ESSENTIAL CABLING
3. IDENTIFY ROUTING BY FIRE ZONE, AS IDENTIFIED IN THE FPER
4. IDENTIFY WHERE REDUNDANT CABLES ARE NOT PROTECTED PER APPENDIX R, PART III G.2.

B. ASSOCIATED CABLES SEPARATION FOR SAFE SHUTDOWN EQUIPMENT.

NOT APPLICABLE TO PVNGS AS ALL ASSOCIATED CABLES ARE ELECTRICALLY CLASSIFIED AS ESSENTIAL CABLES WITH THE EXCEPTION OF INTERCONNECTING CABLES BETWEEN THE SAFETY EQUIPMENT STATUS SYSTEM (SESS) LOGIC CABINET AND THE SESS STATUS PANELS ON THE MAIN CONTROL BOARD, AND INTERCONNECTING CABLES BETWEEN THE ELECTRONIC ISOLATION SYSTEM AND THE SESS LOGIC CABINET. THESE ASSOCIATED CABLES WILL BE IDENTIFIED BY FIRE AREA AND PROTECTED PER APPENDIX R, PART III G.2.

C. ALTERNATE OR DEDICATED SHUTDOWN FOR THE MAIN CONTROL ROOM OR ANY OTHER FIRE AREA.

1. IDENTIFY THE PRIMARY HOT AND COLD SHUTDOWN EQUIPMENT AND INSTRUMENTS, INCLUDING SUPPORT SYSTEMS
2. IDENTIFY THE REMOTE ALTERNATE, OR DEDICATED EQUIPMENT AND INSTRUMENTS
3. IDENTIFY WHERE THE PRIMARY AND ALTERNATE OR DEDICATED EQUIPMENT AND INSTRUMENTS ARE IN THE SAME FIRE AREA, AND THEIR ESSENTIAL CABLES

EXHIBIT 1

4. WHERE PRIMARY AND ALTERNATE EQUIPMENT OR INSTRUMENTS ARE IN THE SAME FIRE AREA EITHER:

   A. PROVIDE DETAILED ELECTRICAL DRAWINGS TO SHOW THE ESSENTIAL CABLES ARE DUPLICATED ELSEWHERE AND ARE ELECTRICALLY ISOLATED, OR

   B. PROVIDE AN ANALYSIS THAT DEMONSTRATES A FAILURE OF EACH ESSENTIAL CABLE IDENTIFIED WILL NOT AFFECT THE CAPABILITY TO ACHIEVE AND MAINTAIN HOT OR COLD SHUTDOWN

D. ASSOCIATED CABLES TO THE ALTERNATE, DEDICATED, OR REMOTE METHOD OF SHUTDOWN.

NOT APPLICABLE TO PVNGS AS ALL ASSOCIATED CABLES ARE ELECTRICALLY IDENTIFIED AS ESSENTIAL CABLES.

E. REACTOR COOLANT SYSTEM (RCS) ISOLATION FROM LOW PRESSURE SYSTEM.

1. IDENTIFY EACH RCS LOW PRESSURE INTERFACE USING REDUNDANT ELECTRICALLY OPERATED DEVICES
2. IDENTIFY EACH DEVICE'S ESSENTIAL CABLING AND ROUTING BY FIRE AREA
3. IDENTIFY WHERE THE CABLES ARE NOT PROTECTED PER APPENDIX R, PART III.G.2.
4. WHERE PROTECTION DOES NOT MEET THE REQUIREMENTS OF APPENDIX R, III.G.2; PROVIDE THE BASES AND JUSTIFICATION OF THE EXISTING DESIGN OR ANY PROPOSED MODIFICATIONS.

PVNGS CLASSIFICATIONS

A. QUALITY CLASS "Q"

- FULL COMPLIANCE WITH 10CFR 50, APPENDIX B, PER ANSI N45.2-1971. (ALL ESF AND OR ASME COMPONENTS ARE "Q")

B. QUALITY CLASS "R"

- SIMILAR TO 10CFR 50, APPENDIX B - BUT REQUIRES ONLY THAT DOCUMENTATION NECESSARY TO ASSURE SAFE AND RELIABLE POWER GENERATION.

C. QUALITY CLASS "S"

- INDUSTRY STANDARD EQUIPMENT.

D. SEISMIC CATEGORY I

- REMAIN FUNCTIONAL FOR SSE

E. SEISMIC CATEGORY II

- COMPONENTS ESSENTIAL TO POWER GENERATION DESIGNED TO REMAIN FUNCTIONAL FOR OBE.

F. SEISMIC CATEGORY IX

- DESIGNED FOR NON-COLLAPSE FOR SSE.

EXHIBIT 3

2. SYSTEM OVERVIEW

EXHIBIT 2-1

2A GENERAL

- PRINCIPAL FUNCTION IS RAPID CONTAINMENT AND/OR EXTINGUISHING OF FIRES TO MINIMIZE RADIOACTIVE RELEASES AND REDUCE FIRE SPREAD AND DAMAGE.

1. DESIGN CRITERIA

A. GENERAL

1. TYPES OF FIRE PROTECTION BASED ON THE TYPE, CLASS, AND INTENSITY OF FIRES.
2. FIRE PROTECTION SYSTEM COMPONENTS DESIGNED TO NOT CAUSE A LOSS OF FUNCTION OF PLANT STRUCTURES, SYSTEMS, OR SAFETY COMPONENTS DUE TO THEIR FAILURE.
3. WHERE APPLICABLE, FIRE PROTECTION SYSTEM EQUIPMENT SHALL BE LISTED BY UL AND/OR APPROVED BY FM AND CONFORM TO NFPA STANDARDS. ALL EQUIPMENT WILL BE DESIGNATED AS QUALITY CLASS S.
4. FIRE PROTECTION SYSTEM EQUIPMENT SHALL BE INSTALLED, TESTED AND APPROVED IN ACCORDANCE WITH NFPA STANDARDS. INSTALLATION AND TEST PROCEDURES SHALL BE IN ACCORDANCE WITH QUALITY CLASS R.
5. FIRE SEALS OF COMPATIBLE RATING SHALL BE PROVIDED AT HVAC DUCT PENETRATIONS THROUGH FIRE BARRIERS.
6. ALL FIRE PROTECTION PIPING SUPPORTS IN SAFETY RELATED AREAS OR ANYWHERE IN THE CONTROL BUILDING SHALL BE DESIGNED TO WITHSTAND A SAFE SHUTDOWN EARTHQUAKE (SSE) SUCH THAT THE SYSTEM PIPING AND APPURTENANCES MAINTAIN THEIR STRUCTURAL INTEGRITY.

2.A.1.

B. OUTSIDE AREAS

1. PROVIDE A BLANK TWO HOUR RATED WALL FOR ALL BUILDINGS WITHIN 50 FT. OF ANY PART OF OUTDOOR OIL FILLED TRANSFORMERS.
2. TWO HOUR FIRE BARRIER WALLS SHOULD BE PROVIDED BETWEEN TRANSFORMERS.
3. THE TRANSFORMER YARD DRAINAGE PITS SHOULD BE CAPABLE OF CONTAINING THE OIL FROM LARGEST TRANSFORMER, AND THE WATER FROM TWO DELUGE SYSTEMS OPERATING SIMULTANEOUSLY FOR 10 MINUTE DURATION.
4. PROVIDE A BLANK TWO HOUR RATED WALL FOR THE TURBINE BUILDING WITHIN 50 FT. OF ANY PART OF TURBINE GENERATOR LUBE OIL STORAGE TANKS.
5. A DIKED DRAINAGE PIT SHOULD BE PROVIDED FOR THE TURBINE GENERATOR LUBE OIL STORAGE TANKS CAPABLE OF CONTAINING THE OIL FROM ONE STORAGE TANK AND THE WATER FROM BOTH DELUGE SYSTEMS OPERATING SIMULTANEOUSLY FOR A 10 MINUTE DURATION.
6. COOLING TOWERS SHOULD BE OF NONCOMBUSTIBLE CONSTRUCTION AND SO LOCATED AND PROTECTED THAT A FIRE WILL NOT ADVERSELY AFFECT ANY SAFETY-RELATED SYSTEMS OR EQUIPMENT.
7. SHOPS, WAREHOUSES, AUXILIARY BOILER ROOMS, FUEL OIL TANKS AND FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE TANKS SHOULD BE SO LOCATED AND PROTECTED THAT A FIRE WILL NOT ADVERSELY AFFECT ANY SAFETY-RELATED SYSTEMS OR EQUIPMENT.

2.A.1

c. POWER BLOCK AREAS

1. NEW CONSTRUCTION SHOULD BE NONCOMBUSTIBLE AND DESIGNED TO WITHSTAND WIND FORCES IN ACCORDANCE WITH ANSI STANDARD A58.1, "BUILDING CODE REQUIRED FOR MINIMUM DESIGN LOADS IN BUILDINGS AND OTHER STRUCTURES." SELECTION OF BASIC WIND VELOCITY SHALL BE BASED ON 100 YEAR PERIOD OF RECURRENCE.

2. INSULATION OVER ANY METAL ROOF DECKING SHOULD BE SECURELY ATTACHED BY APPROVED NON-COMBUSTIBLE ADHESIVE AND PERIMETER FASTENING. A VAPOR BARRIER, IF PROVIDED, SHOULD CONSIST OF APPROVED MEMBRANE ATTACHED BY APPROVED ADHESIVE AND PERIMETER FASTENING.

3. STAIRWAYS AND ELEVATORS THAT GO FROM ONE FIRE AREA TO ANOTHER FIRE AREA, SHOULD BE ENCLOSED IN APPROVED MASONRY TOWERS WITH APPROVED AUTOMATIC CLASS "B" FIRE DOORS, WITH RATING OF 1-1/2 HOURS AND 250 DEGREES MAX. 30 MIN. TEMP. RISE, AT EACH OPENING INTO THE BUILDING.

4. AN APPROVED FIRE BARRIER WALL OF THREE HOURS FIRE RESISTANCE RATING WITH SINGLE AUTOMATIC CLASS "A" FIRE DOORS, WITH RATING OF THREE HOURS AND 250 DEGREES MAX. 30 MIN. TEMP. RISE, AT ALL NECESSARY WALL OPENINGS SHOULD BE PROVIDED TO CUT OFF THE FOLLOWING AREAS:
   A. AUXILIARY BUILDING FROM TURBINE BUILDING, CONTAINMENT BUILDING, FUEL BUILDING, CONTROL BUILDING AND RADWASTE BUILDING.
   B. CONTROL BUILDING FROM RADWASTE BUILDING AND DIESEL GENERATOR BUILDING.
   C. SWITCHGEAR ROOM, BATTERY ROOM AND RAILROAD BAY WITHIN TURBINE BUILDINGS.
   D. ELECTRICAL PENETRATION ROOMS, ELECTRICAL CHASES, AND CHEMICAL STORAGE ROOM WITHIN AUXILIARY BUILDING.
   E. RAILROAD BAY (IF COMBUSTIBLE OCCUPANCY OR IF EQUIPMENT VULNERABLE TO PHYSICAL DAMAGE ARE WITHIN 50 FT. OF BAY) WITHIN FUEL BUILDINGS.
   F. AIR HANDLING AND CHILLER UNITS TRAIN "A" FROM TRAIN "B", E.S.F. EQUIPMENT ROOMS, BATTERY ROOMS, SWITCHGEAR ROOMS, CABLE SHAFTS, COMPUTER ROOM AND CONTROL ROOM FROM SERVICE AREA WITHIN CONTROL BUILDINGS, ALSO, CUT-OFF REDUNDANT CABLE AREAS SUCH AS TRAIN "A" FROM TRAIN "B" WITHIN CABLE SPREADING ROOMS.
   G. ELECTRICAL AREA IN HVAC, ELEC. AND PIPE CHASE AND TRUCK BAY WITHIN RADWASTE BUILDINGS.
   H. EACH DIESEL GENERATOR AND FUEL OIL DAY TANK ROOM WITHIN DIESEL GENERATOR BUILDINGS.
   I. WAREHOUSE AND/OR SHOPS WITHIN SERVICE BUILDINGS.
   J. MAJOR MOTOR GENERATOR SETS.
   K. DIESEL-DRIVEN FIRE PUMP ROOMS WITHIN FIRE PUMP HOUSE.

5. PROVIDE A BLANK TWO HOUR RATED WALL FOR THE TURBINE BUILDING WITHIN 50 FT. OF ANY PART OF TURBINE GENERATOR LUBE OIL RESERVOIR.

6. A DIKED DRAINAGE SYSTEM SHOULD BE PROVIDED FOR THE TURBINE GENERATOR LUBE OIL RESERVOIR CAPABLE OF CONTAINING ALL OF THE OIL AND WATER FROM THE DELUGE SYSTEM IN OPERATION FOR A 10 MINUTE DURATION.

7. AN ENCLOSURE OF AT LEAST THREE HOURS FIRE RESISTANCE RATING SHOULD BE PROVIDED WITHIN FUEL BUILDINGS TO CUT OFF NEW FUEL STORAGE FROM OTHER AREAS.

8.

   A. AN ENCLOSURE OF TWO HOURS FIRE RESISTANCE RATING SHOULD BE PROVIDED BETWEEN DIESEL DRIVEN FIRE PUMPS.

   B. FUEL OIL DAY TANKS SHOULD BE LOCATED OUTSIDE.

9. THE REACTOR COOLANT PUMPS (RECIRCULATION PUMPS) SHOULD BE PROTECTED AS FOLLOWS:

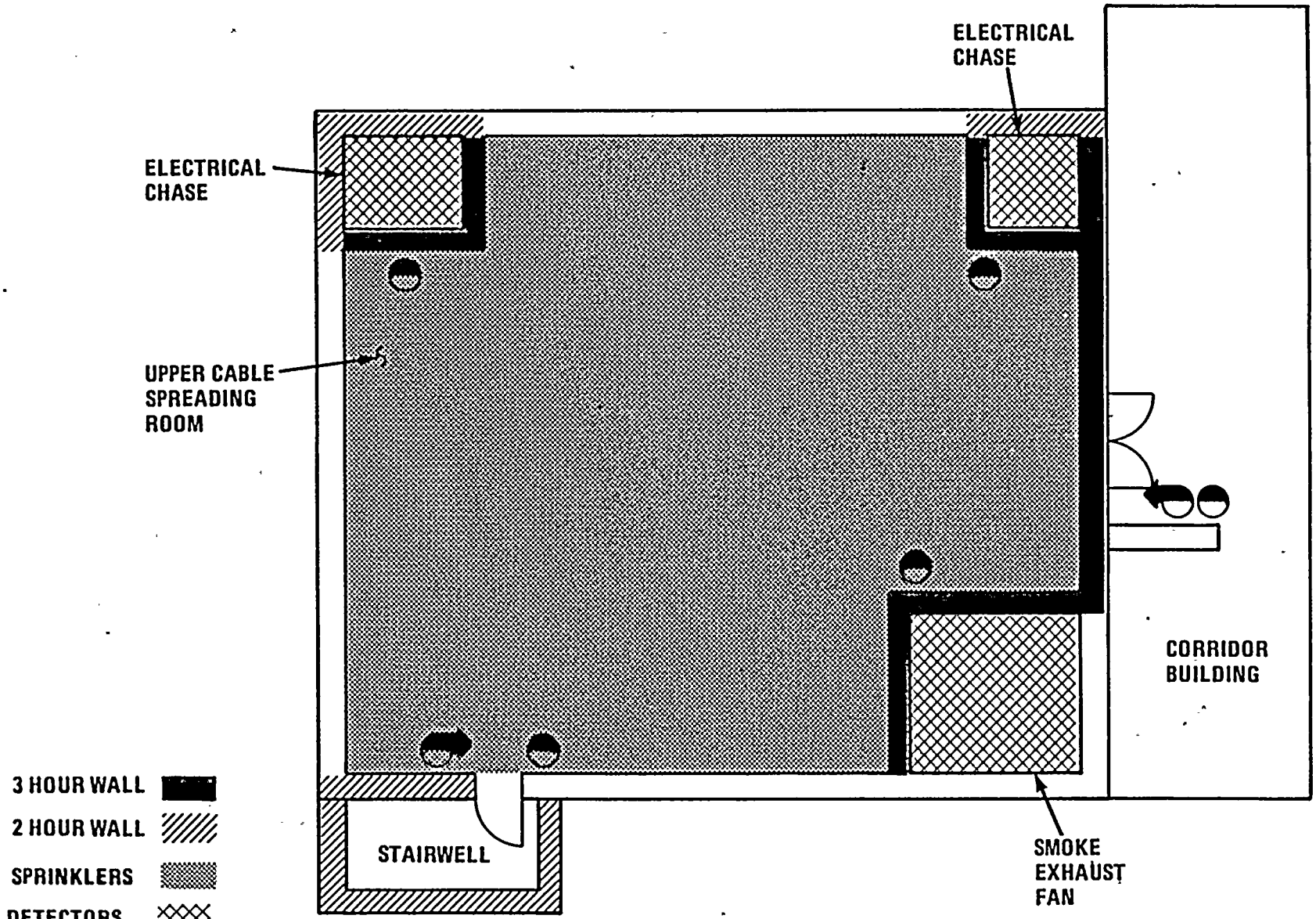
   A. THE LUBE OIL SYSTEM SHOULD BE DESIGNED, ENGINEERED, AND INSTALLED SO THAT ITS FAILURE WILL NOT LEAD TO A FIRE AFFECTING SAFETY-RELATED EQUIPMENT AS A RESULT OF AN SSE.

   B. PROVIDE AN OIL COLLECTION SYSTEM TO CONTAIN THE POSTULATED SYSTEM LEAKAGE AND WITHSTAND THE EFFECTS OF AN SSE WITHOUT LOSS OF FUNCTION.

   C. INSULATED HOT SURFACES WITH NON-POROUS COVERINGS.

   D. PROTECT STEEL SUPPORTING MEMBERS OF PUMPS AND STEAM GENERATORS WITH A TWO-HOUR RATED PROTECTIVE SURFACE.

10. ALL ELECTRICAL WIRING, FOR SAFETY-RELATED AREAS, BETWEEN LOCAL CONTROL PANELS FOR WATER SUPPRESSION SYSTEMS AND THE CONTROL ROOM SHALL HAVE 4 WIRES PER CIRCUIT ("CLASS A") AND SHALL PROVIDE EMERGENCY OPERATION FOR FIRE ALARM AND SYSTEM ACTUATION SIGNALS DURING A SINGLE-OPEN, SINGLE-GROUND OR WIRE-TO-WIRE SHORT OF THE SIGNALING LINE CIRCUIT.



CONTROL BLDG ELEV. 160'

Figure 2.A.1-1

2.B.1 SUPPRESSION SYSTEMS DESIGN CRITERIA

A. TERMS

- FUSIBLE LINK
- DELUGE SPRAY
- CROSS-ZONED ACTUATION
- PROTECTOWIRE
- WET PIPE SYSTEM
- PRE-ACTION SYSTEM
- TOTAL FLOODING
- FIRE EXTINGUISHER TYPES AND CLASSES (A, B, C)

EXHIBIT 2B-1

B. WATER SUPPLIES

- THE FIRE PROTECTION WATER SUPPLY AND PUMPING EQUIPMENT SHALL BE SHARED BY ALL THREE UNITS OF THE POWER PLANT, THE ADMINISTRATION BUILDING, SERVICE BUILDING, TECHNICAL SUPPORT CENTER, EMERGENCY OPERATIONS FACILITY, WATER TREATMENT AREA, AND THE WRP.
- THE FIRE PROTECTION WATER SUPPLY SYSTEM SHALL BE DESIGNED TO SUPPLY, SIMULTANEOUSLY, THE MAXIMUM FLOW OF 2500 GAL/MIN FOR THE LARGEST AUTOMATIC SPRINKLER OR FIXED WATER SPRAY SYSTEM AND 500 GAL/MIN FOR FIRE HOSES, ASSUMING THE SHORTEST FIRE MAIN FLOW PATH IS VALVED OUT OF SERVICE.
- TWO SEPARATE FRESHWATER TANKS OF 300,000 GALLONS CAPACITY SHALL BE PROVIDED.
- COMMON TANKS ARE PERMITTED FOR FIRE AND SERVICE WATER STORAGE. IN SUCH A CASE MINIMUM FIRE WATER STORAGE CAPACITY SHALL BE DEDICATED.
- THE STORAGE TANKS SHALL BE AUTOMATICALLY FILLED BY WELL WATER PUMPS CAPABLE OF FILLING TANKS IN 8 HOURS.
- THE FIRE WATER STORAGE TANKS SHALL BE SO CONNECTED THAT PUMPS CAN TAKE SUCTION FROM EITHER OR BOTH.
- IN THE EVENT OF LEAK IN ONE TANK OR ITS PIPING, IT SHOULD BE POSSIBLE TO ISOLATE IT IN SUCH A WAY THAT IT WILL NOT CAUSE BOTH THE TANKS TO DRAIN.

EXHIBIT 2B-2

c. FIRE WATER PUMPS

- FIRE WATER FLOW REQUIREMENTS SHALL BE MET BY THREE FIRE WATER PUMPS RATED AT 1500 GAL/MIN EACH AT 125 PSIG. THE FIRE PUMPS WILL BE ARRANGED FOR PARALLEL OPERATION SO THAT ANY TWO OF THE THREE PUMPS OPERATING CAN MEET 100 PERCENT OF THE MAXIMUM FIRE WATER DEMAND.
- THREE CENTRIFUGAL FIRE PUMPS SHOULD BE PROVIDED AS FOLLOWS AND LOCATED IN FIRE CUT-OFF ROOMS, IN A DETACHED NON-COMBUSTIBLE PUMP HOUSE:

1) ONE 1500 GPM ELECTRIC MOTOR DRIVEN, AND TWO 1500 GPM DIESEL ENGINE DRIVEN HORIZONTAL UNITS @ 125 PSI (AT PUMP DISCHARGE), EQUIPPED WITH APPROVED CONTROL PANELS ARRANGED FOR AUTOMATIC START WITH MANUAL STOP.

2) THE PUMPS SHOULD BE ARRANGED TO START BEFORE THE SYSTEM PRESSURE DROPS BELOW THE MINIMUM DESIGN OPERATING PRESSURE (AS RELATED TO THE FIRE PUMP LOCATION) OF ANY FIRE PROTECTION EQUIPMENT CONNECTED TO THE SYSTEM, AND CLOSE TO THEIR MAXIMUM DISCHARGE PRESSURE (AS INSTALLED) TO AVOID WATER HAMMER.

3) THE SEQUENCE STARTING TIMES IN THE SECOND AND THIRD CONTROL PANELS SHOULD BE SET FOR ABOUT 5 TO 10 SECOND INTERVALS.

4) PROVIDE AN AUTOMATIC PRESSURE MAINTENANCE PUMP (30 GPM MINIMUM) OF SUFFICIENT CAPACITY AND PRESSURE TO PROVIDE A FLOW OF APPROXIMATELY TWICE THE RATE OF LEAKAGE IN THE SYSTEM AT A PRESSURE CORRESPONDING TO THE "STOP" SETTING OF ITS CONTROLLER.

5) THE PRESSURE MAINTENANCE PUMP SHOULD START AT A PRESSURE SUFFICIENTLY ABOVE (APPROXIMATELY 10 PSI) THE STARTING PRESSURE SETTING OF THE FIRE PUMPS TO PREVENT UNNECESSARY FALSE STARTS, AND STOP AT A PRESSURE ABOUT 10 PSI HIGHER.

6) ELECTRIC POWER FOR FIRE PUMP TO BE TAKEN FROM TWO POWER SOURCES ARRANGED IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET NO. 20.

7) SUCTION PIPING INSIDE THE STORAGE TANKS SHOULD BE SO ARRANGED THAT ANY OR ALL FIRE PUMPS CAN TAKE SUCTION FROM EITHER ONE OR BOTH SUCTION TANKS.

8) PUMP INSTALLATION TO INCLUDE FLOW METER FOR ANNUAL TEST PURPOSES.

9) ALARMS INCLUDING PUMP RUNNING, POWER FAILURE AND FAILURE TO START, SHOULD BE PROVIDED AND ARRANGED TO SOUND AT CONSTANTLY ATTENDED LOCATION IN CONTROL ROOM.

- THE FIRE PUMPS SHALL BE ARRANGED FOR PARALLEL OPERATION SO THAT ANY TWO OF THE THREE PUMPS OPERATING CAN MEET 100 PERCENT OF THE MAXIMUM FIRE WATER DEMAND.
- THE DIESEL FUEL STORAGE TANKS FOR THE DIESEL FIRE PUMPS SHOULD BE SEPARATED SO THAT IT DOES NOT AFFECT SAFETY-RELATED AREAS OR EQUIPMENT.

D. YARD FIRE WATER MAIN

- SPRINKLER AND WATER SPRAY SYSTEMS SHOULD BE SUPPLIED FROM AT LEAST 12" CEMENT-LINED YARD MAINS. STEEL PIPING, IF USED FOR YARD MAINS, SHALL CONFORM TO A.W.W.A. STANDARDS AS OUTLINED IN ARTICLES 81 THROUGH 85 IN NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET NO. 24.
- TWO-WAY HYDRANTS, SPACED APPROXIMATELY AT 250' INTERVALS, CONTROLLED BY INDIVIDUAL CURB BOX VALVES SHOULD BE PROVIDED ON THE 12" YARD MAINS. EACH HYDRANT OUTLET TO HAVE HOSE GATE VALVE. AN ADEQUATE SUPPLY OF MANUAL FIRE FIGHTING EQUIPMENT SHOULD BE PROVIDED IN HOSE HOUSES LOCATED, IN GENERAL, AT EVERY OTHER HYDRANT. HOSE THREADS SHOULD BE THE SAME AS PUBLIC FIRE DEPARTMENT.
- A SUPPLY OF EMERGENCY LIGHTS MAY BE KEPT IN A SUITABLE CONTAINER AT EITHER A CENTRAL AND ACCESSIBLE LOCATION OR AT HOSE HOUSE LOCATIONS.
- POST INDICATOR VALVES SHOULD BE PROVIDED IN YARD MAINS FOR PROPER SECTIONAL CONTROL OF THE FIRE PROTECTION SYSTEM.
- EACH POWER BLOCK UNIT SHALL BE PROVIDED WITH A CLOSED FIRE PROTECTION WATER LOOP WHICH WILL PERMIT SUPPLY FROM ALTERNATE PATHS.

- THE FIRE PROTECTION WATER LOOP FOR EACH POWER BLOCK UNIT AND FOR THE WRP SHALL BE PROVIDED WITH ISOLATION VALVES FOR THE PURPOSE OF UNIT PROTECTION DURING CONSTRUCTION AS WELL AS FOR ISOLATING SECTIONS IN CASE OF LEAKS. ISOLATION VALVES IN THE POWER BLOCK LOOPS SHALL BE LOCATED SUCH THAT A MAXIMUM OF FOUR TAKEOFFS (INCLUDING FIRE HYDRANTS) ARE ISOLATED DURING ANY SINGLE FAILURE OF THE YARD LOOP PIPING. ISOLATION VALVES IN THE WRP LOOP(S) SHALL BE LOCATED SUCH THAT A MAXIMUM OF SIX TAKEOFFS (INCLUDING FIRE HYDRANTS) ARE ISOLATED DURING ANY SINGLE FAILURE.
- EACH FIRE PROTECTION WATER LOOP SHALL INCLUDE A PUMPER CONNECTION TO PERMIT WATER SUPPLY FROM THE UNITS' COOLING TOWER BASINS BY USE OF PORTABLE PUMPING UNITS.
- THE FIRE PROTECTION WATER SYSTEM SHALL BE DESIGNED TO MINIMIZE CYCLING OF THE MAIN FIRE WATER SUPPLY PUMPS.
- MEANS FOR INSPECTING AND FLUSHING THE WATER LOOP SHALL BE PROVIDED.
- CROSS-CONNECTIONS BETWEEN BUILDINGS OF THE POWER PLANT SHALL BE PROVIDED.

2.B.1

E. WATER SPRINKLER AND HOSE STANDPIPE SYSTEMS

- CONTAINMENT BUILDING

  1) STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM.

EXHIBIT 2B-7

- AUXILIARY BUILDING

  1) CABLE PENETRATION AREAS AND BUILDING CORRIDORS (100 FT. & 120 FT. LEVELS).

  - HYDRAULICALLY DESIGNED AUTOMATIC WATER SPRAY SYSTEM WITH OPEN DIRECTIONAL SPRAY NOZZLES SHALL BE INSTALLED IN THE ELECTRICAL CABLE PENETRATION AREAS AND BUILDING CORRIDORS TO PROTECT THE CABLE TRAYS.
  - SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL.
  - CROSS-ZONED DETECTION SYSTEM SHALL BE INSTALLED FOR SYSTEM ACTUATION. LINE TYPE DETECTORS SHALL BE USED ON CABLE TRAYS AND IONIZATION DETECTORS IN THE AREA.
  - WIRING SHALL BE "CLASS A" BETWEEN THE LOCAL CONTROL PANELS OF THE FOLLOWING AREAS AND THE CONTROL ROOM.
    - CHANNEL "B" PENETRATION ROOM
    - CHANNEL "C" PENETRATION ROOM
    - CHANNEL "A" PENETRATION ROOM
    - CHANNEL "D" PENETRATION ROOM
    - BUILDING CORRIDORS
  - SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
  - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED, TO REACH ALL SAFETY-RELATED EQUIPMENT WITH AT LEAST ONE HOSE STREAM, AS A BACKUP FIRE SUPPRESSION SYSTEM.

2) SAFETY-RELATED PUMPS (40 FT. LEVEL)

- HYDRAULICALLY DESIGN AUTOMATIC PREACTION SPRINKLER SHALL BE INSTALLED.
- PREACTION SYSTEM SHALL BE SUPERVISED WITH AIR.
- SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL.
- SYSTEM ACTUATION AUDIBLE ALAPM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
- CROSS-ZONE DETECTION SHALL BE PROVIDED
- STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL SAFETY-RELATED EQUIPMENT WITH AT LEAST ONE HOSE STREAM.

3) PERSONNEL ACCESS AREAS (140 FT LEVEL)

- HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED IN THE PERSONNEL ACCESS AREA (EAST & WEST).
- SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
- STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP FIRE SUPPRESSION SYSTEM.

4) 88 FT LEVEL, 70 FT LEVEL, 51 FT 6 IN LEVEL AND 40 FT LEVEL

- STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM.

- CONTROL BUILDING

  1) UPPER AND LOWER CABLE SPREADING ROOMS

     - HYDRAULICALLY DESIGNED AUTOMATIC WATER SPRAY SYSTEM WITH OPEN DIRECTIONAL SPRAY NOZZLES SHALL BE INSTALLED.
     - SYSTEM SHALL BE AUTOMATIC AND MANUAL.
     - CROSS-ZONED DETECTION SHALL BE INSTALLED FOR SYSTEM ACTUATION. LINE TYPE DETECTORS SHALL BE USED ON CABLE TRAYS AND IONIZATION DETECTORS IN THE AREA.
     - WIRING SHALL BE "CLASS A" BETWEEN THE LOCAL CONTROL PANEL AND THE CONTROL ROOM;
     - SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
     - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL SAFETY-RELATED EQUIPMENT WITH AT LEAST ONE HOSE STREAM AS A BACKUP FIRE SUPPRESSION SYSTEM;

  2) ESSENTIAL CHILLER ROOM TRAINS A & B (74 FT LEVEL) AND MAIN CONTROL ROOM (140 FT LEVEL)

     - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM.

- FUEL BUILDING
  1) RAILROAD BAY
     - HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED.
     - SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
     - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.
  2) NEW AND SPENT FUEL AREAS (120 FT AND 140 FT LEVELS)
     - STANDPIPE AND HOSE SYSTEMS SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM.
- RADWASTE BUILDING
  1) BALER AREA
     - HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED IN THE BALER AREA.
     - SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
     - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.
  2) LIQUID RADWASTE SYSTEM AND WASTE GAS AREAS
     - STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM.

- DIESEL GENERATOR BUILDING
  1) DIESEL GENERATOR ROOMS AND FUEL OIL DAY TANK VAULT
     - HYDRAULICALLY DESIGNED AUTOMATIC PREACTION SPRINKLER SHALL BE INSTALLED.
     - PREACTION SYSTEM SHALL BE SUPERVISED WITH AIR.
     - SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL.
     - WIRING SHALL BE "CLASS A" BETWEEN THE LOCAL CONTROL PANELS AND THE CONTROL ROOM.
     - SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
     - ULTRAVIOLET DETECTORS SHALL BE PROVIDED FOR FAST RESPONSE (DIESEL GENERATOR ROOM ONLY)
     - CROSS-ZONE DETECTION SHALL BE PROVIDED (FUEL OIL DAY TANK VAULT ONLY).

2.B.1.E

- TURBINE BUILDING

1) 100 FT LEVEL AND 140 FT LEVEL

- HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED.
- SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
- STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.

2) OIL CENTRIFUGE
HYDROGEN SEAL OIL UNIT
LUBE OIL ROOM
TURBINE BEARINGS
MAIN FEEDWATER PUMPS AND TURBINES

- HYDRAULICALLY DESIGNED AUTOMATIC WATER SPRAY SYSTEM WITH OPEN DIRECTIONAL SPRAY NOZZLES SHALL BE INSTALLED.
- SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL (TURBINE BEARINGS MANUAL ONLY).
- SINGLE ZONE DETECTION SYSTEM SHALL BE PROVIDED.
- THERMAL DETECTORS SHALL BE USED.
- SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
- STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL EQUIPMENT WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.

2.B.1.E

- FIRE PUMP HOUSE
  1) HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED.
  2) SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE WATER RECLAMATION PLANT (WRP) CONTROL ROOM AND UNIT 1 CONTROL ROOM.

F. CARBON DIOXIDE SUPPRESSION SYSTEM

- GENERAL

1) LOW PRESSURE CO_2 SYSTEM, DESIGNED AND APPROVED IN ACCORDANCE WITH NFPA PAMPHLET NO. 12, SHALL BE PROVIDED FOR BOTH TOTAL FLOODING AND LOCAL HAND HOSE LINE APPLICATION.

2) THE CO_2 STORAGE TANK SHALL BE SIZED TO PROVIDE ENOUGH CO_2 TO COMPLETELY FLOOD, AT THE REQUIRED CONCENTRATION, THE LARGEST PROTECTED SPACE TWICE, AND HAVE SUFFICIENT ADDITIONAL CAPACITY TO PURGE THE GENERATOR TWICE.

3) THE CO_2 SYSTEM WILL BE PROVIDED WITH A VAPORIZER TO GASIFY THE CO_2 FOR GENERATOR PURGING.

4) EXCEPT FOR GENERATOR PURGING, ALL CO_2 WILL BE ODORIZED FOR SAFETY PURPOSES.

5) CO_2 FLOODING SYSTEMS WILL NOT BE USED IN NORMALLY OCCUPIED AREAS.

6) VENTILATION SYSTEM SHOULD BE CONTROLLED.

7) PRESSURE RELIEF DEVICES SHALL BE DESIGNED TO PREVENT ENTRAPMENT OF LIQUID CARBON DIOXIDE.

8) PROVISIONS FOR LOCALLY DISARMING AUTOMATIC CARBON DIOXIDE SYSTEMS SHOULD BE KEY LOCKED AND UNDER STRICT ADMINISTRATIVE CONTROL.

- SWITCHGEAR ROOMS AND SAFETY-RELATED BATTERY ROOMS
  1) TOTAL FLOODING AUTOMATIC CO_2 SYSTEM SHALL BE PROVIDED.
  2) MINIMUM REQUIRED CO_2 CONCENTRATION SHOULD BE 50%.
  3) EXTENDED SOAK TIME SHALL BE PROVIDED.
  4) SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL.
  5) CROSS-ZONE DETECTION SHALL BE PROVIDED.
  6) SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.
  7) HAZARD AREAS SHALL BE ISOLATED PRIOR TO CO_2 RELEASE.
  8) 20 SECONDS PRE-DISCHARGE DELAY SHALL BE PROVIDED.
  9) WATER STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.

G. HALON 1301 SUPPRESSION SYSTEMS

- COMPUTER ROOM
- INVERTER ROOM
- COMMUNICATION ROOM

1) TOTAL FLOODING AUTOMATIC HALON 1301 SYSTEM SHALL BE PROVIDED.

2) MINIMUM REQUIRED HALON 1301 CONCENTRATION SHOULD BE 5%.

3) SYSTEM ACTUATION SHALL BE AUTOMATIC AND MANUAL.

4) CROSS-ZONE DETECTION SYSTEM SHALL BE PROVIDED.

5) SYSTEM ACTUATION AUDIBLE ALARM AND ANNUNCIATION SHALL BE PROVIDED IN THE CONTROL ROOM.

6) HAZARD AREAS SHALL BE ISOLATED PRIOR TO HALON 1301 RELEASE.

7) 20 SECONDS PRE-DISCHARGE DELAY SHALL BE PROVIDED.

8) WATER STANDPIPE AND HOSE SYSTEM SHALL BE INSTALLED TO REACH ALL AREAS WITH AT LEAST ONE HOSE STREAM AS A BACKUP SUPPRESSION SYSTEM.

H. PORTABLE FIRE EXTINGUISHERS

- EXTINGUISHERS SHALL BE SELECTED FOR THE SPECIFIC CLASS OR CLASSES OF HAZARDS TO BE PROTECTED IN ACCORDANCE WITH GUIDELINES OF NFPA 10.
- PORTABLE FIRE EXTINGUISHERS SHOULD BE PROVIDED IN THE FOLLOWING AREAS:
  1) CONTROL BUILDING
     - 74 FT LEVEL
       - ESSENTIAL CHILLER ROOM, TRAINS A & B - CLASS B, C EXTINGUISHERS.
       - CABLE SHAFTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
     - 100 FT LEVEL
       - CABLE SHAFTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
       - ESF SWITCHGEAR RUNS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
       - D.C. EQUIPMENT ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
       - BATTERY ROOMS, TRAINS A & B - CLASS B, C, EXTINGUISHERS.
       - REMOTE SHUTDOWN ROOM - CLASS B, C EXTINGUISHERS.

- 120 FT LEVEL
  - CABLE SHAFTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - COMMUNICATION ROOM - CLASS B, C. EXTINGUISHERS.
  - INVERTER ROOM - CLASS B, C. EXTINGUISHERS.
  - LOWER CABLE SPREADING ROOM - CLASS B, C EXTINGUISHERS
- 140 FT LEVEL
  - CABLE SHAFTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - COMPUTER ROOM - CLASS B, C EXTINGUISHERS.
  - CONTROL ROOM - CLASS B, C EXTINGUISHERS.
- 160 FT LEVEL
  - CABLE SHAFTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - NORMAL SMOKE EXHAUST ROOM - CLASS B, C EXTINGUISHERS.
  - UPPER CABLE SPREADING ROOM - CLASS B, C EXTINGUISHERS.

2) DIESEL GENERATOR BUILDING

- 100 FT LEVEL
  - DIESEL GENERATOR ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - CONTROL ROOMS, TRAINS A & B
    - CLASS B, C EXTINGUISHERS.
- 115 FT LEVEL
  - COMBUSTION AIR INTAKE ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
- 131 FT LEVEL
  - FUEL OIL DAY TANK VAULTS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - EXHAUST SILENCER ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.

3) FUEL BUILDING

- 100 FT LEVEL
  - ESSENTIAL EXHAUST AIR FILTRATION UNIT - CLASS A, B C EXTINGUISHERS.
  - SPENT FUEL COOLING PUMPS AND HEAT EXCHANGERS - CLASS A, B; C EXTINGUISHERS.
- 120 FT LEVEL
  - NEW FUEL STORAGE AREA - CLASS B, C EXTINGUISHERS.

4) AUXILIARY BUILDING

- 40 FT & 51'6'' LEVELS
  - CONTAINMENT SPRAY PUMP ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - HIGH PRESSURE SAFETY INJECTION PUMP ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - LOW PRESSURE SAFETY INJECTION PUMP ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - PIPE CHASE, TRAINS A & B - CLASS A, B C EXTINGUISHERS.
- 70 FT LEVEL
  - ESSENTIAL COOLING WATER PUMP ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - SHUTDOWN COOLING EXCHANGER AND VALVE GALLERY ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - REACTOR MAKEUP WATER & BORIC ACID MAKEUP PUMP ROOM - CLASS A, B, C EXTINGUISHERS.
  - PIPE PENETRATION ROOMS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
  - CORRIDOR ZONES - CLASS A, B, C EXTINGUISHERS.

- 88 FT LEVEL
  - PIPEWAYS, TRAINS A & B - CLASS A, B, C EXTINGUISHERS.
- 100 FT LEVEL
  - ELECTRICAL PENETRATION ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - ESSENTIAL COOLING WATER HEAT EXCHANGER ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHER.
  - LETDOWN AND SEAL INJECTION HEAT EXCHANGER AND VALVE GALLERY ROOMS - CLASS B, C EXTINGUISHERS.
  - GRID PUMPS & GRID TANK ROOMS - CLASS B, C EXTINGUISHERS.
  - CHARGING PUMPS & VALVE GALLERY ROOMS, TRINS A & B - CLASS B, C EXTINGUISHERS.
  - CORRIDORS ZONE - CLASS B, C EXTINGUISHERS.

2.B.1.H

- 120 FT LEVEL
  - ELECTRICAL PENETRATION ROOMS, TRAINS A & B - CLASS B, C EXTINGUISHERS.
  - ESSENTIAL COOLING WATER SURGE TANKS CORRIDOR, TRAINS A & B - CLASS B, C EXTINGUISHERS
  - BORIC ACID & REACTOR MAKEUP WATER FILTER ROOMS - CLASS B, C EXTINGUISHERS.
  - LIQUID RADWASTE SYSTEM & PURIFICATION FILTER ROOMS - CLASS B, C EXTINGUISHERS.
  - REACTOR DRAIN & SEAL INJECTION FILTER ROOMS - CLASS B, C EXTINGUISHERS.
  - PURIFICATION FILTER ROOMS - CLASS B, C EXTINGUISHERS.
  - FUEL POOL PURIFICATION & PRE-HOLDUP ION EXCHANGE ROOMS - CLASS B, C EXTINGUISHERS.
  - GRID TANK FILTER ROOMS - CLASS B, C EXTINGUISHERS.
  - PURIFICATION & DEBORATING ION EXCHANGE ROOMS - CLASS B, C EXTINGUISHERS.
  - VALVE GALLERY - CLASS B, C EXTINGUISHERS.
  - VOLUME CONTROL TANK ROOM - CLASS B, C EXTINGUISHERS.
  - SPRAY CHEMICAL STORAGE TANK ROOM - CLASS B, C EXTINGUISHERS.
  - CORRIDOR AREAS - CLASS B, C EXTINGUISHERS.
  - PROCESS RADIATION MONITOR & BORONOMETER ROOMS - CLASS B, C EXTINGUISHERS.
  - REACTOR TRIP SWITCHGEAR ROOM - CLASS B, C EXTINGUISHERS.

2.B.1.H

- 140 FT LEVEL
  - PERSONNEL ACCESS AREA - CLASS A EXTINGUISHERS.
  - HOT CLOTHING ROOM - CLASS A EXTINGUISHERS.
  - CLEAN ISSUE ROOM - CLASS A EXTINGUISHERS.
  - STORAGE AND ELECTRICAL EQUIPMENT ROOM - CLASS A EXTINGUISHERS
  - HOT LAB - CLASS A EXTINGUISHERS
  - HOT LAB STORAGE - CLASS A EXTINGUISHERS
  - SAMPLE ROOM - CLASS A EXTINGUISHERS
  - COUNTING ROOM - CLASS A EXTINGUISHERS
  - H.P. SAMPLE COUNTING ROOM - CLASS A EXTINGUISHERS
  - PERSONNEL DECONTAMINATION AREA - CLASS A, B, C EXTINGUISHERS
  - FIRST AID ROOM - CLASS A, B, C EXTINGUISHERS

5) RADWASTE BUILDING

- 100 FT LEVEL
  - BALER AREA - CLASS B, C EXTINGUISHERS
  - WASTE SOLIDIFICATION AREA - CLASS B, C EXTINGUISHERS
  - LRS WASTE HOLDUP PUMP ROOM - CLASS A, B, C EXTINGUISHERS
  - LRS CONCENTRATE TANK ROOMS - CLASS B, C EXTINGUISHERS
  - LRS CONCENTRATE MONITOR PUMP ROOM - CLASS B, C EXTINGUISHERS
  - VALVE GALLERY - CLASS B, C EXTINGUISHERS
  - HIGH ACTIVITY SPENT RESIN TANK ROOM - CLASS B, C EXTINGUISHERS

6) CONTAINMENT BUILDING

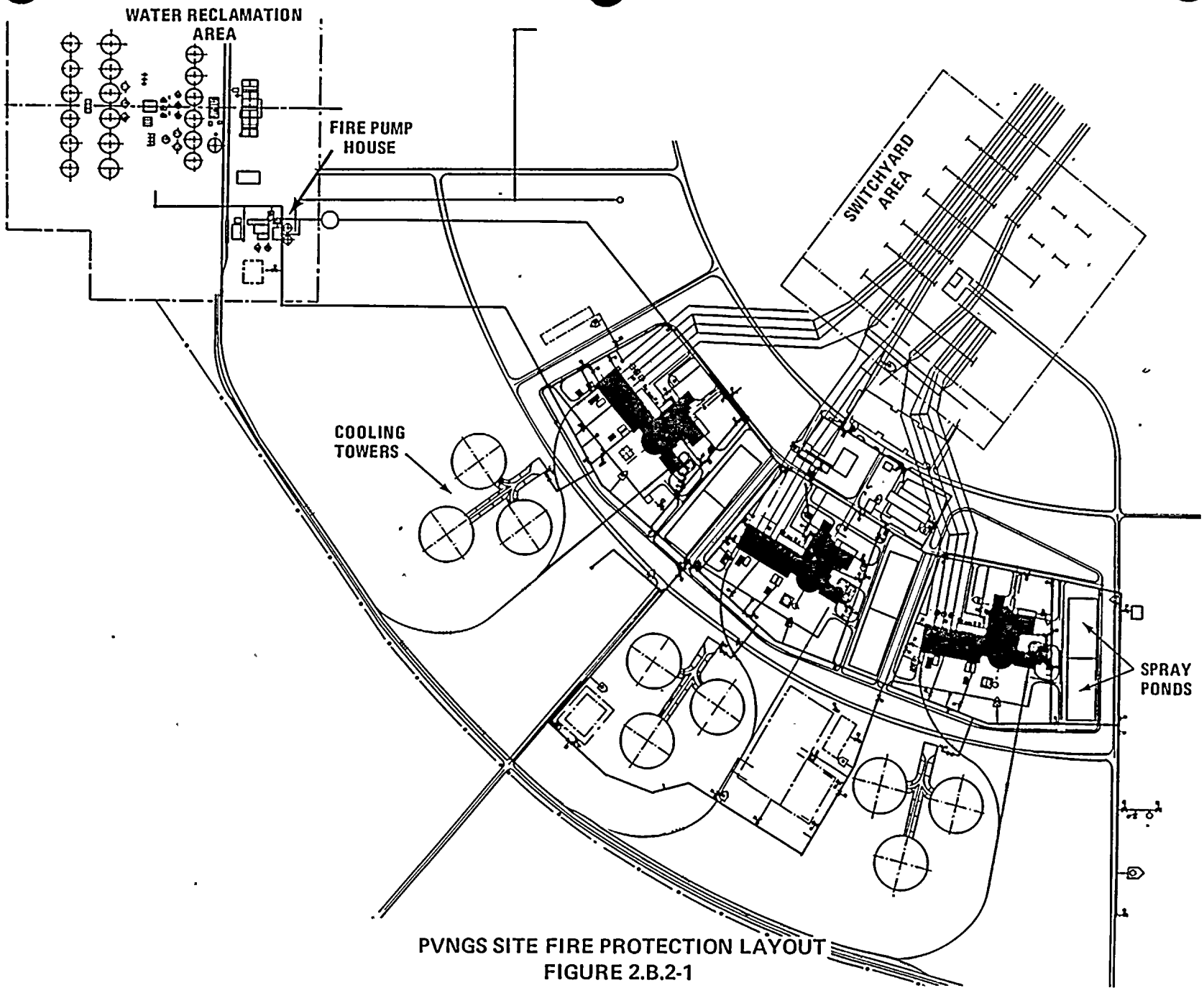
- REACTOR COOLANT PUMPS, CAVITY COOLING FANS, STEAM GENERATOR, REACTOR DRAIN TANK - CLASS B, C EXTINGUISHERS
- CONTAINMENT CABLE TRAYS AREA AT ELEVATIONS 80', 100', 120' AND 140' - CLASS B, C EXTINGUISHERS
- CHARCOAL FILTER AREA AT ELEVATION 140 FT - CLASS B, C EXTINGUISHERS

7) MAIN STEAM SUPPORT STRUCTURE

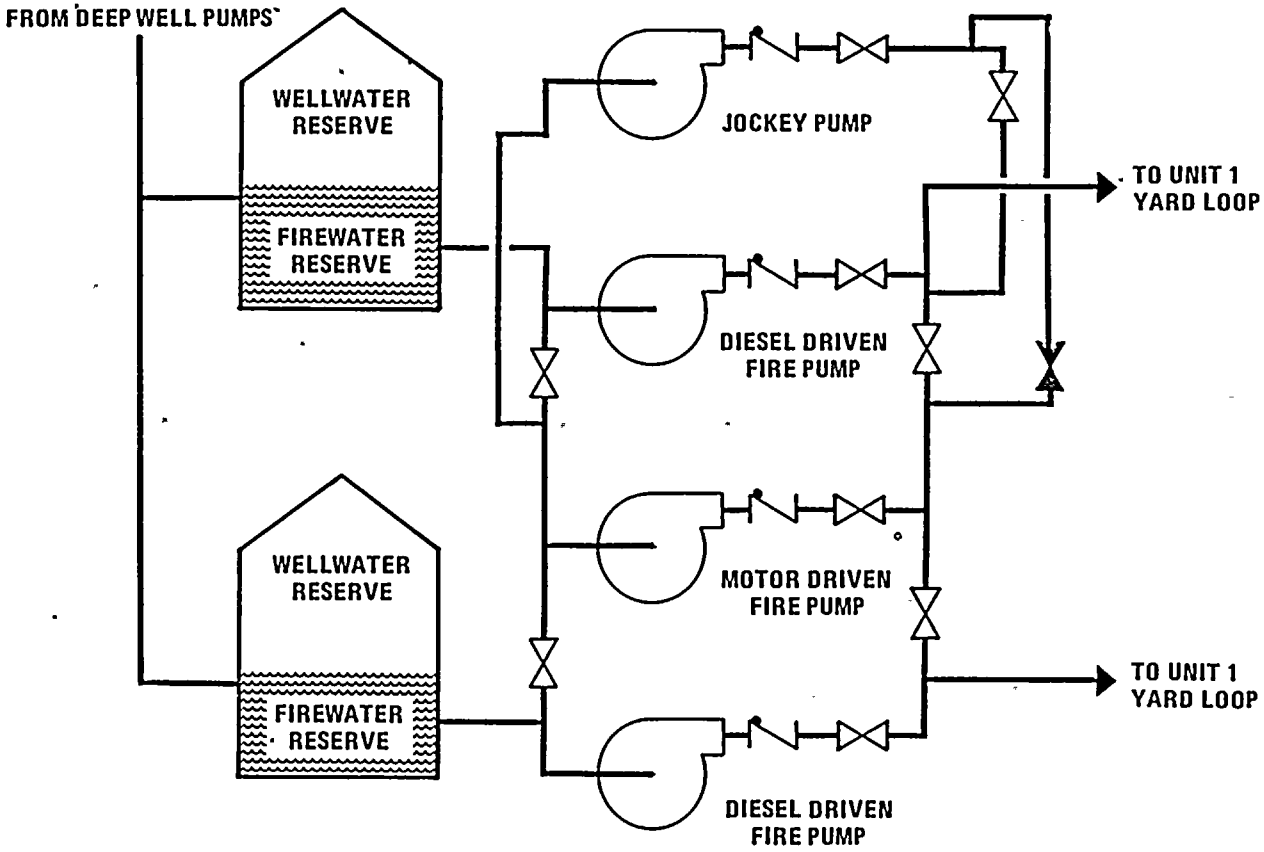
- 81 FT LEVEL
  - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP - CLASS B, C EXTINGUISHERS
  - MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS ROOM - CLASS B, C EXTINGUISHER
- 100 FT LEVEL
  - VALVE AREA - CLASS B, C EXTINGUISHERS

8) COMPARTMENT BETWEEN AUXILIARY AND CONTROL BUILDING

- CLASS B, C EXTINGUISHERS

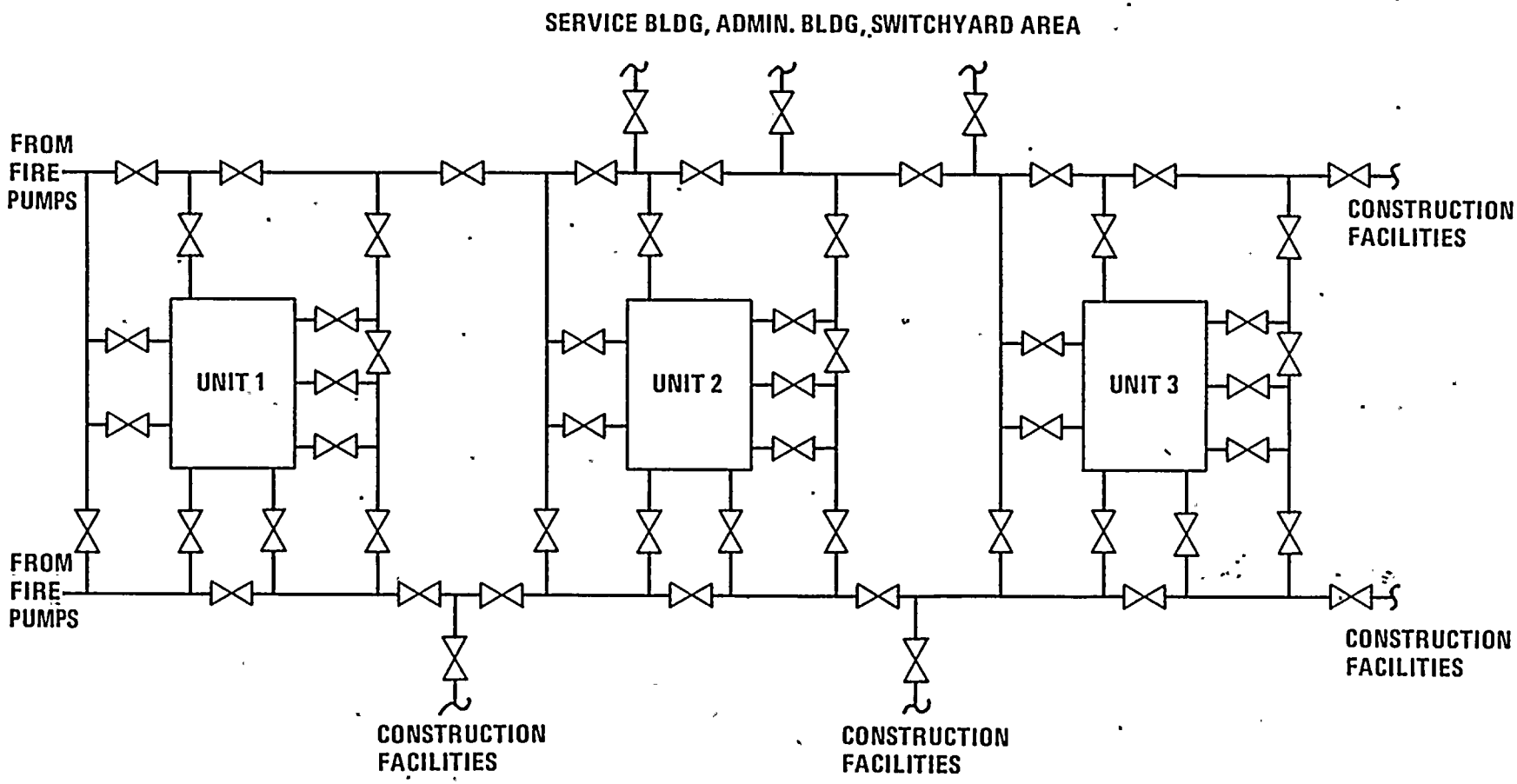


PVNGS SITE FIRE PROTECTION LAYOUT
FIGURE 2.B.2-1



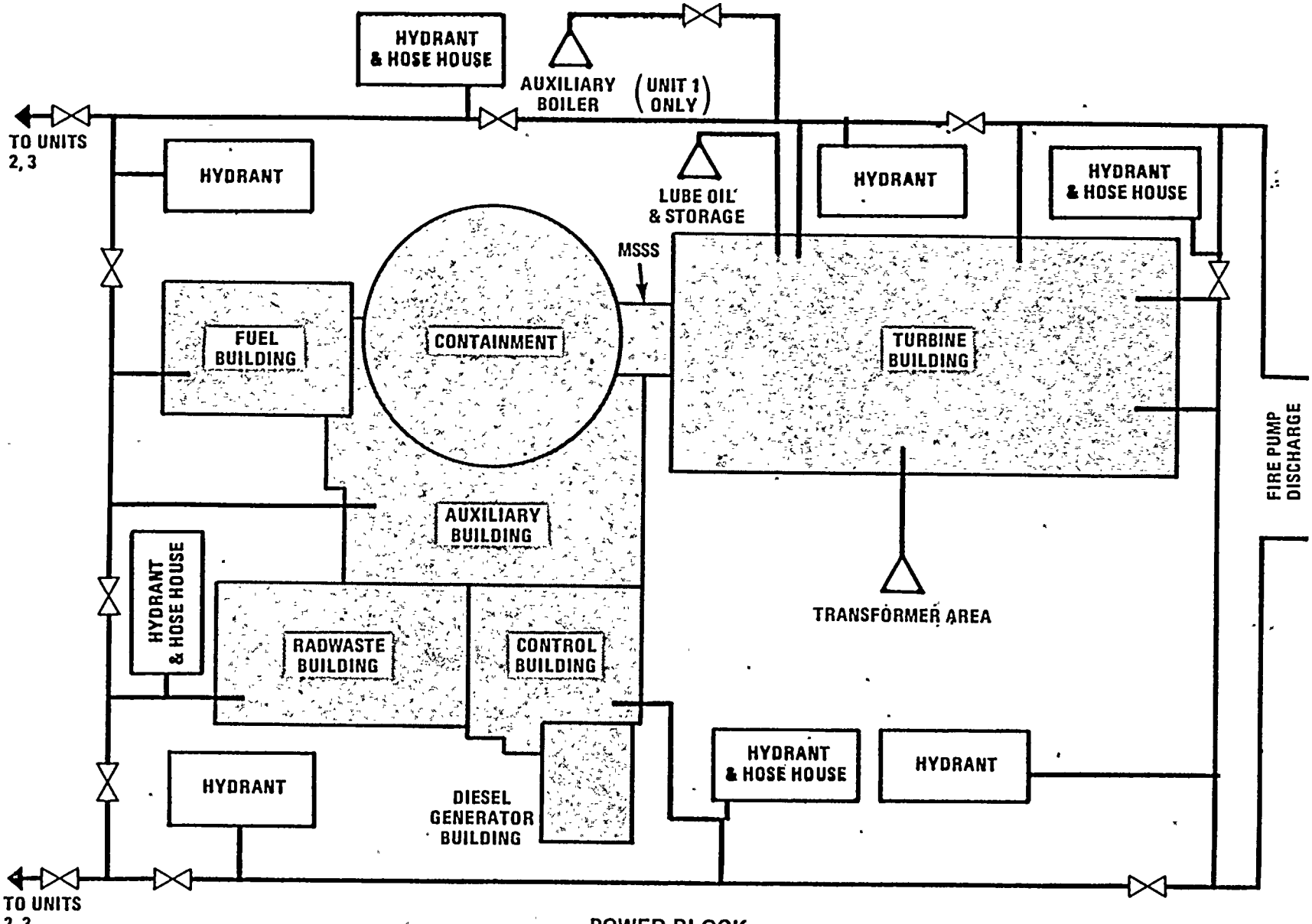
FIRE PUMP HOUSE AREA

FIGURE 2.B.2-2



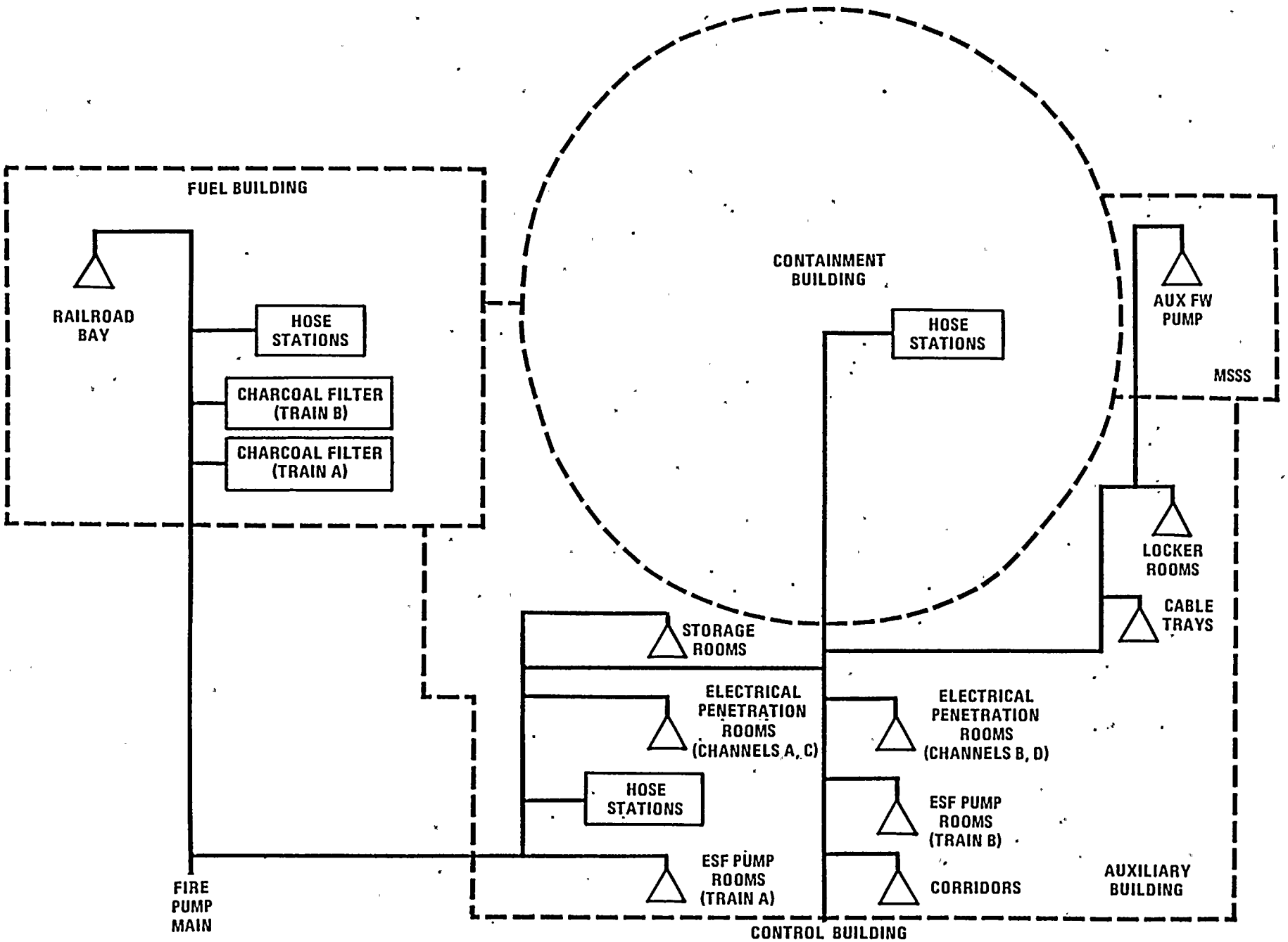
MAIN YARD LOOP

FIGURE 2.B.2-3



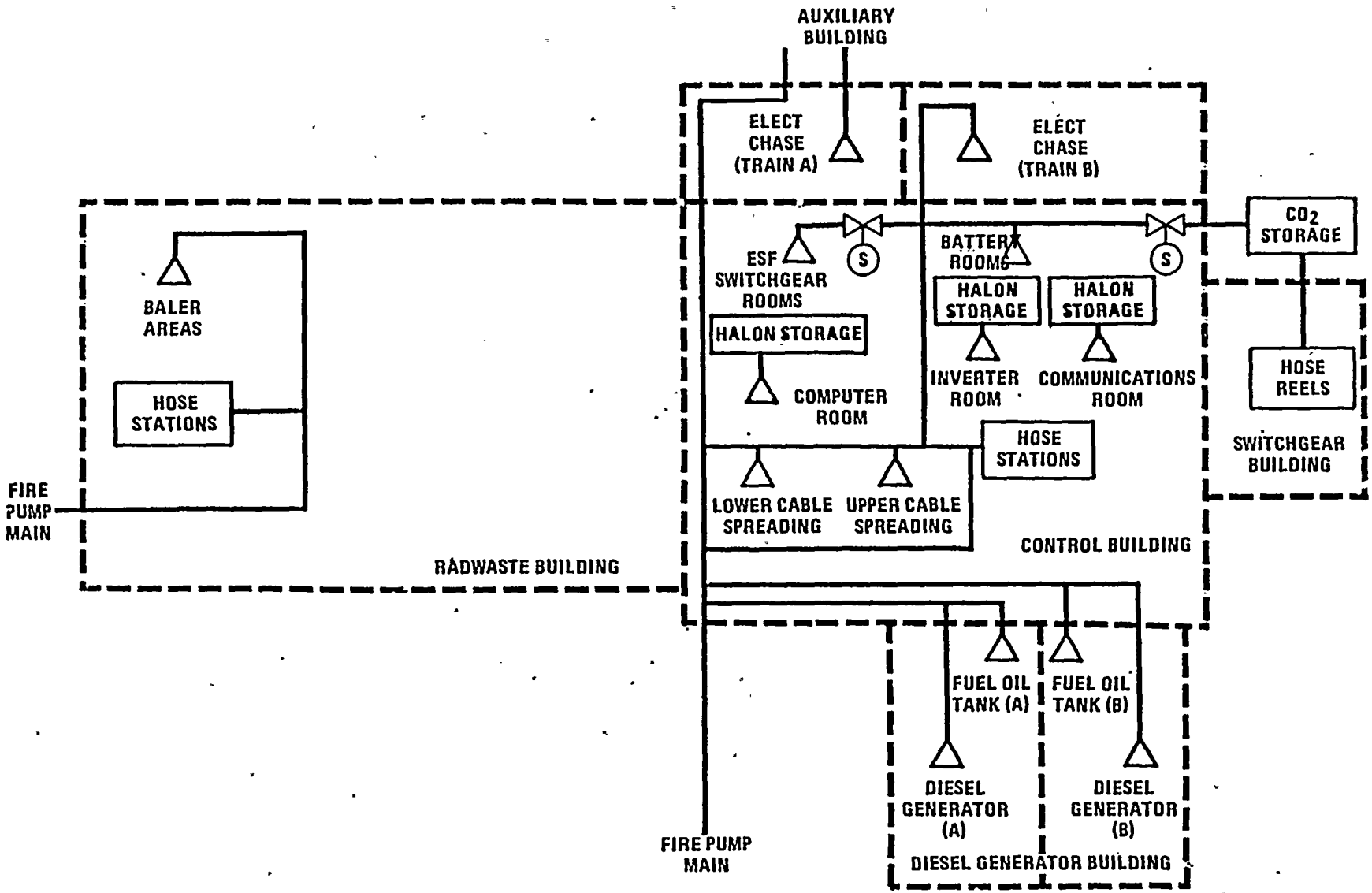
POWER BLOCK
FIRE WATER SOURCES AND OUTSIDE AREAS

FIGURE 2.B.2-4



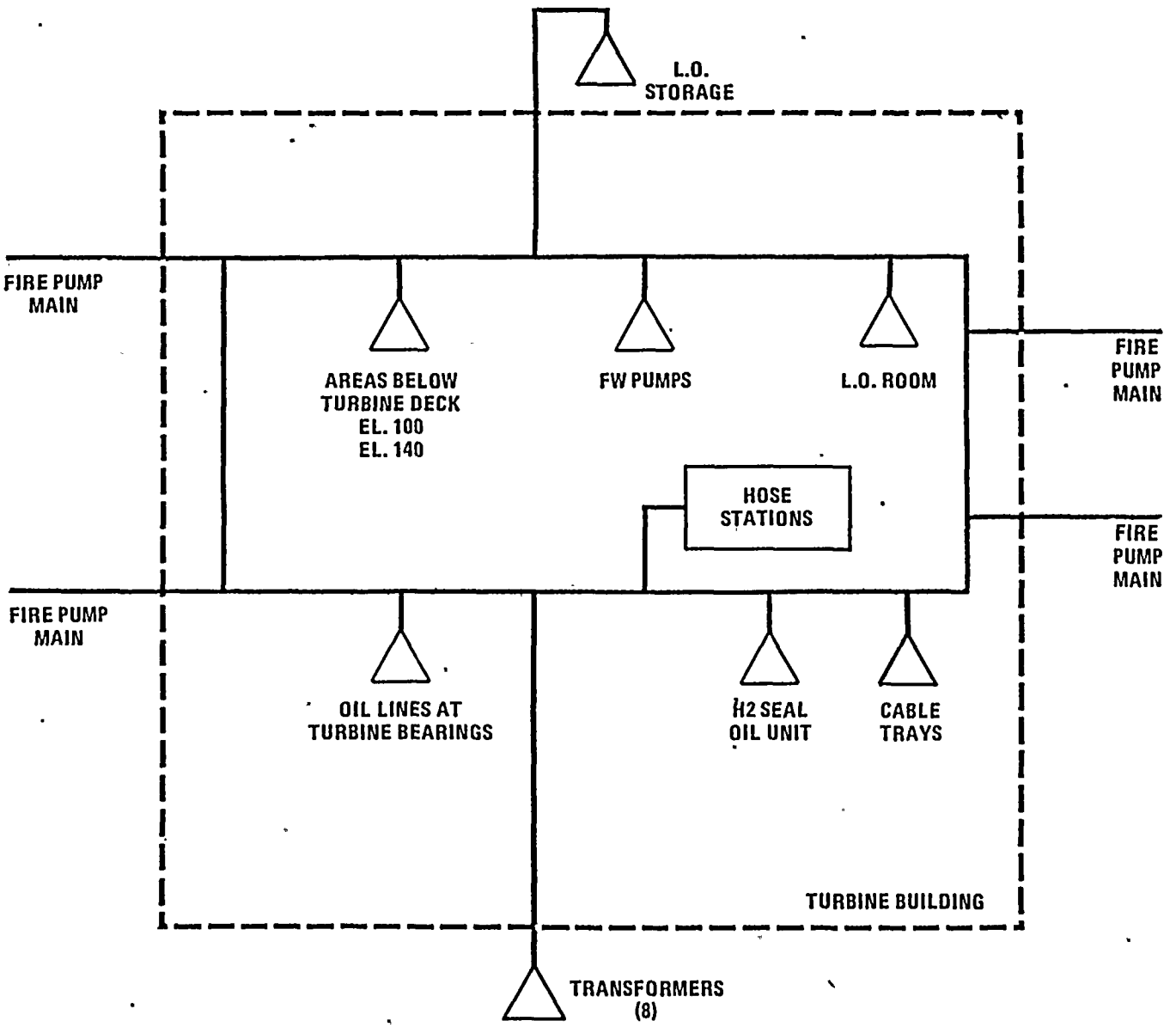
SUPPRESSION LAYOUT – CONTAINMENT, AUXILIARY, FUEL BLDGS.

FIGURE 2.B.2-5



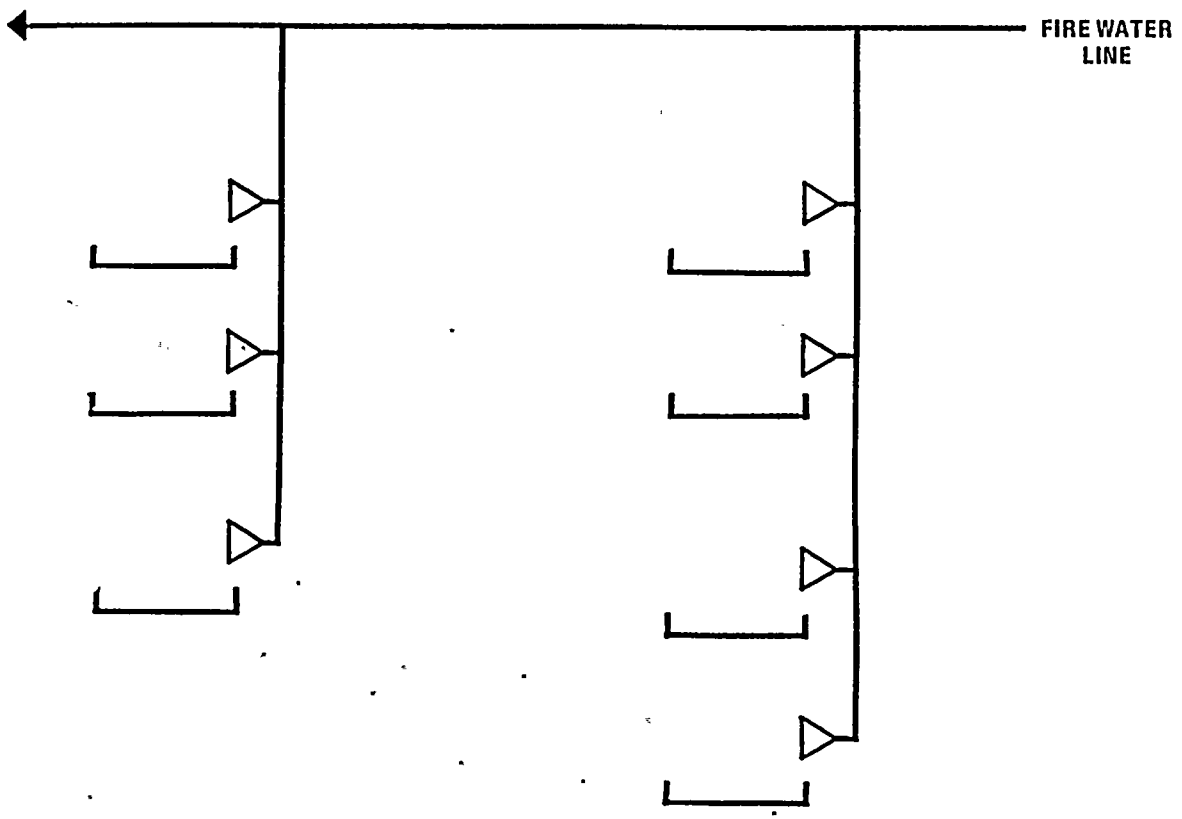
SUPPRESSION LAYOUT – CONTROL, RADWASTE, DIESEL GENERATOR BLDGS.

FIGURE 2.B.2-6



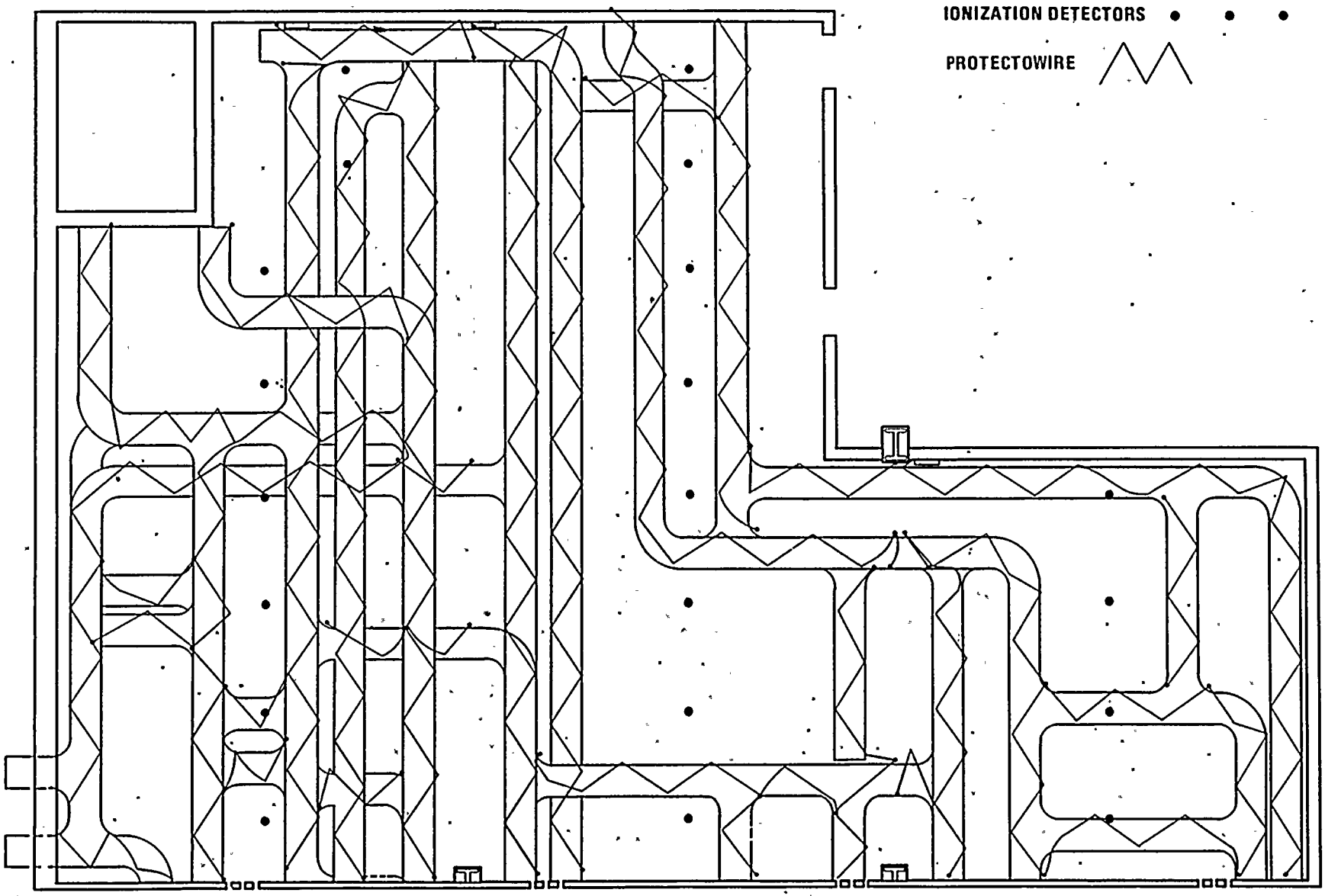
SUPPRESSION LAYOUT – TURBINE BLDG.

FIGURE 2.B.2-7

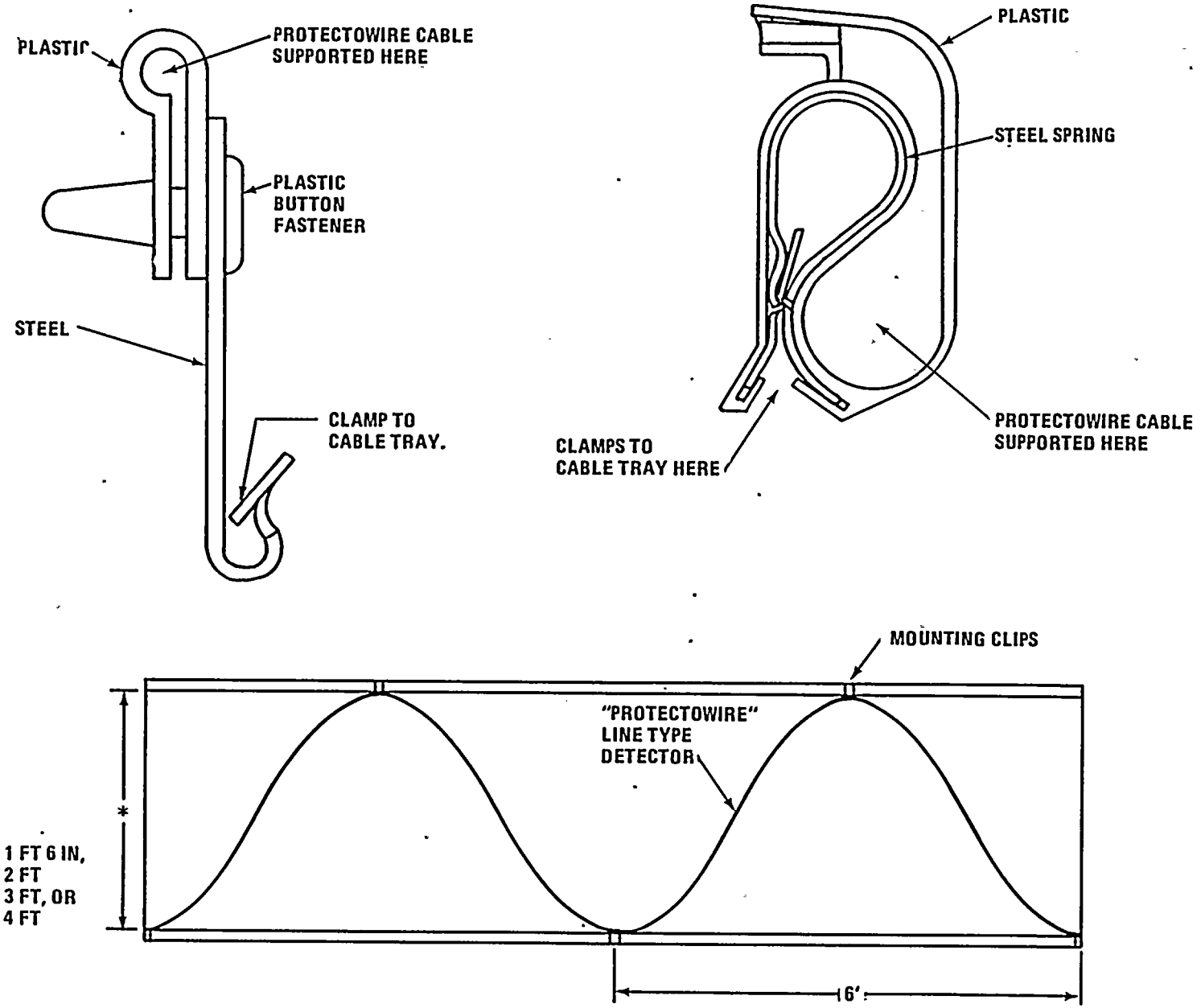


TYPICAL VIEW OF SPRINKLER SYSTEM
COVERING CABLE TRAYS

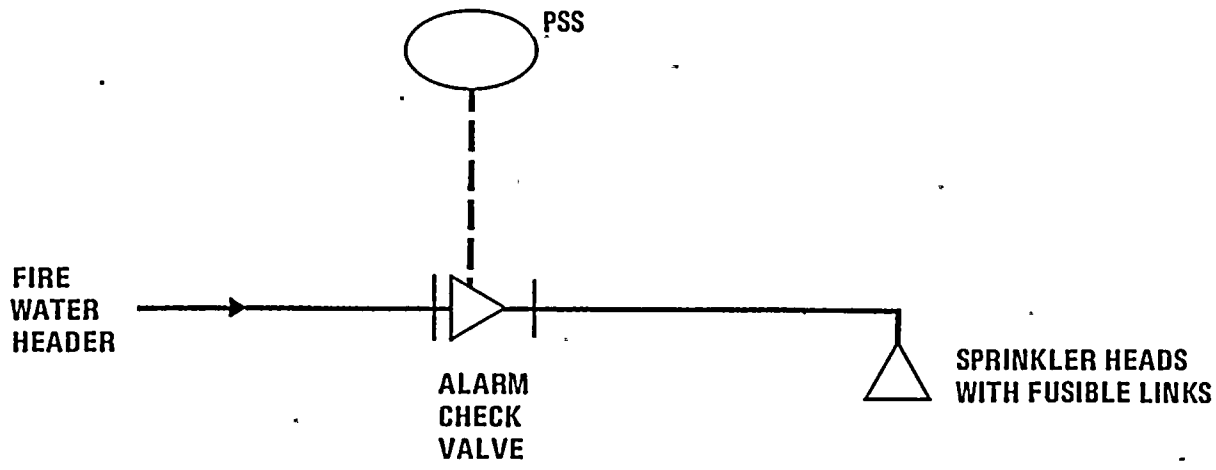
FIGURE 2.B.2-8



CONTROL BUILDING, LOWER CABLE SPREADING ROOM,
EL. 120 (EAST HALF)
FIGURE 2.B.2-9

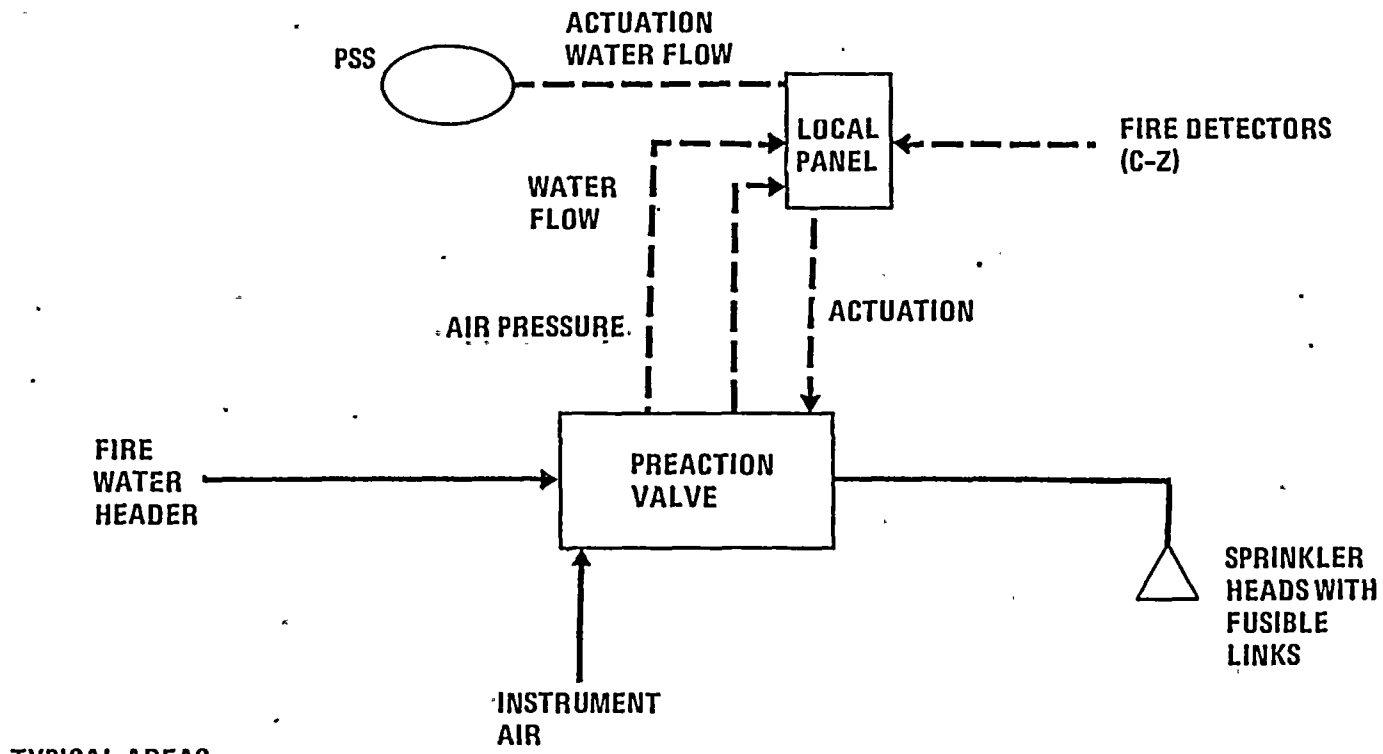


PROTECTOWIRE MOUNTING IN CABLE TRAYS
FIGURE 2.B.2-10



TYPICAL AREAS:
TURBINE BLDG.
FUEL BLDG.
RADWASTE BLDG.

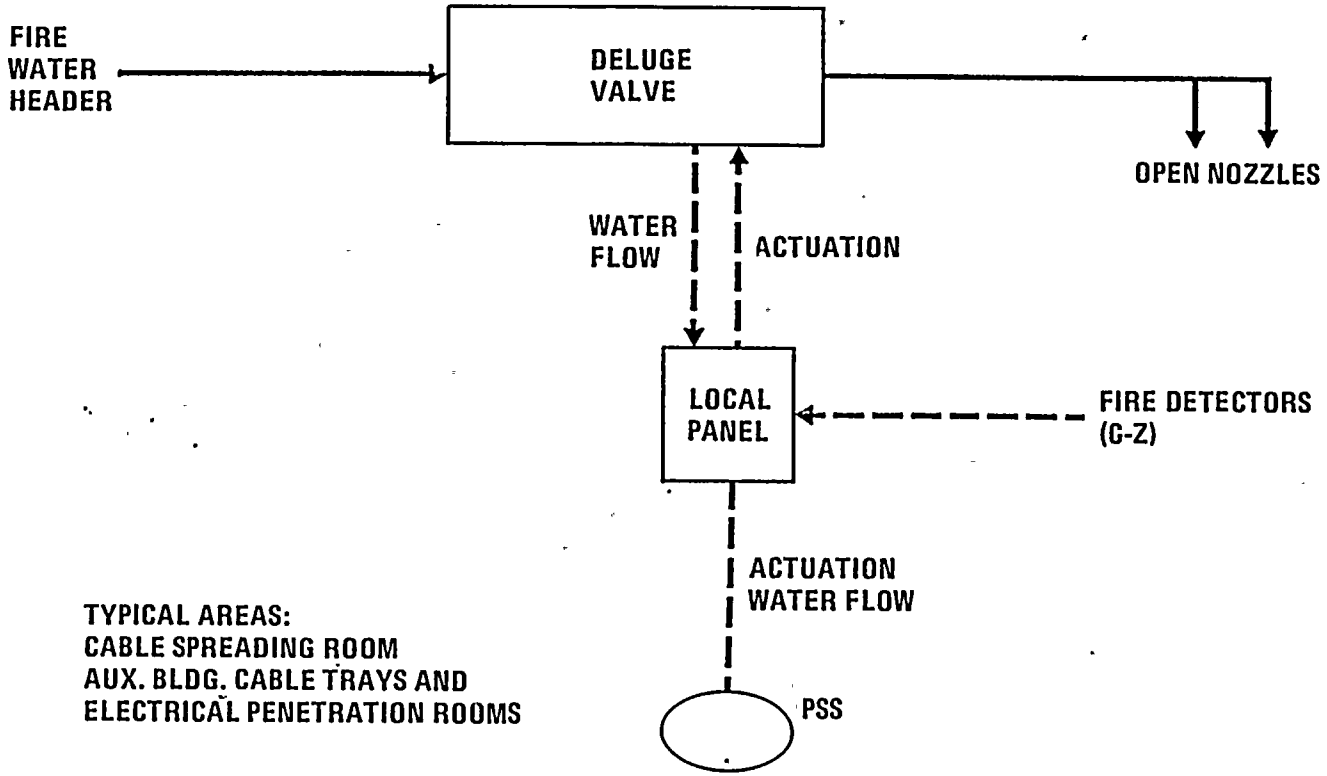
WET PIPE WITH FUSIBLE LINKS
FIGURE 2.B.3-1



TYPICAL AREAS:
AUX. FEED PUMP ROOMS
DIESEL GENERATOR ENGINE ROOM

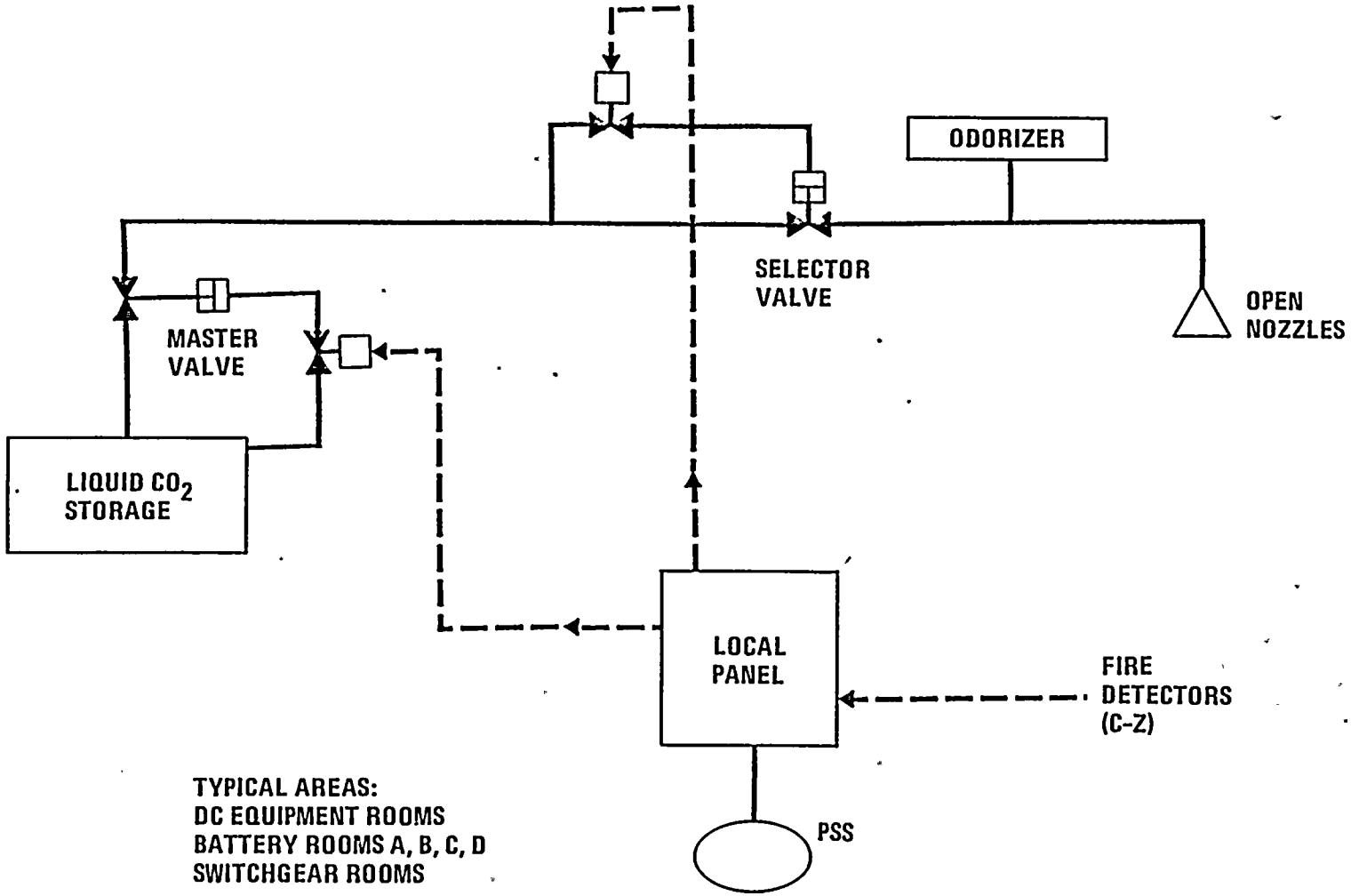
PREACTION SYSTEM WITH FUSIBLE LINKS

FIGURE 2.B.3-2



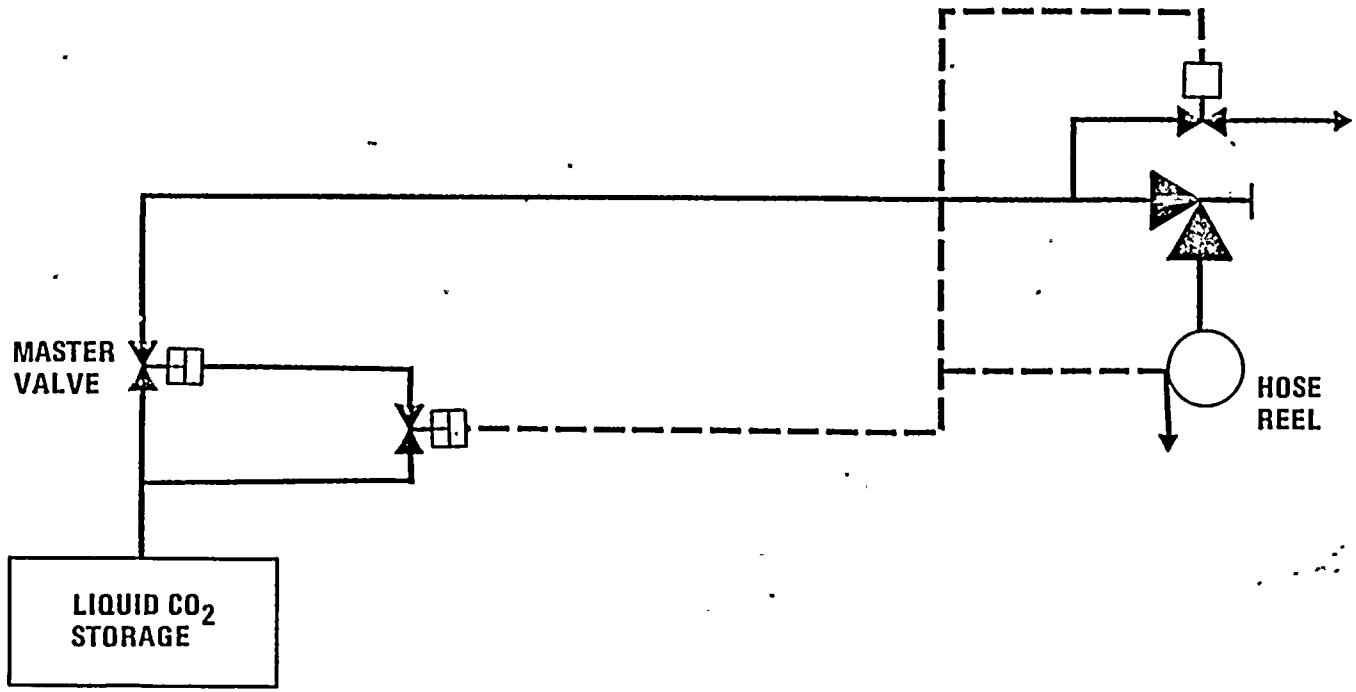
DELUGE SYSTEMS

FIGURE 2.B.3-3



CARBON DIOXIDE SYSTEM
(TOTAL FLOODING)

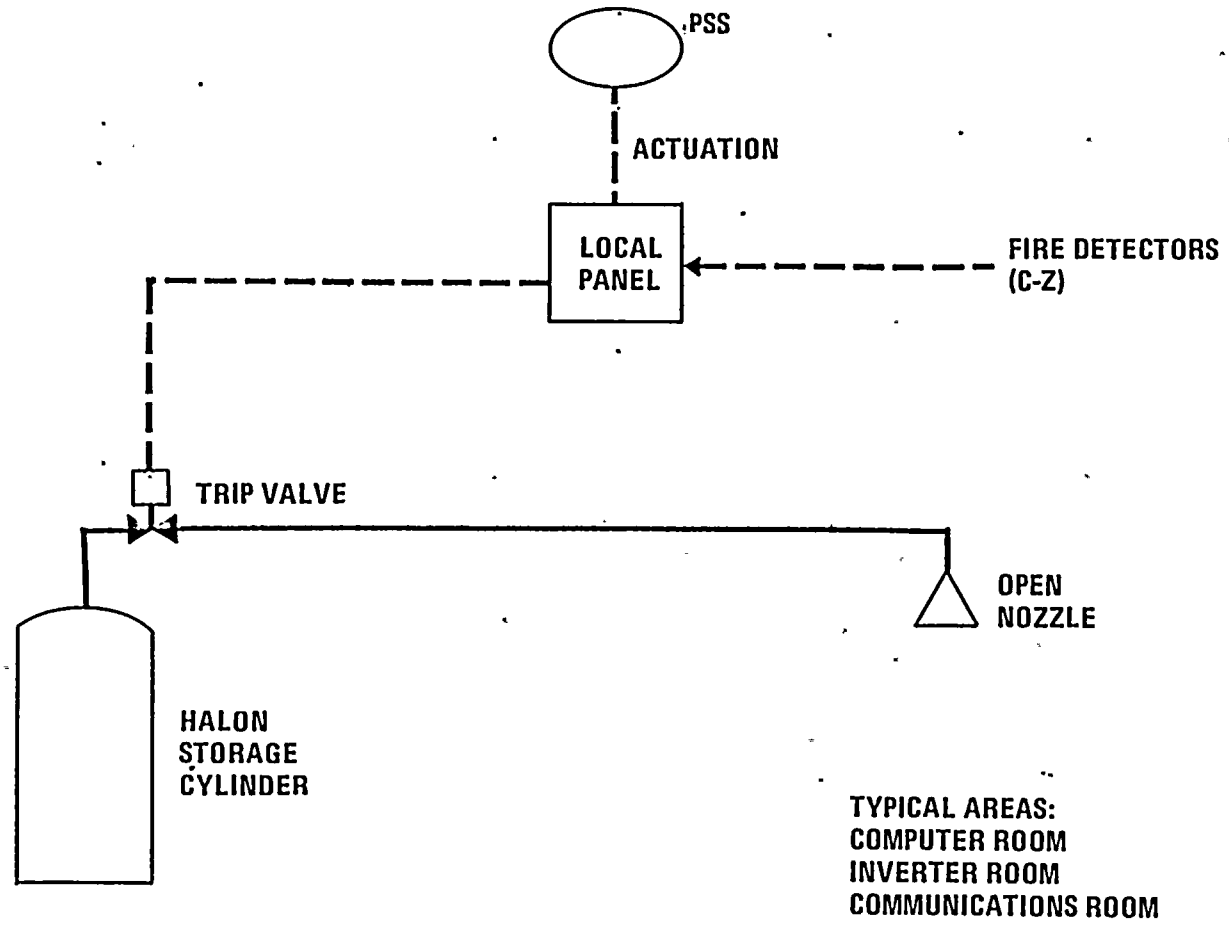
FIGURE 2.B.3-4



TYPICAL AREA:
SWITCHGEAR BUILDING

CARBON DIOXIDE HOSE REELS

FIGURE 2.B.3-5



HALON SYSTEMS

FIGURE 2.B.3-6

2.C DETECTION SYSTEM

- TYPES OF DETECTORS

  A. IONIZATION (PRODUCTS OF COMBUSTION)

  B. PHOTOELECTRIC (SMOKE)

  C. PROTECTOWIRE

  D. ULTRAVIOLET (FLAME)

  E. HEAT ACTUATED DEVICE

EXHIBIT 2C-1

1. DETECTION SYSTEM DESIGN CRITERIA

A. GENERAL

1) FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR ALL AREAS THAT CONTAIN OR PRESENT POTENTIAL FIRE EXPOSURE TO SAFETY-RELATED EQUIPMENT.

2) FIRE DETECTORS SHOULD BE SELECTED AND INSTALLED IN ACCORDANCE WITH NFPA 72E.

3) FIRE DETECTION SYSTEM SHOULD GIVE AUDIBLE AND VISUAL ALARM AND ANNUNCIATION IN THE CONTROL ROOM.

4) FIRE DETECTION AND ACTUATION SHOULD BE CONNECTED TO THE STATION ESSENTIAL LIGHTING POWER SUPPLY.

5) FIRE AND SMOKE MONITORING, DETECTION, AND ALARM SHALL BE ACCOMPLISHED BY IONIZATION, PHOTOELECTRIC, FLAME, AND RATE OF RISE/FIXED TEMPERATURE DETECTORS IN AREAS WHERE THE POTENTIAL OF FIRE EXISTS.

6) A PROPRIETARY FIRE ALARM SIGNALING SYSTEM SHALL PROVIDE INDICATION AND ALARM ANNUNCIATION IN EACH CONTROL ROOM. THIS SYSTEM SHALL ALARM LOCALLY IF THE AREA IS NORMALLY OCCUPIED.

7) IONIZATION DETECTORS SHALL NOT BE INSTALLED IN AREAS WITH RADIATION IN EXCESS OF 7.5 MREM/H OR IN AREAS SUBJECT TO DIESEL OR GASOLINE EXHAUST FUMES.

8) THE SUPPORTS FOR DETECTORS LOCATED IN AREAS CONTAINING SAFETY-RELATED EQUIPMENT SHALL BE DESIGNED TO RETAIN STRUCTURAL INTEGRITY DURING AND AFTER THE SAFE SHUTDOWN EARTHQUAKE (SSE), AND MEET SEISMIC CATEGORY I REQUIREMENTS.

9) THE DETECTION SYSTEM FOR EACH AREA SHOULD BE INDEPENDENT OF EVERY OTHER AREA.

10) ALL DETECTORS ASSOCIATED WITH EACH POWER BLOCK UNIT SHALL BE PROVIDED WITH ALARMS AND STATUS LIGHTS AT THE ANNUNCIATOR BOARD LOCATED IN THE RESPECTIVE CONTROL ROOM.

ALL DETECTORS ASSOCIATED WITH THE WATER RECLAMATION FACILITIES (WRF) SHALL BE PROVIDED WITH ALARMS AND STATUS LIGHTS AT THE ANNUNCIATOR BOARD LOCATED IN THE OPERATION BUILDING CONTROL ROOM OF THE WATER RECLAMATION FACILITIES.

11) FIRE DETECTOR SPACING SHALL BE BASED UPON THE RECOMMENDATIONS OF THE UNDERWRITERS' LABORATORIES LISTING FOR FIRE DETECTION DEVICES. FACTORS GOVERNING THE SPACING OF THE DEVICES INCLUDE:

- CEILING CONSTRUCTION
- CEILING HEIGHT
- ROOM VOLUME
- SPACE SUBDIVISIONS
- NORMAL ROOM TEMPERATURE
- POSSIBLE ABNORMAL ROOM TEMPERATURES
- DRAFT CONDITIONS
- ROOM VENTILATION RATE IN AIR CHANGES PER HOUR

12) MANUAL PUSHBUTTON OR PULL ALARM STATIONS SHALL BE INSTALLED IN CONVENIENT LOCATIONS.

13) ALARMS SHALL BE AUDIBLE AND/OR VISUAL.

14) THE SYSTEM SHALL NOT INITIATE AN ALARM OF FIRE UPON THE OCCURRENCE OF A SIMPLE OUTAGE IN THE SYSTEM POWER SUPPLY. THE OCCURRENCE SHOULD, HOWEVER, INITIATE A DISTINCTIVE SIGNAL SO THAT A CORRECTION MAY BE MADE PROMPTLY.

15) THE SPECIFIC TYPES OF FIRE DETECTION DEVICES, MONITORS, AND ALARMS SHALL BE SELECTED TO SUIT EACH AREA OR EQUIPMENT BASED ON THE TYPE, CLASS, AND INTENSITY OF FIRE HAZARDS INCLUDING THE FIRE HAZARD POSSIBILITY FOR THAT INDIVIDUAL AREA AND/OR EQUIPMENT.

16) DETECTORS LOCATED IN COMMON AREAS, SUCH AS THE ADMINISTRATION BUILDING AND THE SERVICE BUILDING, SHALL ANNUNCIATE LOCALLY AND AT THE UNIT 1 CONTROL ROOM.

17) THE FIRE DETECTION SYSTEM SHALL ACTUATE AUXILIARY RELAYS TO SHUT DOWN AIR SUPPLY FANS OR CLOSE DAMPERS TO LIMIT SUPPLY OF OXYGEN TO FIRES AND TO PREVENT PROPAGATION OF FIRE FROM ONE AREA TO ANOTHER THROUGH DUCTS.

B. CONTROL BUILDING:

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE CONTROL BUILDING:

1) ELEVATION 74 FT
   - CHILLER ROOMS, TRAIN A AND B
   - CABLE SHAFT, TRAIN A AND B
   - BALANCE OF PLANT (B.O.P.) CABLE CHASE

2) ELEVATION 100 FT
   - CABLE SHAFT, TRAIN A & B
   - D.C. EQUIPMENT ROOM, CHANNEL A, V, C
   - B.O.P. CABLE CHASE

3) ELEVATION 120 FT
   - CABLE SHAFT, TRAIN A AND B
   - B.O.P. CABLE CHASE

4) ELEVATION 140 FT

- CABLE SHAFT, TRAIN A AND B
- KITCHEN AND OFFICE AREAS
- CONTROL ROOM AREA - CONTROL BOARDS CONSOLE AND CONTROL CABINETS
- B.O.P. CABLE CHASE

5) ELEVATION 160 FT

- CABLE SHAFT, TRAIN A AND B
- FAN ROOM
- HVAC INTAKE PLENUM
- B.O.P. CABLE CHASE

2.C.1.

C AUXILIARY BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE AUXILIARY BUILDING.

1) ELEVATION 51' -6".

- ESF PUMP ROOMS
- WEST CORRIDOR AREA
- EAST CORRIDOR AREA

2) ELEVATION 70 FT

- ESSENTIAL COOLING WATER PUMP ROOM - TRAIN A AND B
- REACTOR MAKEUP PUMPS ROOM
- SHUTDOWN COOLING HEAT EXCHANGER ROOM - TRAIN A AND B
- WEST CORRIDOR AREA
- EAST CORRIDOR AREA

3) ELEVATION 77 FT

- PIPE PENETRATION AREA, TRAIN A AND B

4) ELEVATION 88 FT

- PIPEWAY AREA, TRAIN A AND B

5) ELEVATION 100 FT
   - WEST CORRIDOR AREA
   - EAST CORRIDOR AREA

6) ELEVATION 120 FT
   - WEST CORRIDOR AREA
   - EAST CORRIDOR AREA
   - MOTOR GENERATOR (M.G.) SETS AND REACTOR TRIP SWITCHGEAR AREA

7) ELEVATION 140 FT
   - PERSONNEL ACCESS AREAS
   - STORAGE AREA
   - HOT LAB
   - PERSONNEL DECONTAMINATION
   - LOCKER ROOM
   - LUNCH ROOM

D. RADWASTE BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE RADWASTE BUILDING.

1) ELEVATION 100 FT

- BALER AREA AND TRUCK BAY
- MOTOR CONTROL CENTERS (MCC)

2) ELEVATION 120 FT

- RADWASTE CONTROL ROOM
- CABLE SHAFT

3) ELEVATION 140 FT

- M.C.C. AND LOAD CENTERS (LC)
- CABLE SHAFT

E. DIESEL GENERATOR BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE DIESEL GENERATOR BUILDING.

1) ELEVATION 100 FT

- CONTROL ROOMS, TRAIN A AND B

2) ELEVATION 115 FT

- INTAKE AIR FILTER, TRAIN A AND B

F. FUEL BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE FUEL BUILDING.

1) ELEVATION 100 FT

- CHARCOAL FILTRATION UNITS
- SPENT FUEL POOL HEAT EXCHANGER AND PUMP AREA

2) ELEVATION 120 FT

- NEW FUEL STORAGE AREA

G. CONTAINMENT BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE CONTAINMENT BUILDING.

1) ELEVATION 80 FT
   - NO. 1 STEAM GENERATOR CAVITY
   - NO. 2 STEAM GENERATOR CAVITY

2) ELEVATION 100 FT
   - CABLE TRAYS

3) ELEVATION 120 FT
   - CABLE TRAYS

4) ELEVATION 140 FT
   - CONTROL ELEMENT DRIVE MECHANISM (CEDM) AREA
   - CABLE TRAYS
   - AIR HANDLING UNITS, TRAIN A AND B

H. MAIN STEAM SUPPORT STRUCTURE

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE MAIN STEAM SUPPORT STRUCTURE.

1) ELEVATION 80 FT
   - MOTOR DRIVEN PUMP ROOM

2) ELEVATION 100 FT
   - VALVE AREA

3) ELEVATION 120 FT
   - VALVE AREA

4) ELEVATION 140 FT
   - VALVE AREA

5) ELEVATION 160 FT
   - VALVE AREA

I. TURBINE BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS OF THE TURBINE BUILDING.

1) ELEVATION 100 FT

- LOAD CENTER (L.C.) AND MOTOR CONTROL CENTER (M.C.C.) - SOUTH SIDE
- L.C. AND M.C.C. - WEST SIDE

2) ELEVATION 140 FT

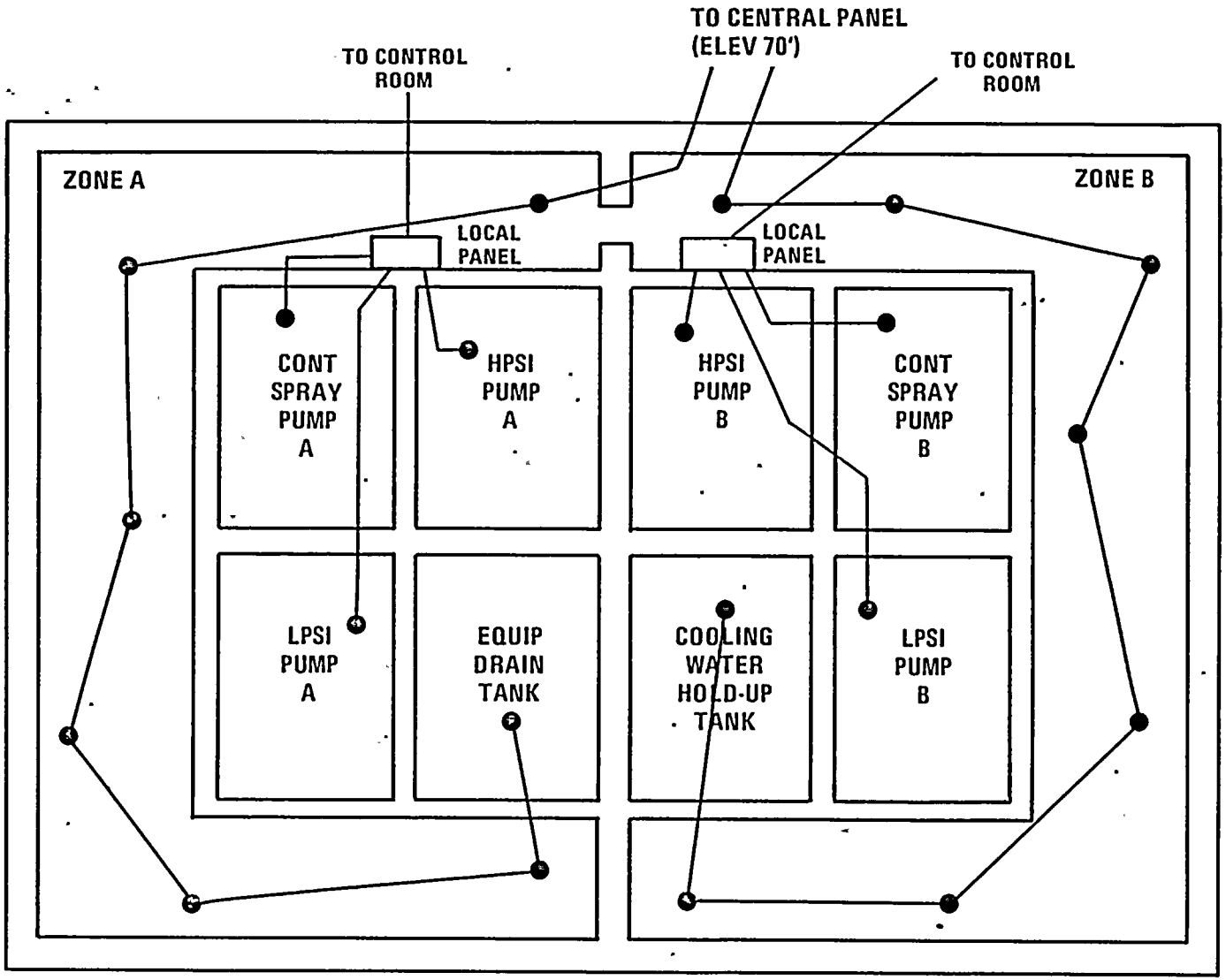
- L.C. AND M.C.C. - SOUTH WIDE
- L.C. AND M.C.C. - NORTH SIDE
- SURGE PROTECTION CUBICLES AND ISO-PHASE BUS COOLING UNIT

J. SWITCHGEAR BUILDING

FIRE DETECTION SYSTEM SHOULD BE PROVIDED FOR FOLLOWING AREAS IN THE SWITCHGEAR BUILDING.

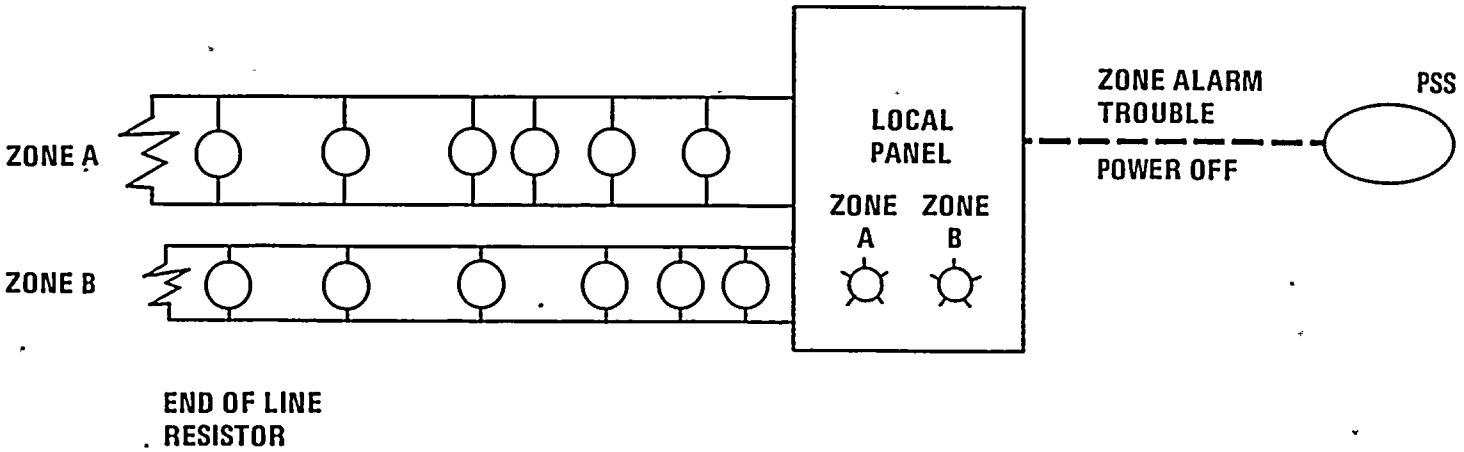
1) ELEVATION 100 FT

- SWITCHGEAR ROOM
- BATTERY ROOM



DETECTION SYSTEM LAYOUT
(AUX BLDG 51'-6" ELEV)

FIGURE 2.C.2-1



TYPICAL DETECTION SYSTEM OPERATION
FIGURE 2.C.3-1

2.D PASSIVE DESIGN FEATURES

BARRIERS

PENETRATION SEALS

FIRE DAMPERS

FIRE DOORS

SEPARATION

NON-FLAMMABLE MATERIALS

EXHIBIT 2D-1

2.D.

1. PASSIVE DESIGN FEATURES CRITERIA

   A. ALL TRANSFORMERS INSIDE BUILDINGS SHOULD EITHER BE ASKAREL INSULATED OR DRY TYPE.

   B. PROVIDE SUBSTANTIAL HORIZONTAL FIRE BARRIERS FOR VERTICAL RUNS OF CABLE TRAYS AT EVERY FLOOR LEVEL, ALSO WITHIN ANY CABLE CHASE OR SHAFT.

   C. PROVIDE SUBSTANTIAL VERTICAL FIRE BARRIERS FOR HORIZONTAL RUNS OF CABLE TRAYS THROUGH ALL FIRE WALLS.

   D. THE CONCRETE FLOORS OF ALL SPRINKLERED BUILDINGS SHOULD BE PITCHED AND DRAINED TO A PROPER DRAINAGE FACILITY.

   E. THE HYDROGEN MANIFOLD SHOULD BE LOCATED IN AN UNEXPOSED LOCATION.

   F. SUSPENDED CEILINGS AND THEIR SUPPORTS SHOULD BE UNDERWRITERS' LABORATORIES (UL) LISTED NON-COMBUSTIBLE CONSTRUCTION. INSULATION FOR PIPES AND DUCTS AND THEIR ADHESIVES SHOULD BE NON-COMBUSTIBLE AND U.L. LISTED. ALL CONCEALED SPACES SHOULD BE DEVOID OF COMBUSTIBLES. ALL MATERIALS SHOULD HAVE RATING OF 25 OR LESS FOR SMOKE CONTRIBUTION, FUEL CONTRIBUTION AND FLAME SPREAD.

G. ALL FILTERS, EXCEPT CHARCOAL, SHOULD BE U.L. CLASS I.

H. ALL FIRE PROTECTION CONTROL VALVES SHOULD BE PROVIDED WITH CLOSED-CIRCUIT, ELECTRICALLY ACTUATED, SUPERVISORY (TAMPER) SWITCHES.

I. THE CONTAINMENT BUILDING, COOLING TOWER, AND STACKS SHOULD BE EQUIPPED WITH A LIGHTNING PROTECTION SYSTEM INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF UNDERWRITERS' LABORATORIES, INC., MASTER LABEL SERVICE OR EQUIVALENT.

J. PROVIDE A BLANK TWO HOUR RATED WALL FOR ALL BUILDINGS WITHIN 50 FT OF ANY PART OF OUTDOOR OIL FILLED TRANSFORMERS.

K. TWO HOURS FIRE BARRIER WALLS SHOULD BE PROVIDED BETWEEN TRANSFORMERS.

L. THE TRANSFORMER YARD DRAINAGE PITS SHOULD BE CAPABLE OF CONTAINING THE OIL FROM LARGEST TRANSFORMER, AND THE WATER FROM TWO DELUGE SYSTEMS OPERATING SIMULTANEOUSLY. A 10 MINUTE DURATION OF DELUGE DISCHARGE IS REQUIRED.

M. PROVIDE A BLANK TWO HOUR RATED WALL FOR THE TURBINE BUILDING WITHIN 50 FT OF ANY PART OF TURBINE GENERATOR LUBE OIL STORAGE TANKS.

N. A DIKED DRAINAGE PIT SHOULD BE PROVIDED FOR THE TURBINE GENERATOR LUBE OIL STORAGE TANKS CAPABLE OF CONTAINING THE OIL FROM ONE STORAGE TANK AND THE WATER FROM BOTH DELUGE SYSTEMS OPERATING SIMULTANEOUSLY FOR A 10 MINUTE DURATION.

O. PROVIDE A BLANK TWO HOUR RATED WALL FOR THE TURBINE BUILDING WITHIN 50 FT OF ANY PART OF TURBINE GENERATOR LUBE OIL RESERVOIR.

P. A DIKED DRAINAGE SYSTEM SHOULD BE PROVIDED FOR THE TURBINE GENERATOR LUBE OIL RESERVOIR CAPABLE OF CONTAINING ALL OF THE OIL AND WATER FROM THE DELUGE SYSTEM. A 10 MINUTE DURATION OF DELUGE DISCHARGE IS REQUIRED.

Q. COOLING TOWERS SHOULD BE OF NONCOMBUSTIBLE CONSTRUCTION OR SO LOCATED AND PROTECTED THAT A FIRE WILL NOT ADVERSELY AFFECT ANY SAFETY-RELATED SYSTEMS OR EQUIPMENT.

R. SHOPS, WAREHOUSES, AUXILIARY BOILER ROOMS, FUEL OIL TANKS AND FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE TANKS SHOULD BE SO LOCATED AND PROTECTED THAT A FIRE WILL NOT ADVERSELY AFFECT ANY SAFETY-RELATED SYSTEMS OR EQUIPMENT.

S. NEW CONSTRUCTION SHOULD BE NONCOMBUSTIBLE AND DESIGNED TO WITHSTAND WIND FORCES IN ACCORDANCE WITH ANSI STANDARD A58.1, "BUILDING CODE REQUIRED FOR MINIMUM DESIGN LOADS IN BUILDINGS AND OTHER STRUCTURES." SELECTION OF BASIC WIND VELOCITY SHALL BE BASED ON 100 YEAR PERIOD OF RECURRENCE.

T. INSULATION OVER ANY METAL ROOF DECKING SHOULD BE SECURELY ATTACHED BY APPROVED NONCOMBUSTIBLE ADHESIVE AND PERIMETER FASTENING. A VAPOR BARRIER, IF PROVIDED, SHOULD CONSIST OF APPROVED MEMBRANE ATTACHED BY APPROVED ADHESIVE AND PERIMETER FASTENING.

U. STAIRWAYS AND ELEVATORS, THAT GO FROM ONE FIRE AREA TO ANOTHER FIRE AREA, SHOULD BE ENCLOSED IN APPROVED MASONRY TOWERS WITH APPROVED AUTOMATIC CLASS "B" FIRE DOORS, WITH RATING OF 1-1/2 HOURS AND 250 DEGREES MAX. 30 MIN TEP RISE, AT EACH OPENING INTO THE BUILDING.

V. AN APPROVED FIRE BARRIER WALL OF THREE HOURS FIRE RESISTANCE RATING WITH SINGLE AUTOMATIC CLASS "A" FIRE DOORS, WITH RATING OF THREE HOURS AND 250 DEGREES MAX. 30 MIN. TEMP RISE, AT ALL NECESSARY WALL OPENINGS SHOULD BE PROVIDED TO CUT OFF THE FOLLOWING AREAS:

1) AUXILIARY BUILDING FROM TURBINE BUILDING, CONTAINMENT BUILDING, FUEL BUILDING, CONTROL BUILDING AND RADWASTE BUILDING.

2) CONTROL BUILDING FROM RADWASTE BUILDING AND DIESEL GENERATOR BUILDING.

3) SWITCHGEAR ROOM, BATTERY ROOM AND RAILROAD BAY (IF COMBUSTIBLE OCCUPANCY OR IF EQUIPMENT VULNERABLE TO PHYSICAL DAMAGE ARE WITHIN 50 FT OF BAY) WITHIN TURBINE BUILDINGS.

4) ELECTRICAL PENETRATION ROOMS, ELECTRICAL CHASES, AND CHEMICAL STORAGE ROOM WITHIN AUXILIARY BUILDING.

5) RAILROAD BAY (IF COMBUSTIBLE OCCUPANCY OR IF EQUIPMENT VULNERABLE TO PHYSICAL DAMAGE ARE WITHIN 50 FT OF BAY) WITHIN FUEL BUILDINGS.

6) AIR HANDLING AND CHILLER UNITS TRAIN "A" FROM TRAIN "B", E.S.F. EQUIPMENT ROOMS, BATTERY ROOMS, SWITCHGEAR ROOMS, CABLE SHAFTS, COMPUTER ROOM AND CONTROL ROOM FROM SERVICE AREA WITHIN CONTROL BUILDINGS, ALSO, CUT-OFF REDUNDANT CABLE AREA SUCH AS TRAIN "A" FROM TRAIN "B" WITHIN CABLE SPREADING ROOMS.

7) ELECTRICAL AREA IN HVAC, ELEC. AND PIPE CHASE AND TRUCK BAY WITHIN RADWASTE BUILDINGS.

8) EACH DIESEL GENERATOR AND FUEL OIL DAY TANK ROOM WITHIN DIESEL GENERATOR BUILDINGS.

9) MAJOR MOTOR GENERATOR SETS.

10) DIESEL-DRIVEN FIRE PUMP ROOMS WITHIN FIRE PUMP HOUSE.

W. AN ENCLOSURE OF AT LEAST THREE HOURS FIRE RESISTANCE RATING SHOULD BE PROVIDED WITHIN FUEL BUILDINGS TO CUT OFF NEW FUEL STORAGE FROM OTHER AREAS.

X. AN ENCLOSURE OF TWO HOURS FIRE RESISTANCE RATING SHOULD BE PROVIDED BETWEEN DIESEL DRIVEN FIRE PUMPS.

Y. FUEL OIL DAY TANKS SHOULD BE LOCATED OUTSIDE.

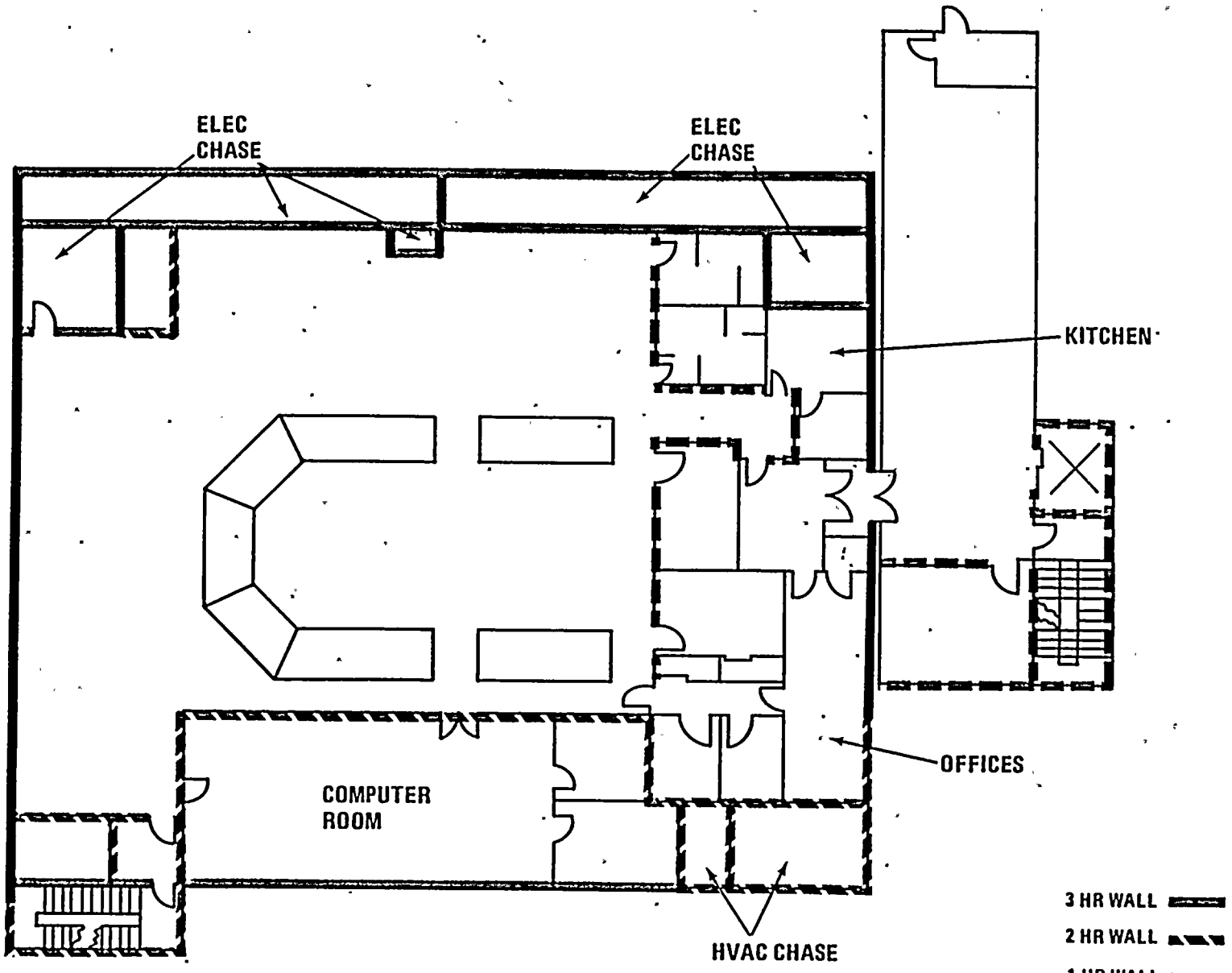
2.D.3 MATERIAL SELECTION

A. HEAVY CONCRETE WALL CONSTRUCTION

B. UNDERWRITER'S LABORATORY (U.L.) LISTED DESIGN AND MATERIALS FOR FIRE WALLS AND STEEL COLUMN PROTECTION

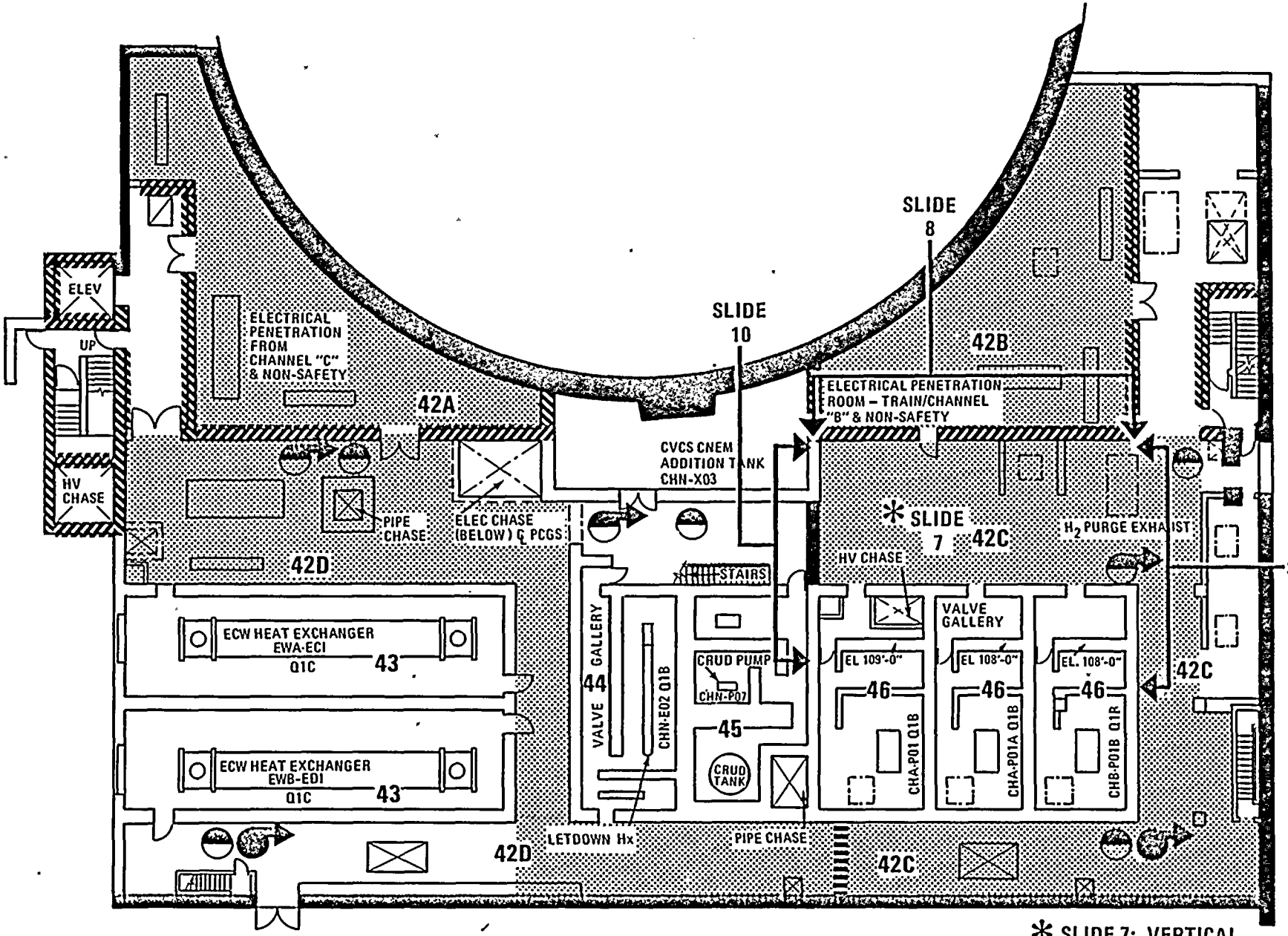
C. DAMPERS, WALL PENETRATION SEALANTS MEET RATING OF MAIN BARRIER

D. FIRE DOORS ARE U.L. LISTED



CONTROL BUILDING
ELEV 140 FT
(CONTROL ROOM)

FIGURE 2.D-1

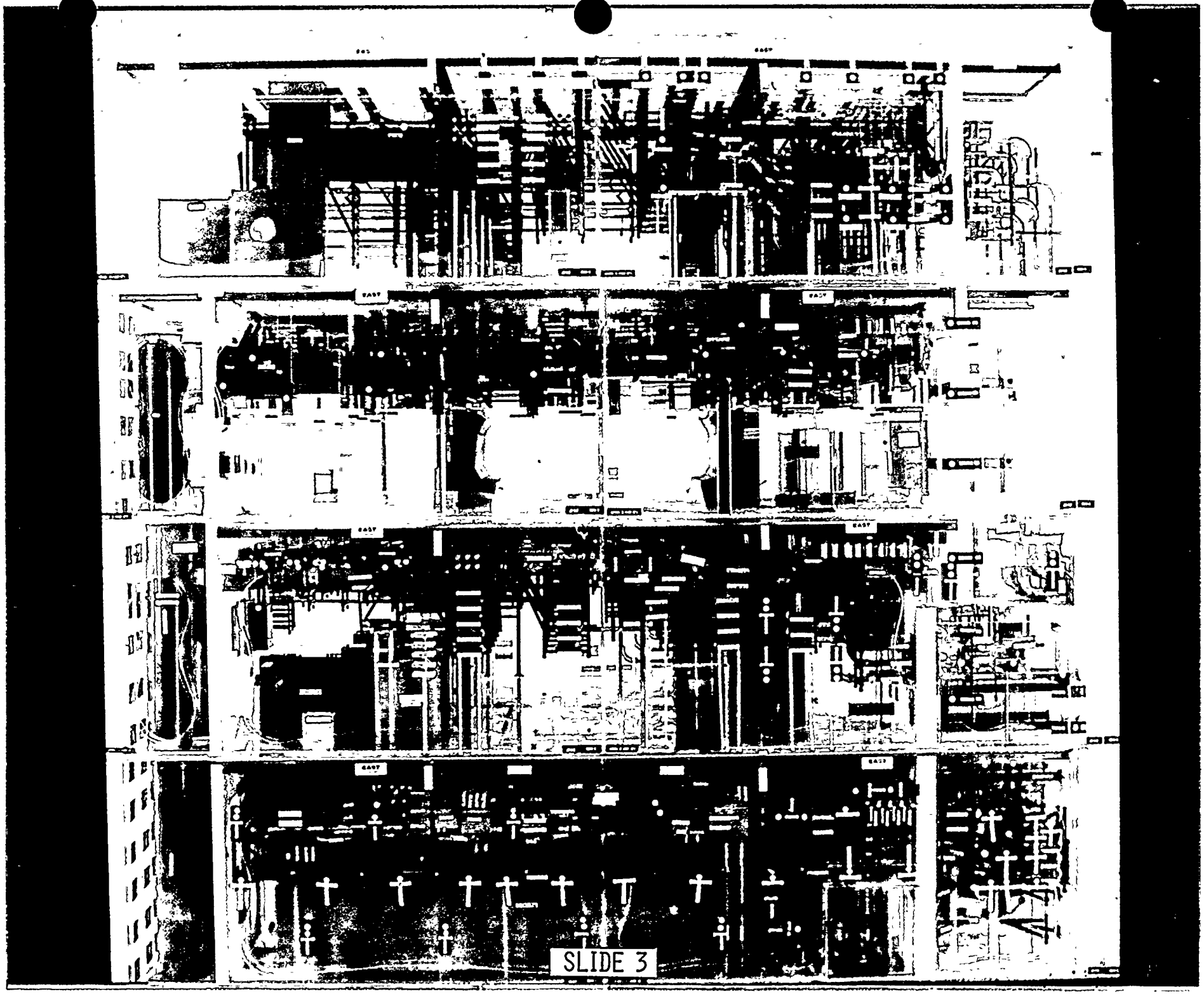


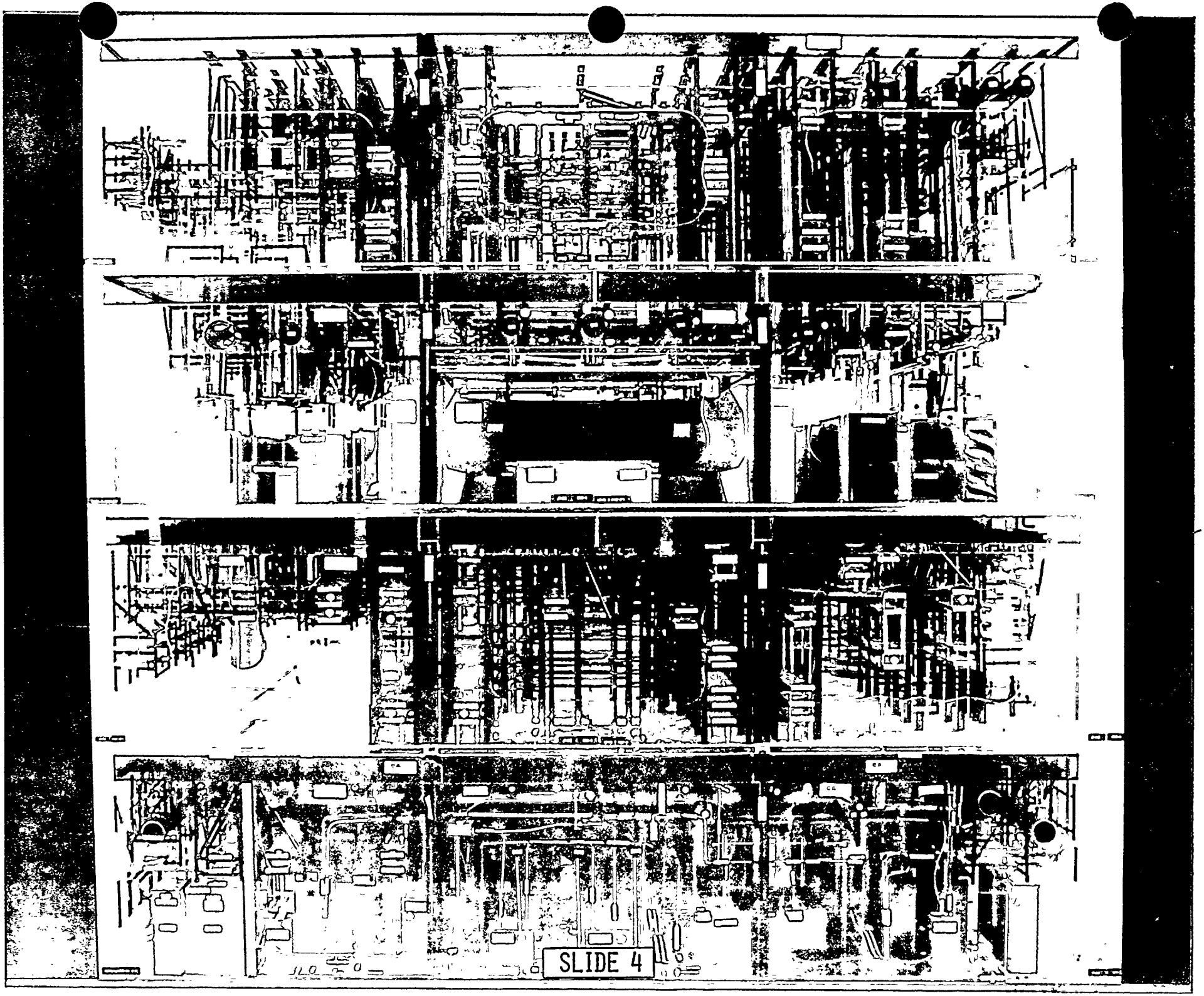
AUXILIARY BUILDING, ELEVATION 100 FT.
FIGURE 2.D-2

* SLIDE 7: VERTICAL VIEW

SLIDE 1

SLIDE 2


SLIDE 3



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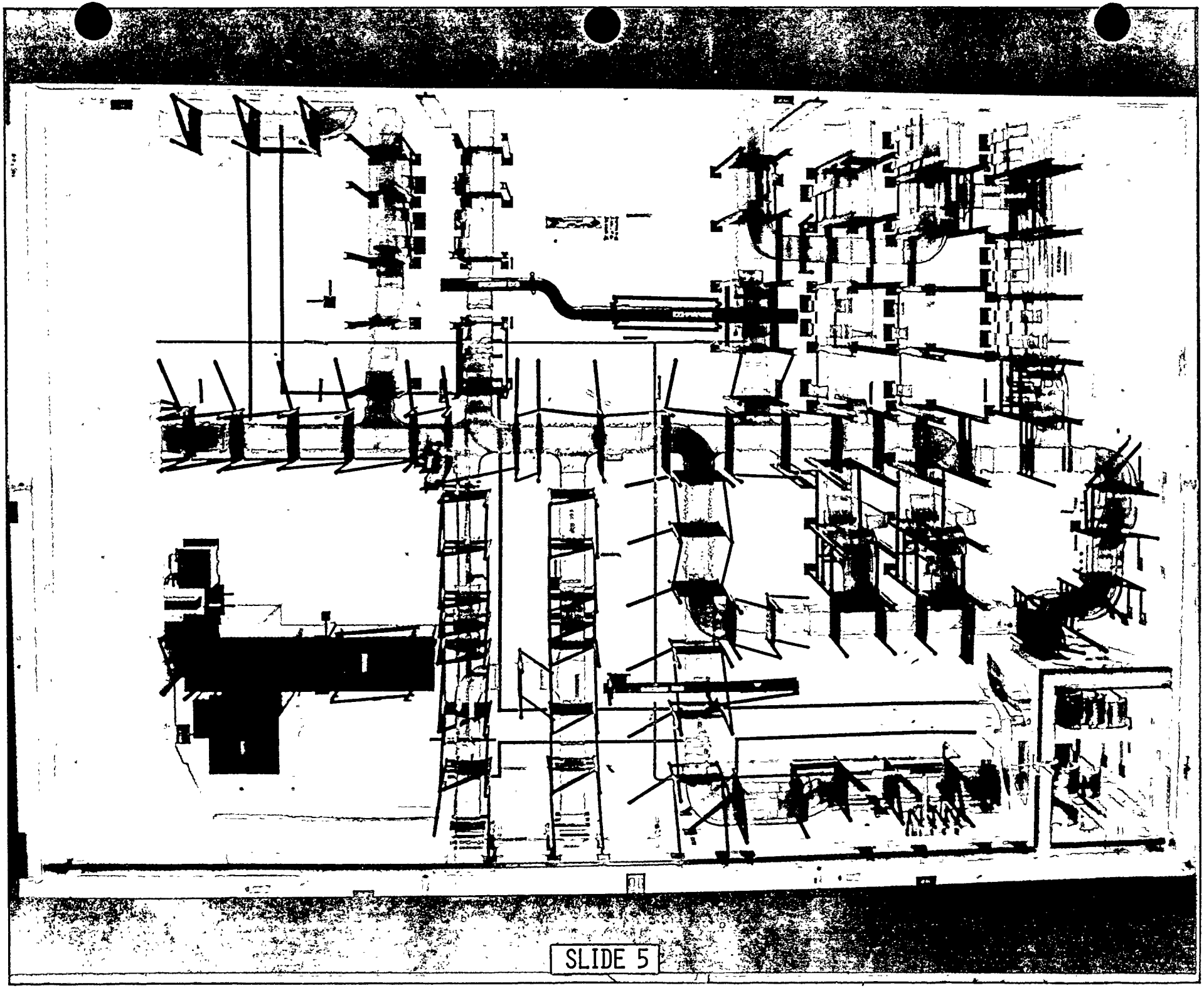
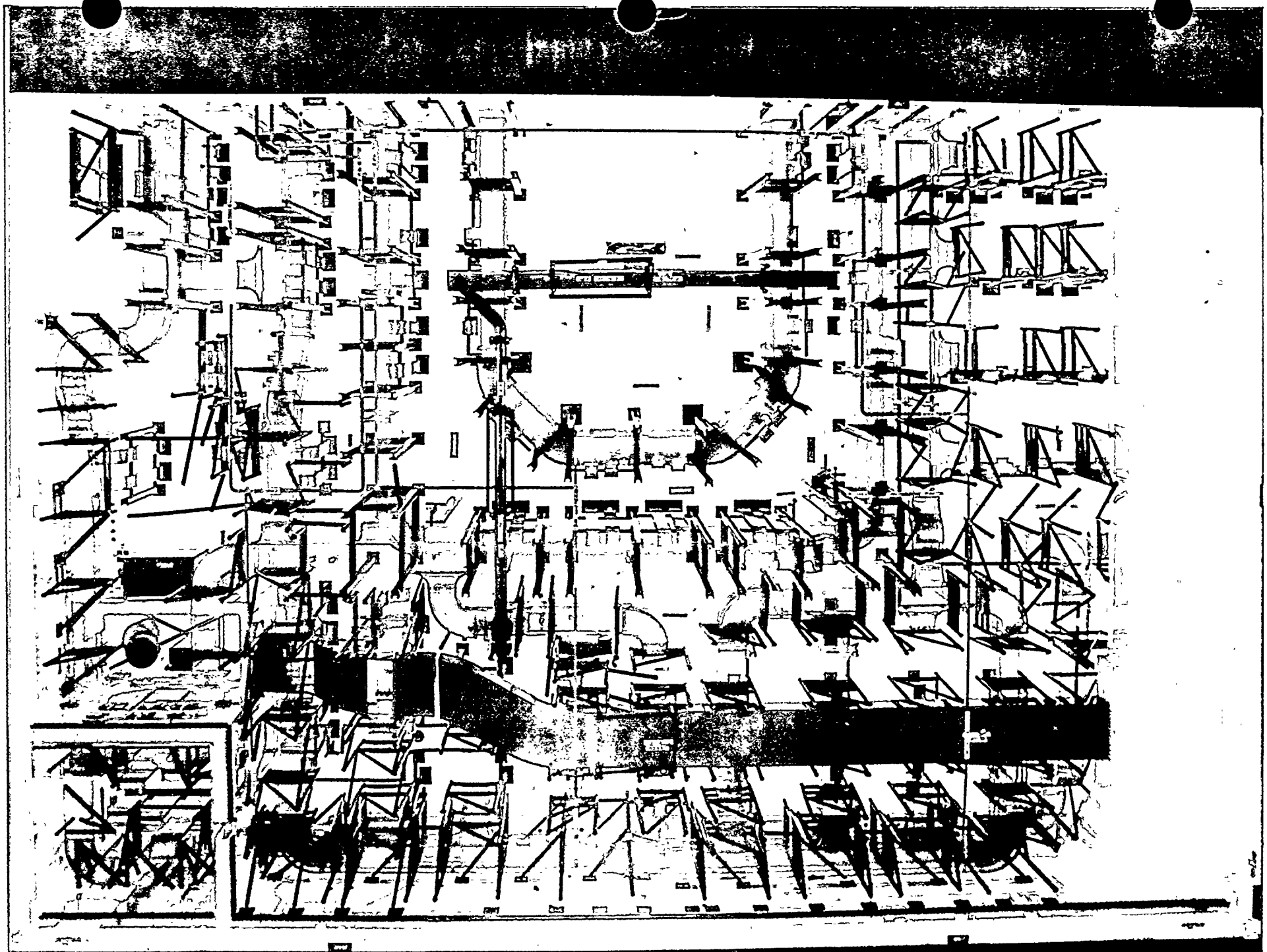
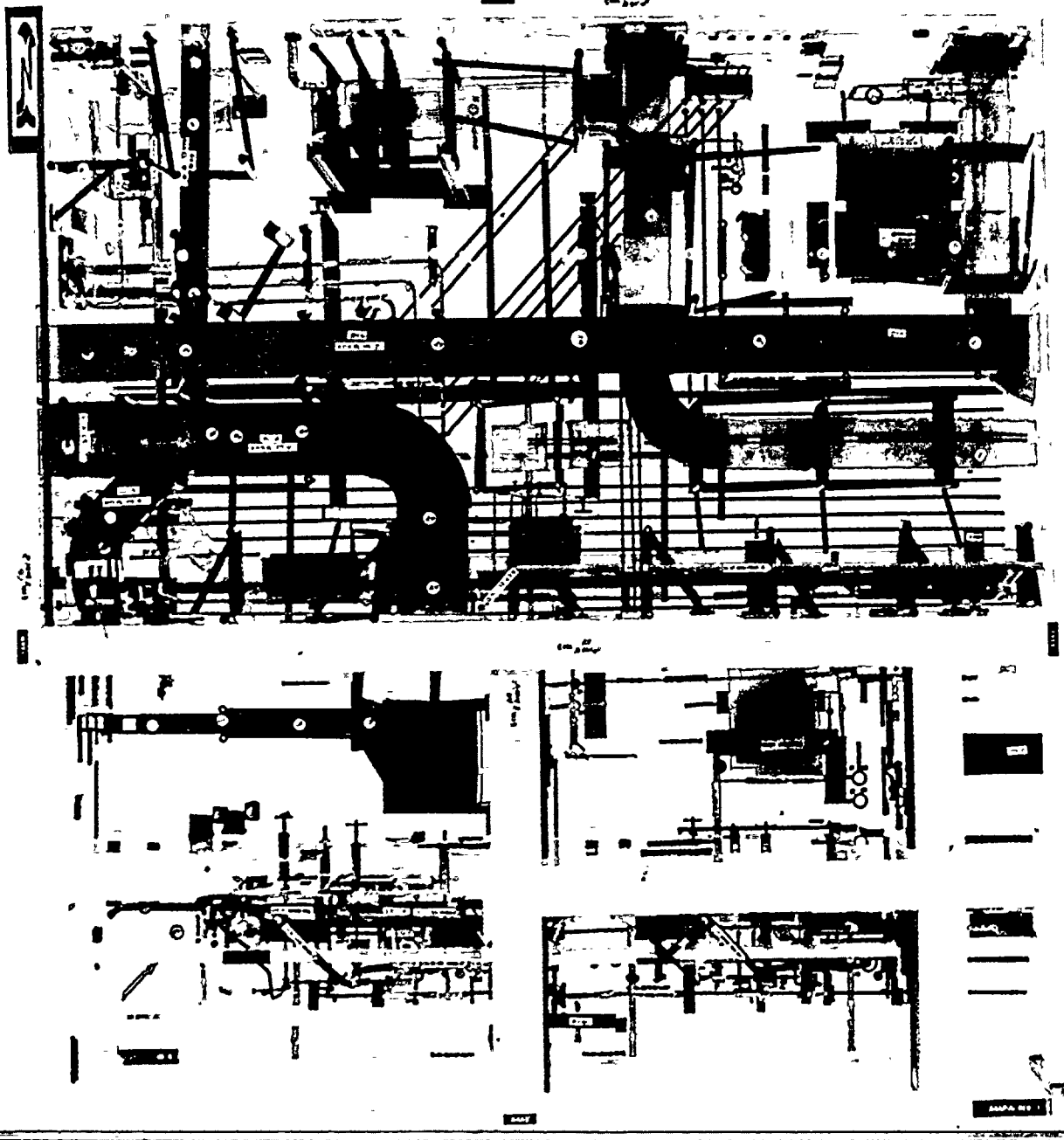


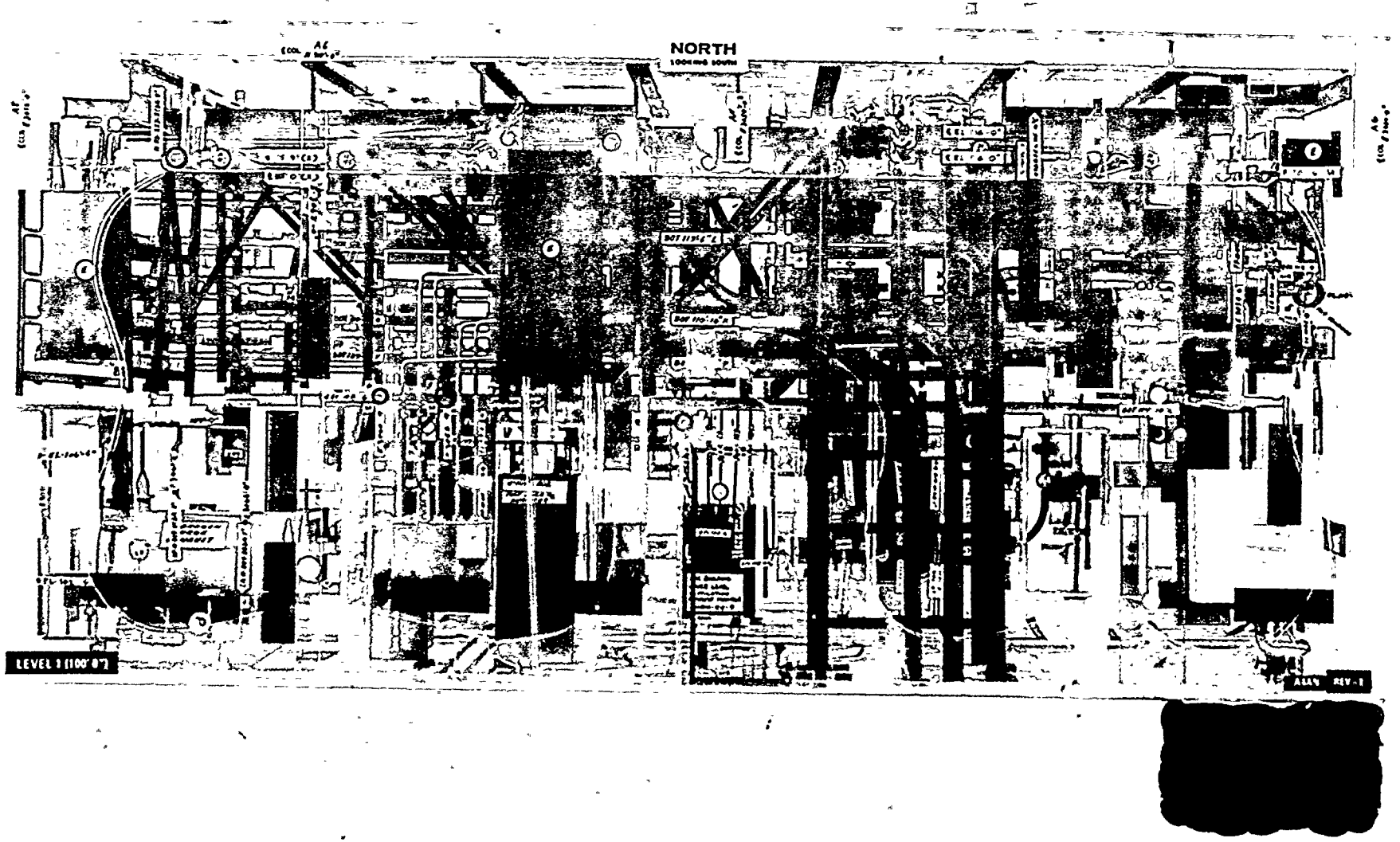
SLIDE 5



SLIDE 6



SLIDE 7



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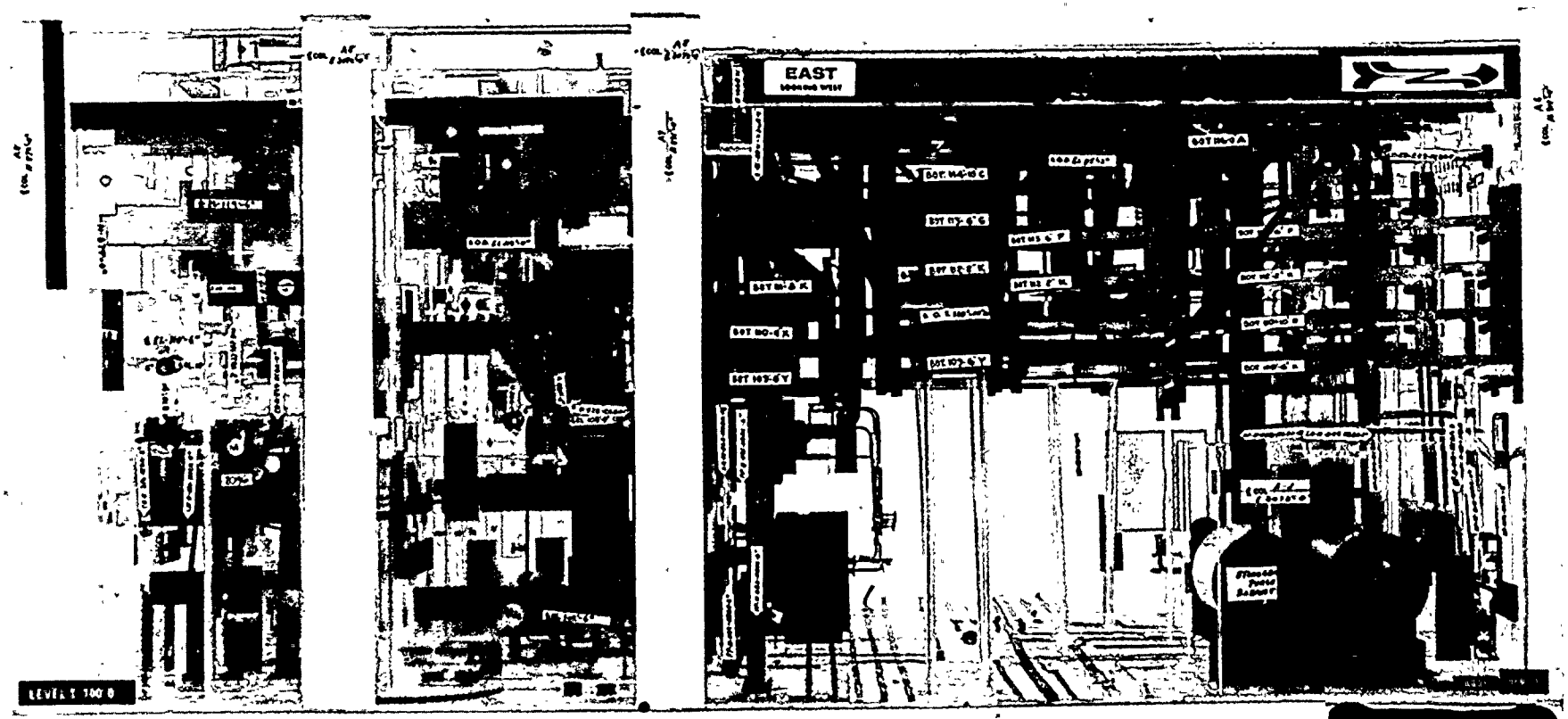
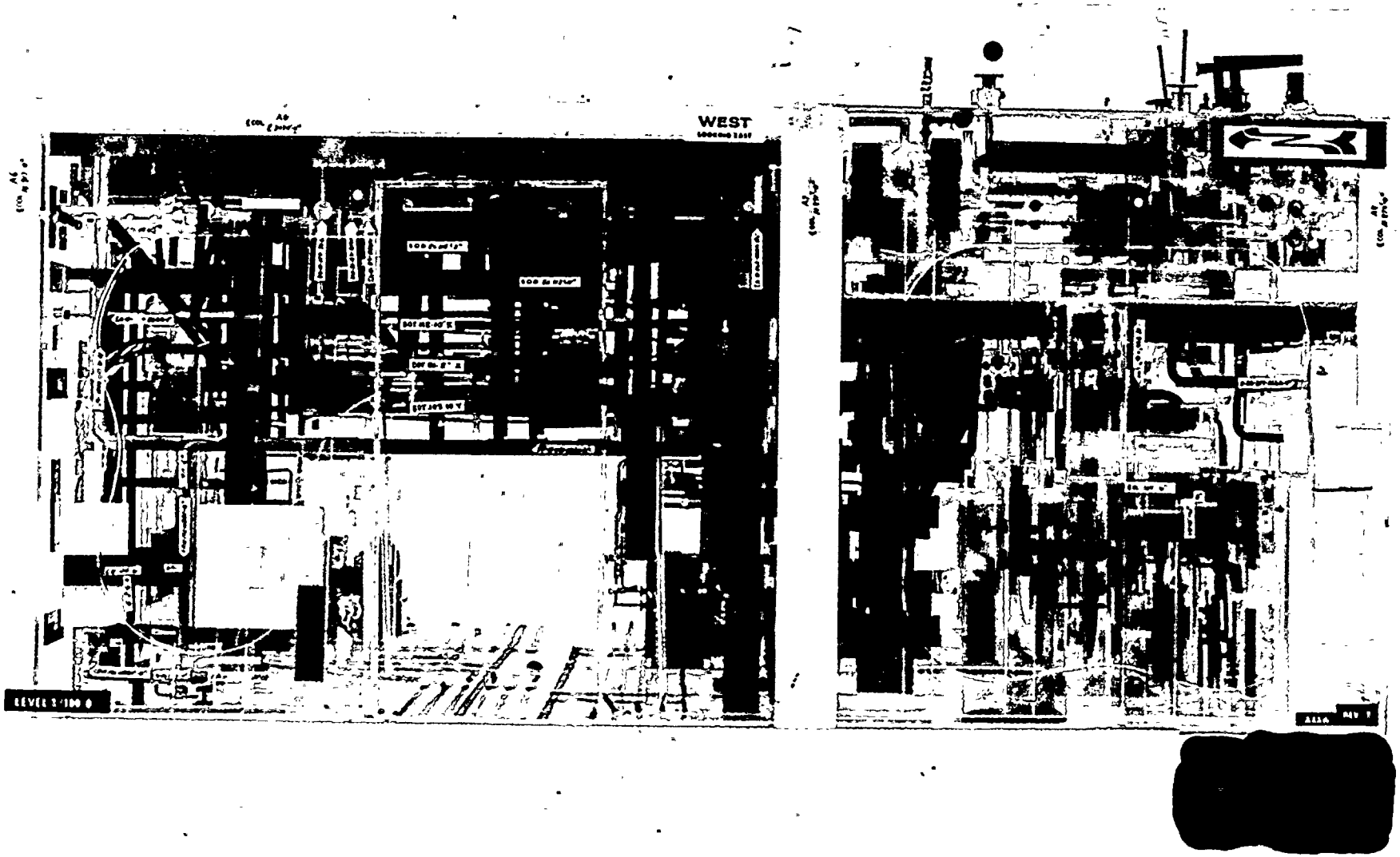
SLIDE 8



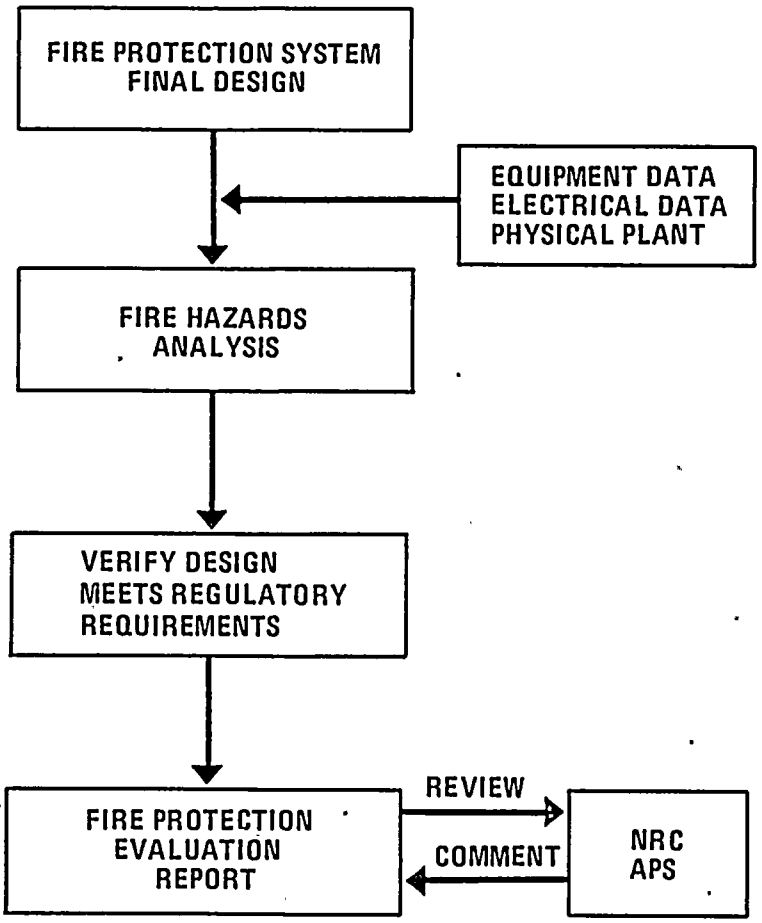
SLIDE 9



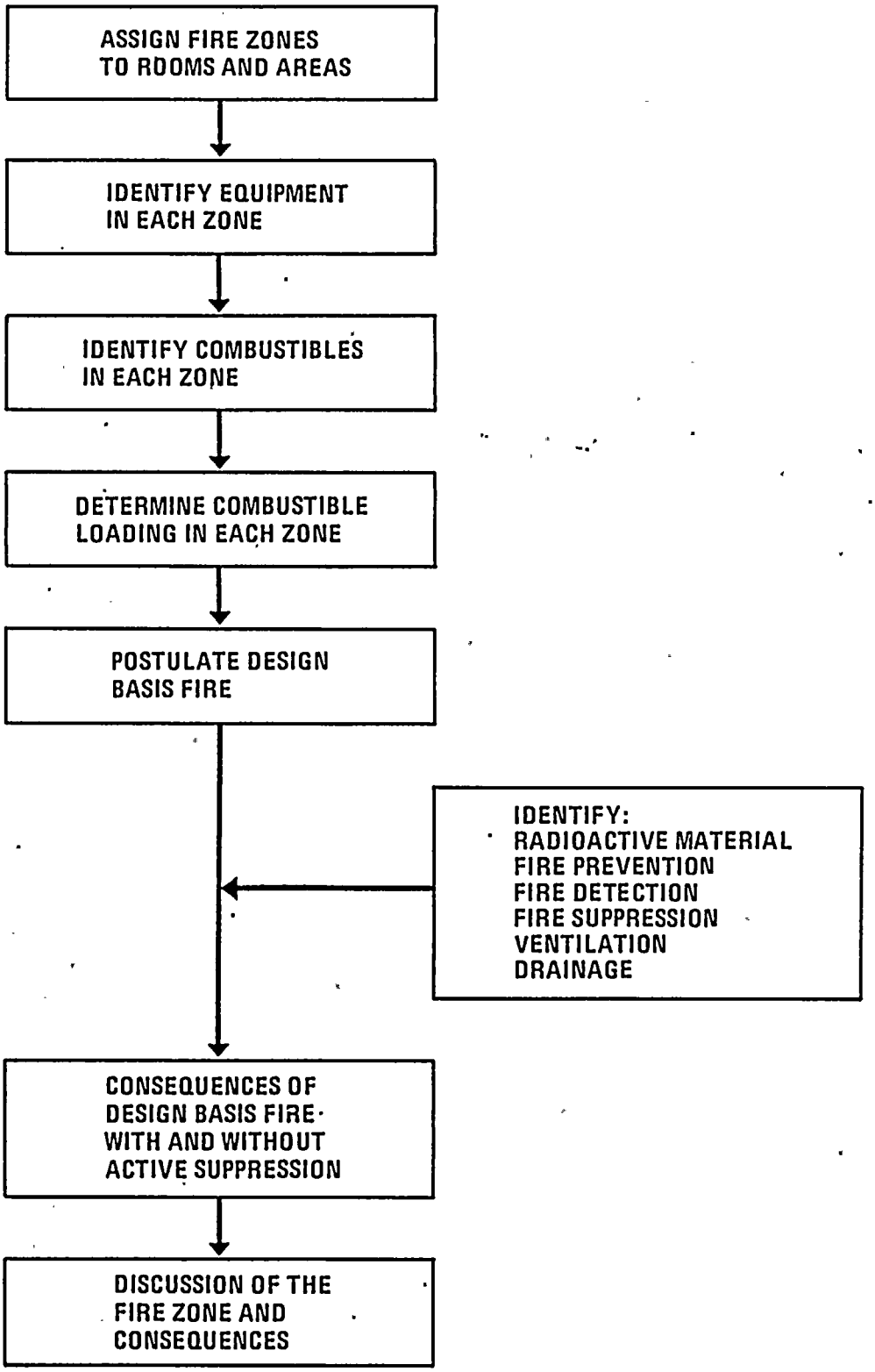
SLIDE 10

3. FIRE PROTECTION EVALUATION REPORT

EXHIBIT 3A-1



DESIGN VALIDATION PROCESS
FIGURE 3-1



FIRE HAZARDS ANALYSIS
FIGURE 3-2

1. CONTAINMENT SPRAY PUMP ROOMS, ONE TRAIN A, ONE TRAIN B - ZONE 30

A. EQUIPMENT

(1) SAFETY RELATED EQUIPMENT (EACH ROOM)

- CONTAINMENT SPRAY PUMP
- CONTAINMENT SPRAY PUMP ROOM ESSENTIAL AIR COOLING UNIT

(2) NON-SAFETY RELATED

NONE

B. RADIOACTIVE MATERIAL (EACH ROOM)

IN PROCESS EQUIPMENT

C. FIRE PREVENTION (EACH ROOM)

(1) FIRE BARRIERS

WALLS, FLOOR AND CEILING OF HEAVY CONCRETE CONSTRUCTION (3 HOUR RATED)

(2) FIRE DOORS

ACCESS THROUGH WATERTIGHT DOOR

(3) FIRE DAMPERS

DUCT PENETRATIONS IN THE RATED FIRE BARRIERS ARE PROVIDED WITH FIRE DAMPERS OF CORRESPONDING RATING.

(4) STRUCTURAL MEMBERS

ALL CONCRETE

(5) ELECTRICAL PENETRATIONS

WILL EQUAL OR EXCEED FIRE BARRIER RATINGS

D. FIRE DETECTION (EACH ROOM)

SMOKE DETECTORS ARE PROVIDED FOR EARLY WARNING.

E. FIRE SUPPRESSION SYSTEMS (EACH ROOM)

(1) PRIMARY

PREACTION WATER SPRINKLER SYSTEM

(2) SECONDARY

MANUAL HOSE STREAMS WITH CLASS A-B-C NOZZLES AND HAND DRY CHEMICAL EXTINGUISHERS.

F. VENTILATION (EACH ROOM)

(1) NORMAL OPERATION

0.8 SCFM/FT^2 FULL FLOW TO OUTSIDE

(2) FIRE OPERATION

0.8 SCFM/FT^2 FULL FLOW TO OUTSIDE UNTIL FIRE DAMPERS OPERATE

G. DRAINS (EACH ROOM)

TWO 4 INCH DRAINS

H. COMBUSTIBLES (EACH ROOM)

- TYPE - CABLE INSULATION AND PUMP GREASE
- QUANTITY - 150 POUNDS INSULATION, 1.0 POUND PUMP GREASE
- COMBUSTIBLE LOAD (TOTAL HEAT RELEASE) - 4800 BTU/SQ. FT.
- WOOD EQUIVALENT FIRE LOAD - .60 LB/FT^2
- EQUIVALENT FIRE SEVERITY - 4 MINUTES

I. POSTULATED FIRE

IGNITION OF CABLE INSULATION AND OIL

J. CONSEQUENCE OF A DESIGN BASIS FIRE WITHOUT ACTIVE PROTECTION

THE DESIGN BASIS FIRE IS THE MAXIMUM TOTAL HEAT THAT CAN BE RELEASED THROUGH COMPLETE COMBUSTION OF EITHER ALL THE OXYGEN OR THE COMBUSTIBLES IN THE CONTAINMENT SPRAY PUMP ROOMS. THESE COMPARTMENTS HAVE ONE NORMALLY CLOSED DOOR AND ONE EXHAUST DUCT WITH A TOTAL AREA OF 2.0 SQUARE METERS FOR BOTH DOOR AND DUCT. THE CALCULATED "F" FOR A VENTILATION CONTROLLED FIRE WITH THESE VALUES IS 0.009, A LOW VALUE FOR THIS TYPE OF FIRE. WHEN THE ESTIMATED FIVE MINUTE GROWTH PERIOD OF THE FIRE IS COMPLETE, THE FIRE DAMPERS WILL CLOSE WITHIN TWO TO THREE MINUTES OF THE FULLY DEVELOPED VENTILATION CONTROLLED FIRE PERIOD AND THE FIRE WILL ENTER AN OXYGEN DEPLETION PERIOD FOR ABOUT 70 MINUTES, IN WHICH THE HEAT RELEASE RATE WILL FALL TO A LOW VALUE. THE DESIGN BASIS FIRE IN THIS CASE WILL BE LIMITED BY OXYGEN DEPLETION AND WILL PERMIT ABOUT 68 PERCENT OF CABLE TRAY TO BE CONSUMED DURING THE OXYGEN DEPLETION. THE LOSS OF BOTH SAFETY TRAINS WILL NOT OCCUR, BECAUSE THE TRAINS ARE IN SEPARATE FIRE ZONES. HIGH TEMPERATURES WILL CAUSE ADDITIONAL DAMAGE TO THE REMAINING TRAYS, AND THE REMAINING 32 PERCENT WILL BE CONSUMED AT A LOW RATE OVER A LONG PERIOD OF TIME.

K. CONSEQUENCE OF A FIRE WITH ACTIVE PROTECTION

AN AUTOMATIC DETECTION SYSTEM WILL ALARM THE CONTROL ROOM WITHIN THE FIRST FEW MINUTES OF THE GROWTH PERIOD OF THE FIRE, AND THE FIRE BRIGADE WILL ASSEMBLE TO ATTACK THE FIRE.

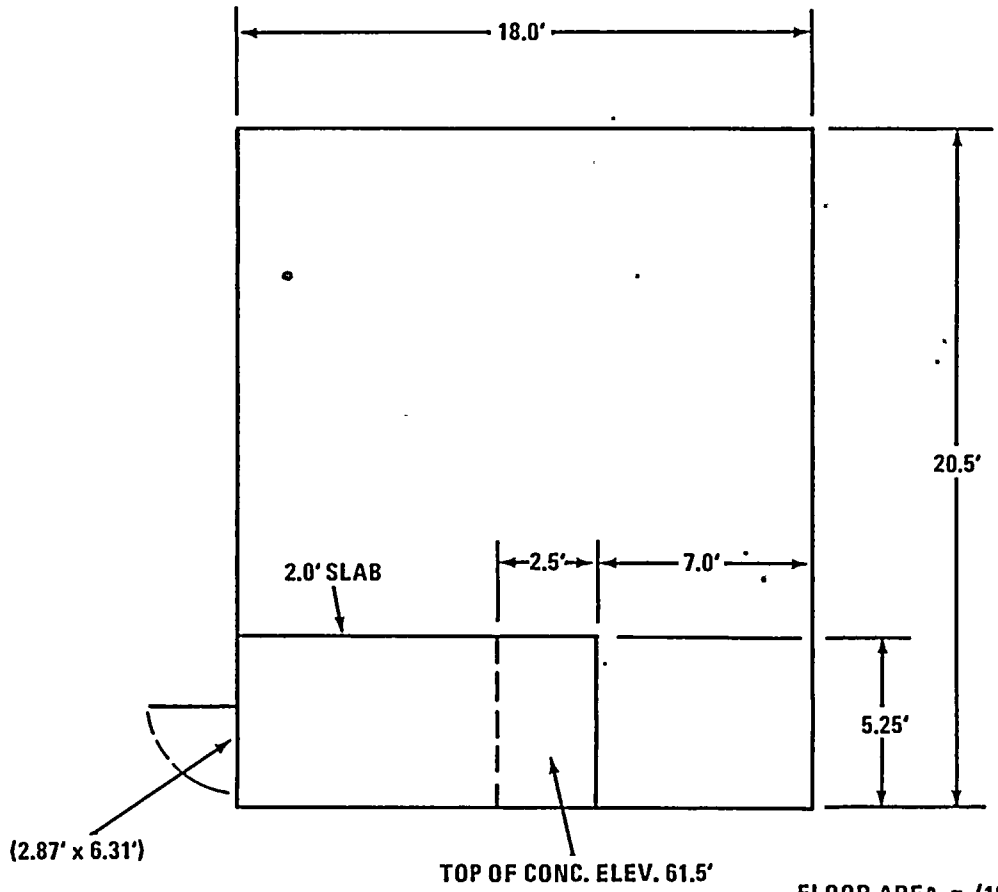
L. DISCUSSION

(1) THE RELATIONSHIP OF REDUNDANT SAFETY RELATED EQUIPMENT OR CABLING IN THIS COMPARTMENT IS AS FOLLOWS: TRAIN A, NO TRAIN B: OR TRAIN B, NO TRAIN A.

(2) THE RELATIONSHIP OF REDUNDANT CONTROL, POWER OR INSTRUMENT CABLES OF REDUNDANT SAFETY RELATED SYSTEMS IN THE SAME CABLE TRAYS IS AS FOLLOWS: TRAIN A, NO TRAIN B: OR TRAIN B, NO TRAIN A.

(3) THE CONTAINMENT SPRAY PUMP ROOM SHOWS AN EQUIVALENT FIRE SEVERITY OF 4 MINUTES WHICH IS BASED PRIMARILY ON A FUEL-SURFACE CONTROLLED WOOD FIRE. ANY FIRE APPROACHING A DESIGN BASIS FIRE WILL LARGELY BE VENTILATION CONTROLLED AND SUBJECT TO OXYGEN DEPLETION, WHICH WILL NOT ALLOW A HIGH HEAT RELEASE FOR OVER 70 MINUTES. THE FIRE PREVENTION ELEMENTS OF RATED BARRIERS IN CONJUNCTION WITH THE RESOURCES OF THE FIRE BRIGADE WILL CONTAIN THE FIRE.

FIRE HAZARD ZONE (30)



NOTE: CONCRETE SHIELDING WALL SURFACE AREA 388 FT^2 AND VOLUME 371 FT^3 ARE NOT INCLUDED IN FIGURES BELOW.

FLOOR AREA = (18.0' x 20.5') = 369 FT^2 (EACH ROOM)

HEIGHT = 26.88' ; VOLUME = 26.88' x 369 = 9,919 FT^2 (EACH ROOM)

SURFACE AREAS:

FLOOR = 369 FT^2 WALLS = 2 (18.0' + 20.5') x 26.88' = 2,070 FT^2

CEILING = 369 FT^2

738 FT^2

TOTAL = 2,808 FT^2 = 260.9 M^2 (EACH ROOM)

EXHIBIT 3A-7

A. CONT. SPRAY PUMP ROOMS A & B, LEVELS C & D

FLOOR AREA = 369 FT^2

ROOM VOLUME 9,919 FT^3

ROOM SURFACE AREA 2,808 FT^2 = 260.9 M^2

DOORS 1-2.87' x 6.31' = 18.1 FT^2 = 1.68 M^2 H = 6.31 FT = 1.92 M

HVAC NORM 300 SCFM

DUCT 10" ϕ = 0.545 FT^2 = 0.051 M^2 D = 10" = 0.254 M

CABLE INSULATION 151 LB, INCL 23 LB HYPALON AND 1 LB GREASE IN EACH PUMP

TOTAL HEAT RELEASE (THR):

(151 LB - 23 LB) (12,250 BTU/LB) + (23 LB) (8000 BTU/LB) + (1 LB) (20,000 BTU/LB) = 1,772,000 BTU

$$\frac{1{,}772{,}000 \text{ BTU}}{369 \text{ FT}^2 \text{ FLOOR}} = 4{,}802 \text{ BTU/FT}^2$$

$$\frac{4802 \text{ BTU/FT}^2}{8000 \text{ BTU/LB WOOD}} = 0.6 \text{ LB WOOD/FT}^2$$

1. COMPARISON OF THR AVAILABLE VS AIR

(9,919 FT^3 ROOM VOL.) (112 BTU/FT^3) = 1,110,928 BTU

FUEL 1,772,000 BTU
AIR 1,110,928 BTU
661,072 BTU EXCESS FUEL

2. COMPARISON OF FUEL SURFACE CONTROLLED FIRE (WOOD EQUIV. SEVERITY)

$$\frac{0.6 \text{ LB WOOD/FT}^2}{10 \text{ LB WOOD/FT}^2\text{/HR}} = 0.06 \text{ HR} = 3.6 \text{ MIN}$$

3. COMPARISON OF VENTILATION CONTROLLED WOOD FIRE

$$F_{DUCT} = \frac{(0.051/(0.254)^{1/2}}{260.9} = 0.0000985 \left(F = \frac{(A_{DUCT})(D_{DUCT})^{1/2}}{\text{ROOM SURF AREA}} \right)$$

$$F_{DOOR} = \frac{(1.68/(1.92)^{1/2}}{260.9} = 0.0089 \left(F = \frac{(A_{DOOR})(H_{DOOR})^{1/2}}{\text{ROOM SURF AREA}} \right)$$

$300 \text{ SCFM}/369 \text{ FT}^2 = 0.81 \text{ SCFM/FT}^2$

4. COMPARISON OF MAXIMUM BURNING POSSIBLE WITH HVAC AND ROOM AVAILABLE AIR

$$(300 \text{ SCFM})\left(60 \frac{\text{MIN}}{\text{HR}}\right)\left(112 \frac{\text{BTU}}{\text{FT}^3}\right) = 2{,}016{,}000 \text{ BTU/HR}$$

AVERAGE BURNING RATE IS 1/2 INITIAL RATE WITH HVAC AVAILABLE OR:

$$\left(\frac{1}{2}\right)\left(2{,}016{,}000 \frac{\text{BTU}}{\text{HR}}\right) = 1{,}008{,}000$$

$\therefore$ OXYGEN DEPLETION PERIOD IS: $\dfrac{1{,}110{,}928 \text{ BTU (ROOM)}}{1{,}008{,}000 \text{ BTU/HR}} = 1.1 \text{ HR} = 66 \text{ MIN}$

5. QUANTITY OF FUEL CONSUMED

GROWTH PERIOD	5 MIN
FULLY DEVELOPED UNTIL FIRE DAMPERS DROP	3 MIN
OXYGEN DEPLETION	66 MIN
	74 MIN

GROWTH

DEVELOPED $(2{,}016{,}000 \frac{BTU}{HR})\ (\frac{3}{60}\ HR) = 100{,}800\ BTU$

OXYGEN DEPLETION $+ \underline{1{,}110{,}928\ BTU}$

$1{,}211{,}728\ BTU$

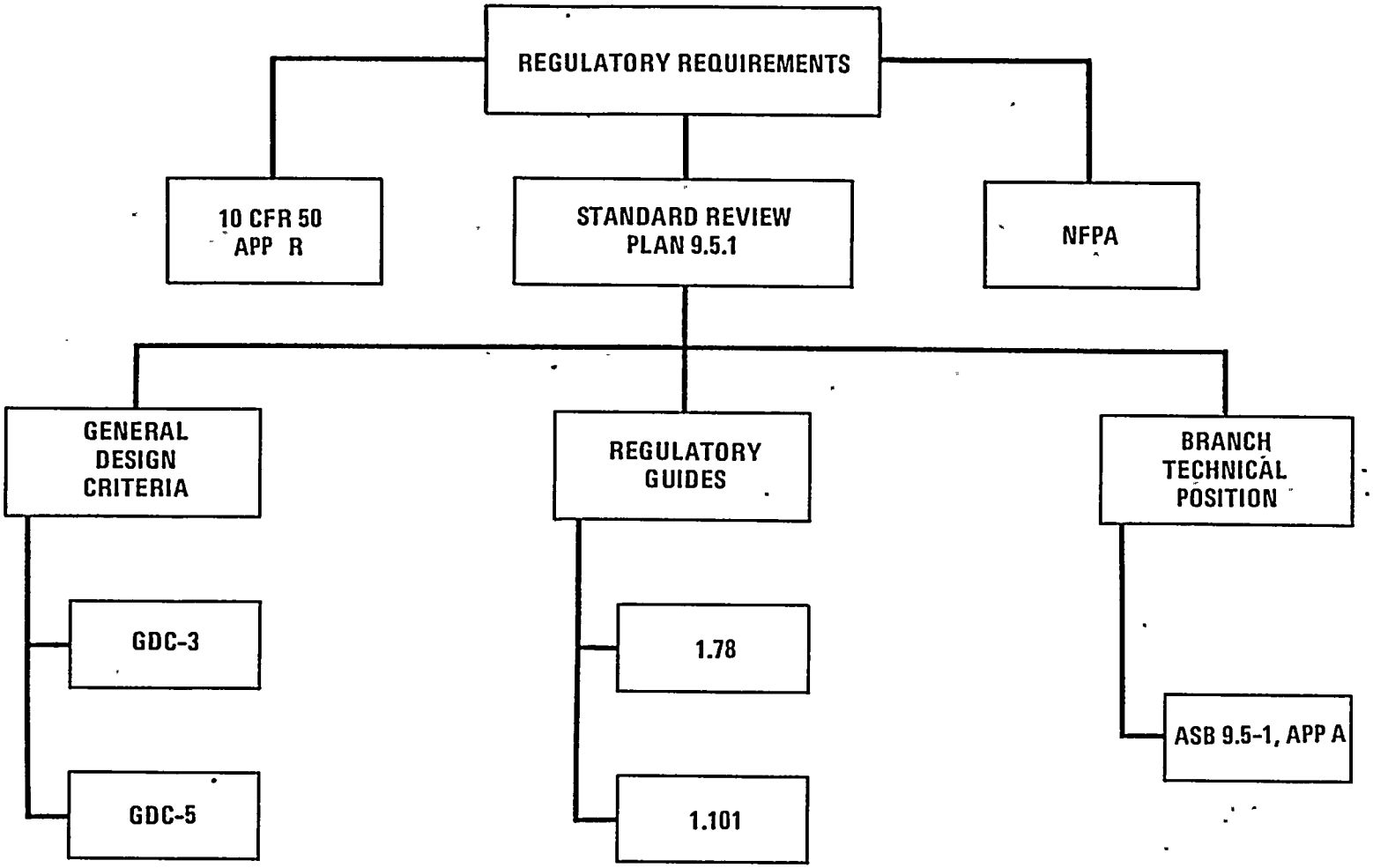
SMALL AMOUNT CONSUMED

$$\frac{1{,}211{,}728\ BTU\ CONS}{1{,}772{,}000\ BTU\ ORIG} = 0.684 = 68.4\%$$

EXHIBIT 3A-10

4. CONFORMANCE WITH REGULATORY REQUIREMENTS

EXHIBIT 4A-1



REGULATORY REQUIREMENTS
FIGURE 4A-1

SRP ACCEPTANCE CRITERIA

GENERAL DESIGN CRITERION 3, FIRE PROTECTION

REQUIREMENT	DESIGN FEATURE
• STRUCTURES, SYSTEMS, AND COMPONENTS IMPORTANT TO SAFETY SHALL BE DESIGNED AND LOCATED TO MINIMIZE, CONSISTANT WITH OTHER SAFETY REQUIREMENTS, THE PROBABILITY AND EFFECT OF FIRES AND EXPLOSIONS.	SAFETY TRAINS ARE SEPARATED TO PRECLUDE FIRE OR EXPLOSION FROM RENDERING BOTH TRAINS INOPERABLE. FIRE BARRIERS SEPARATE SAFETY EQUIPMENT FROM OTHER HAZARDS, WHERE APPROPRIATE.
• NONCOMBUSTIBLE AND HEAT RESISTANT MATERIALS SHALL BE USED WHEREVER PRACTICAL THROUGHOUT THE UNIT, PARTICULARLY IN LOCATIONS SUCH AS CONTAINMENT AND CONTROL ROOM.	COMBUSTIBLES STORAGE IS MINIMIZED. NON-COMBUSTIBLES ARE USED, WHERE PRACTICABLE, THROUGHOUT PVNGS.
• FIRE DETECTION AND FIGHTING SYSTEMS OF APPROPRIATE CAPACITY AND CAPABILITY SHALL BE PROVIDED AND DESIGNED TO MINIMIZE THE ADVERSE EFFECTS OF FIRES ON STRUCTURES, SYSTEMS, AND COMPONENTS IMPORTANT TO SAFETY.	FIRE SUPPRESSION SYSTEMS ARE SIZED FOR THE LARGEST HAZARD. DETECTION SYSTEMS PROVIDE BACKUP.

EXHIBIT 4A-2

GENERAL DESIGN CRITERION 3

REQUIREMENT	DESIGN FEATURE
• FIRE FIGHTING SYSTEMS SHALL BE DESIGNED TO ASSURE THAT THEIR RUPTURE OR INADVERTENT OPERATION DOES NOT SIGNIFICANTLY IMPAIR THE SAFETY CAPABILITY OF THESE STRUCTURES, SYSTEMS, AND COMPONENTS.	SAFETY RELATED AREAS ARE PRECLUDED FROM FLOODING BY CLASS 1E LEVEL DETECTORS AND PRE-ACTION SYSTEMS; ALL PIPE SUPPORTS ARE SEISMIC CATEGORY IX IN SAFETY-RELATED AREAS. SUPPRESSION SYSTEMS ARE CROSS-ZONED TO PRECLUDE SPURIOUS ACTUATION.

GENERAL DESIGN CRITERION 5, SHARED SYSTEMS

• STRUCTURES, SYSTEMS, AND COMPONENTS IMPORTANT TO SAFETY SHALL NOT BE SHARED BETWEEN NUCLEAR POWER UNITS UNLESS IT IS SHOWN THAT THEIR ABILITY TO PERFORM THEIR SAFETY FUNCTIONS, INCLUDING, IN THE EVENT OF AN ACCIDENT IN ONE UNIT, AN ORDERLY SHUTDOWN AND COOLDOWN OF THE REMAINING UNITS.	NO SAFETY RELATED SYSTEMS ARE SHARED BETWEEN PVNGS UNITS. THE FIRE PROTECTION SYSTEM IS NOT SAFETY-RELATED.

SRP ACCEPTANCE CRITERIA

REGULATORY GUIDE 1.78, CONTROL ROOM HABITABILITY

REQUIREMENT	DESIGN FEATURE
• FIRE-FIGHTING EQUIPMENT USED FOR FIGHTING CHEMICAL AND ELECTRICAL FIRES SHOULD BE CONSIDERED AS A POTENTIAL SOURCE OF HAZARDOUS CHEMICALS FOR CONTROL ROOM HABITABILITY.	PVNGS SUPPRESSIONS SYSTEMS UTILIZE LIQUID CARBON DIOXIDE, HALON 1301, AND PORTABLE EXTINGUISHERS. SEVEN AND ONE-HALF (7.5) TONS OF LIQUID CARBON DIOXIDE IS STORED AT EACH UNIT, WEST OF THE RADWASTE BUILDING. AN INSTANTANEOUS RUPTURE WILL NOT DECREASE THE CONTROL ROOM HABITABILITY DUE TO VAPORIZATION TIME AND DISTANCE TO THE CONTROL BUILDING AIR INTAKES. PORTABLE EXTINGUISHERS LOCATED IN THE CONTROL ROOM DO NOT CONTAIN SUFFICIENT MATERIAL TO AFFECT HABITABILITY. APPROXIMATELY 180 LBS. OF HALON 1301 IS STORED IN THE CONTROL ROOM AREA FOR FIRE SUPPRESSION IN THE COMPUTER ROOM TO PROVIDE A 6% BY WEIGHT CONCENTRATION. HALON IS BREATHABLE AT THIS CONCENTRATION FOR APPROXIMATELY 5 MINUTES. SHOULD THE ENTIRE HALON 1301 CHARGE BE RELEASED INTO THE CONTROL ROOM, IT WOULD RESULT IN A

REGULATORY GUIDE 1.78

REQUIREMENT	DESIGN FEATURE
	CONCENTRATION OF APPROXIMATELY 1% IN THE 80' X 62' X 9' MAIN CONTROL ROOM (EXCLUSIVE OF THE COMPUTER ROOM). THE CONTINUED EXPOSURE LEVEL IS 0.1%. HALON IS CLASSIFIED BY UL IN GROUP 6 - THE LEAST TOXIC. TEST ANIMALS CAN BE EXPOSED TO 20% CONCENTRATIONS FOR 2 HOURS WITHOUT INJURY.

REGULATORY GUIDE 1.101, EMERGENCY PLANNING

• PREPARE EMERGENCY PLANS AND CLASSIFY POTENTIAL EMERGENCIES.	IN COMPLIANCE.

APPENDIX A

REQUIREMENT	DESIGN FEATURE
A. OVERALL REQUIREMENTS OF NUCLEAR PLANT FIRE PROTECTION PROGRAM	
1. PERSONNEL	
RESPONSIBILITY FOR THE OVERALL FIRE PROTECTION PROGRAM SHOULD BE ASSIGNED TO A DESIGNATED PERSON IN THE UPPER LEVEL OF MANAGEMENT. THE QUALIFICATION REQUIREMENTS FOR THE FIRE PROTECTION ENGINEER OR CONSULTANT WHO WILL ASSIST IN THE DESIGN AND SELECTION OF EQUIPMENT, INSPECT AND TEST THE COMPLETED PHYSICAL ASPECTS OF THE SYSTEM, DEVELOP THE FIRE PROTECTION PROGRAM, AND ASSIST IN THE FIRE-FIGHTING TRAINING FOR THE OPERATING PLANT SHOULD BE STATED.	PVNGS WILL COMPLY, AND THE RESPONSIBILITY FOR THE OVERALL FIRE PROTECTION PROGRAM WILL BE ASSIGNED TO THE PVNGS PLANT MANAGER. A COMPLETE DESCRIPTION OF THE TRAINING AND PERSONNEL ASSIGNMENT FOR FIRE PROTECTION STAFF WILL BE OUTLINED IN THE PVNGS FSAR. THE A&E FOR PVNGS WILL UTILIZE A "FIRE PROTECTION ENGINEER" TO ASSIST IN THE DESIGN AND SELECTION OF EQUIPMENT AND DEVELOP THE FIRE PROTECTION PROGRAM IN

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
	GENERAL. THIS "FIRE PROTECTION ENGINEER" HAS THE FOLLOWING QUALIFICATIONS: • REGISTERED AS A PROFESSIONAL ENGINEER IN THE STATE OF CALIFORNIA (FIRE PROTECTION DISCIPLINE) • MEMBER OF SOCIETY OF FIRE PROTECTION ENGINEERS
THE FIRE PROTECTION STAFF SHOULD BE RESPONSIBLE FOR: (A) COORDINATION OF BUILDING LAYOUT AND SYSTEMS DESIGN WITH FIRE AREA REQUIREMENTS, (B) DESIGN AND MAINTENANCE OF FIRE DETECTION, SUPPRESSION, AND EXTINGUISHING SYSTEMS, (C) FIRE PREVENTION ACTIVITIES,	IN COMPLIANCE.

REQUIREMENT	DESIGN FEATURE
(D) TRAINING AND MANUAL FIRE-FIGHTING ACTIVITIES OF PLANT PERSONNEL AND THE FIRE BRIGADE.	
2. <u>DESIGN BASES</u>	
THE OVERALL FIRE PROTECTION PROGRAM SHOULD BE BASED UPON EVALUATION OF POTENTIAL FIRE HAZARDS THROUGHOUT THE PLANT AND MAINTAINING THE ABILITY TO PERFORM SAFETY SHUTDOWN FUNCTIONS AND MINIMIZE RADIOACTIVE RELEASES TO THE ENVIRONMENT.	PVNGS WILL COMPLY; AND THE EVALUATION OF EACH APPLICABLE FIRE HAZARD HAS BEEN PERFORMED.
3. <u>BACKUP</u>	
TOTAL RELIANCE SHOULD NOT BE PLACED ON A SINGLE AUTOMATIC FIRE SUPPRESSION SYSTEM. APPROPRIATE BACKUP FIRE SUPPRESSION CAPABILITY SHOULD BE PROVIDED.	PVNGS WILL COMPLY BY PROVIDING HOSE STATIONS AND PORTABLE EXTINGUISHERS AS THE BACKUP SUPPRESSION CAPABILITY FOR EACH HAZARD THROUGHOUT THE PLANT.

REQUIREMENT	DESIGN FEATURE
4. SINGLE FAILURE CRITERION	
A SINGLE FAILURE IN THE FIRE SUPPRESSION SYSTEM SHOULD NOT IMPAIR BOTH THE PRIMARY AND BACKUP FIRE SUPPRESSION CAPABILITY.	PVNGS WILL COMPLY WITH THE "SINGLE FAILURE CRITERION" BASED ON THE DEFINITION OF "BACKUP" FIRE SUPPRESSION BEING INTERPRETED AS FOLLOWS FOR EACH SPECIFIC HAZARD: • FOR HAZARDS WHICH DEPEND UPON WATER AS BOTH PRIMARY AND BACKUP SUPPRESSION, PVNGS HAS REDUNDANT FIRE WATER PUMPS WITH INDEPENDENT POWER SUPPLIES. PIPING BETWEEN FIRE PUMPS AND ANY OF THE SEVERAL BUILDINGS WITHIN THE PLANT IS ROUTED SUCH THAT TWO SEPARATE PATHS EXIST, WITH SECTIONAL VALVES LOCATED SUCH THAT A FAILURE IN EITHER PATH CAN BE ISOLATED. • FOR ANY BUILDING WHICH LOSES INTERNAL FIRE WATER PROTECTION DUE TO A SINGLE FAILURE OF FIRE WATER PIPING WITHIN THE BUILDING, BACKUP SUPPRESSION CAPABILITY WILL BE AVAILABLE FROM OUTSIDE HYDRANTS AND INSIDE PORTABLE EXTINGUISHERS.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
	• SPECIFICALLY FOR THE TURBINE BUILDING, A SINGLE FAILURE OF ANY FIRE WATER PIPING WILL STILL ALLOW FULL COVERAGE OF ANY AREA BY EITHER AUTOMATIC SPRINKLER SYSTEMS OR BY INTERNAL FIRE WATER HOSE STATIONS.
	• SPECIFICALLY FOR THE CONTROL BUILDING, A SINGLE FAILURE OF INTERNAL FIRE WATER PIPING WILL NOT IMPAIR BOTH AUTOMATIC SPRINKLER/SPRAY SYSTEMS AND ALL OF THE INTERNAL FIRE WATER HOSE STATIONS FOR ANY HAZARD AREA.
	• SPECIFICALLY FOR THE AUXILIARY BUILDING, A SINGLE FAILURE OF INTERNAL FIRE WATER PIPING WILL NOT IMPAIR THE SUPPRESSION CAPABILITY (EITHER AUTOMATIC OR MANUAL) OF BOTH TRAIN A AND TRAIN B.
THE EFFECTS OF LIGHTNING STRIKES SHOULD BE INCLUDED IN THE OVERALL PLANT FIRE PROTECTION PROGRAM.	PVNGS WILL MINIMIZE THE EFFECTS OF LIGHTNING STRIKES BY PROVIDING LIGHTNING PROTECTION FOR THE STRUCTURE THAT HAS BEEN APPROVED BY MASTER LABEL. ALL STARTUP

REQUIREMENT	DESIGN FEATURE
	TRANSFORMERS, MAIN TRANSFORMERS, AND 13.8 kV SWITCHGEAR WILL BE PROTECTED WITH APPROPRIATE LIGHTNING ARRESTERS.
5. FIRE SUPPRESSION SYSTEMS	
FAILURE OR INADVERTENT OPERATION OF THE FIRE SUPPRESSION SYSTEM SHOULD NOT INCAPACITATE SAFETY RELATED SYSTEMS OR COMPONENTS.	PVNGS WILL COMPLY WITH FIRE SUPPRESSION SYSTEMS IN SAFETY RELATED AREAS BY UTILIZING ONLY PRE-ACTION SPRINKLER SYSTEMS, CROSS-ZONED DETECTORS FOR WATER SPRAY SYSTEMS, OR HOSE STATIONS WITH MANUAL VALVES LOCATED OUTSIDE THE SAFETY RELATED AREA. ALL NORMALLY PRESSURIZED FIRE PROTECTION PIPING WILL BE ANALYZED PER APCSB BTP 3-1.
6. FUEL STORAGE AREA	
THE FIRE PROTECTION PROGRAM FOR BUILDINGS STORING NEW REACTOR FUEL AND FOR ADJACENT FIRE ZONES WHICH COULD AFFECT THE FUEL STORAGE ZONE SHOULD BE FULLY OPERATIONAL BEFORE FUEL IS RECEIVED AT THE SITE.	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
7. FUEL LOADING	
THE FIRE PROTECTION PROGRAM FOR AN ENTIRE REACTOR UNIT SHOULD BE FULLY OPERATIONAL PRIOR TO INITIAL FUEL LOADING IN THAT REACTOR UNIT.	PVNGS WILL COMPLY.
8. MULTIPLE-REACTOR SITES	
ON MULTIPLE-REACTOR SITES WHERE THERE ARE OPERATING REACTORS AND CONSTRUCTION OF REMAINING UNITS IS BEING COMPLETED, THE FIRE PROTECTION PROGRAM SHOULD PROVIDE CONTINUING EVALUATION AND INCLUDE ADDITIONAL FIRE BARRIERS, FIRE PROTECTION CAPABILITY, AND ADMINISTRATIVE CONTROLS NECESSARY TO PROTECT THE OPERATING UNITS FROM CONSTRUCTION FIRE HAZARDS.	PVNGS WILL COMPLY WITH THE EXCEPTION THAT NO ADDITIONAL FIRE BARRIERS BETWEEN ANY TWO UNITS WILL BE PROVIDED. THE BASIS FOR THIS EXCEPTION IS DUE TO THE FACT THAT EACH UNIT COMPLEX IS SEPARATED FROM ANY OTHER UNIT COMPLEX BY A DISTANCE OF APPROXIMATELY 500 FEET.
9. SIMULTANEOUS FIRES	
SIMULTANEOUS FIRES IN MORE THAN ONE REACTOR NEED NOT BE POSTULATED, WHERE	PVNGS WILL COMPLY DUE TO THE FACT THAT SEPARATION REQUIREMENTS ARE MET.

REQUIREMENT	DESIGN FEATURE
SEPARATION REQUIREMENTS ARE MET. A FIRE INVOLVING MORE THAN ONE REACTOR UNIT NEED NOT BE POSTULATED EXCEPT FOR FACILITIES SHARED BETWEEN UNITS.	
B. ADMINISTRATIVE PROCEDURES, CONTROLS AND FIRE BRIGADE	
1. ADMINISTRATIVE PROCEDURES CONSISTENT WITH THE NEED FOR MAINTAINING THE PERFORMANCE OF THE FIRE PROTECTION SYSTEM AND PERSONNEL IN NUCLEAR POWER PLANTS SHOULD BE PROVIDED.	PVNGS WILL COMPLY, AND ADMINISTRATIVE PROCEDURES FOR FIRE PROTECTION WILL BE PREPARED FOR PVNGS UTILIZING GUIDANCE FROM NFPA 4, 4A, 6, 7, 8, & 27 AS APPROPRIATE.
2. EFFECTIVE ADMINISTRATIVE MEASURES SHOULD BE IMPLEMENTED TO PROHIBIT BULK STORAGE OF COMBUSTIBLE MATERIALS INSIDE OR ADJACENT TO SAFETY RELATED BUILDINGS OR SYSTEMS DURING OPERATION OR MAINTENANCE PERIODS.	PVNGS WILL COMPLY.
3. NORMAL AND ABNORMAL CONDITIONS OR OTHER ANTICIPATED OPERATIONS SUCH AS MODIFICATIONS (E.G., BREAKING FIRE	PVNGS WILL COMPLY. NORMAL AND ABNORMAL CONDITIONS OR OTHER ANTICIPATED OPERATIONS/ MODIFICATIONS AND REFUELING ACTIVITIES WILL

REQUIREMENT	DESIGN FEATURE
STOPS, IMPAIRMENT OF FIRE DETECTION AND SUPPRESSION SYSTEMS) AND REFUELING ACTIVITIES SHOULD BE REVIEWED AND APPROPRIATE SPECIAL PROCEDURES SUCH AS FIRE WATCHES OR TEMPORARY FIRE BARRIERS IMPLEMENTED.	BE REVIEWED BY THE PLANT MANAGER OR HIS DESIGNATED ALTERNATIVE, AND APPROPRIATE SPECIAL ACTIONS AND PROCEDURES WILL BE IMPLEMENTED TO ASSURE ADEQUATE FIRE PROTECTION AND REACTOR SAFETY.
(A) WORK INVOLVING IGNITION SOURCES SUCH AS WELDING AND FLAME CUTTING SHOULD BE DONE UNDER CLOSELY CONTROLLED CONDITIONS. PROCEDURES GOVERNING SUCH WORK SHOULD BE REVIEWED AND APPROVED BY PERSONS TRAINED AND EXPERIENCED IN FIRE PROTECTION. IF THE ACTUAL WORKERS ARE NOT TRAINED IN FIRE PROTECTION, A QUALIFIED FIRE WATCH SHOULD BE SUPPLIED.	PVNGS WILL COMPLY.
(B) LEAK TESTING, AND SIMILAR PROCEDURES SUCH AS AIR FLOW DETERMINATION, SHOULD USE ONE OF THE COMMERCIALLY AVAILABLE AERESOL	PVNGS WILL COMPLY BY PROHIBITING OPEN FLAMES AND COMBUSTION GENERATED SMOKE FROM BEING USED FOR LEAK TESTING OR AIR FLOW TESTS.

REQUIREMENT	DESIGN FEATURE
TECHNIQUES. OPEN FLAMES OR COMBUSTION GENERATED SMOKE SHOULD NOT BE PERMITTED.	
(c) USE OF COMBUSTIBLE MATERIAL, E.G., HEPA AND CHARCOAL FILTERS, DRY ION EXCHANGE RESINS OR OTHER COMBUSTIBLE SUPPLIES, IN SAFETY RELATED AREAS SHOULD BE CONTROLLED.	PVNGS WILL COMPLY BY CONTROLLING THE USE OF COMBUSTIBLE MATERIAL IN SAFETY RELATED AREAS. USE OF WOOD INSIDE BUILDINGS CONTAINING SAFETY RELATED SYSTEMS OR EQUIPMENT WILL BE PERMITTED ONLY WHEN SUITABLE NON-COMBUSTIBLE SUBSTITUTES ARE NOT AVAILABLE. IF WOOD IS TO BE USED, ONLY FIRE RETARDANT TREATED WOOD (SCAFFOLDING, LAY DOWN BLOCKS) WILL BE PERMITTED. SUCH MATERIALS WILL BE ALLOWED INTO SAFETY RELATED AREAS ONLY WHEN THEY ARE TO BE USED IMMEDIATELY. THEIR POSSIBLE AND PROBABLE USE WAS NOT CONSIDERED IN THE "FIRE HAZARD ANALYSIS". DUE TO THE LACK OF DATA AVAILABLE AT THIS TIME THAT WOULD BE NECESSARY TO ACCURATELY ESTIMATE SUCH QUANTITIES OF WOOD.

REQUIREMENT	DESIGN FEATURE
4. NUCLEAR POWER PLANTS ARE FREQUENTLY LOCATED IN REMOTE AREAS, AT SOME DISTANCE FROM PUBLIC FIRE DEPARTMENTS, AND THEREFORE FIRE PROTECTION SYSTEMS SHOULD BE DESIGNED TO BE SELF-SUFFICIENT.	PVNGS WILL COMPLY BY PROVIDING A PLANT FIRE PROTECTION SYSTEM THAT IS DESIGNED TO BE SELF-SUFFICIENT. DUE TO THE EXTREME REMOTENESS OF PVNGS, THERE ARE NO PUBLIC FIRE DEPARTMENTS WHICH WILL PROVIDE BACKUP.
5. THE NEED FOR GOOD ORGANIZATION, TRAINING AND EQUIPPING OF FIRE BRIGADES REQUIRES EFFECTIVE MEASURES BE IMPLEMENTED.	PVNGS WILL COMPLY BY IMPLEMENTING EFFECTIVE MEASURES TO INSURE PROPER ORGANIZATION, TRAINING, AND EQUIPPING OF THE PLANT FIRE BRIGADE. THE GUIDANCE IN REGULATORY GUIDE 1.101, "EMERGENCY PLANNING FOR NUCLEAR POWER PLANTS," WILL BE FOLLOWED WHERE APPLICABLE.
(A) SUCCESSFUL FIRE FIGHTING REQUIRES TESTING AND MAINTENANCE OF THE FIRE PROTECTION EQUIPMENT, EMERGENCY LIGHTING AND COMMUNICATION, AS WELL AS PRACTICE AS BRIGADES FOR THE PEOPLE WHO MUST UTILIZE THE EQUIPMENT.	PVNGS WILL COMPLY BY DEVELOPING A TEST PLAN THAT LISTS THE INDIVIDUALS AND THEIR RESPONSIBILITIES IN CONNECTION WITH ROUTINE PLANT TESTS AND INSPECTIONS OF THE PLANT FIRE PROTECTION SYSTEM. THE TEST PLAN WILL CONTAIN THE TYPES, FREQUENCY AND DETAILED PROCEDURES FOR TESTING. PROCEDURES WILL CONTAIN INSTRUCTIONS ON MAINTAINING FIRE

REQUIREMENT	DESIGN FEATURE
	PROTECTION DURING THOSE PERIODS WHEN THE FIRE PROTECTION SYSTEM IS IMPAIRED OR DURING PERIODS OF PLANT MAINTENANCE.
(B) BASIC TRAINING IS A NECESSARY ELEMENT IN EFFECTIVE FIRE FIGHTING OPERATION. IN ORDER FOR A FIRE BRIGADE TO OPERATE EFFECTIVELY, IT MUST BE TRAINED AS A TEAM AND BE KNOWLEDGEABLE IN THE PLANT LAYOUT.	PVNGS WILL COMPLY BY PROVIDING APPROPRIATE TRAINING OF THE PLANT FIRE BRIGADE AS A TEAM OPERATION. ALL MEMBERS WILL BE INSTRUCTED IN WHAT THEIR INDIVIDUAL DUTIES ARE. THEY WILL BE FAMILIAR WITH THE LAYOUT OF THE PLANT AND EQUIPMENT LOCATION AND OPERATION IN ORDER TO PERMIT EFFECTIVE FIRE-FIGHTING OPERATIONS DURING TIMES WHEN A PARTICULAR AREA IS FILLED WITH SMOKE OR IS INSUFFICIENTLY LIGHTED. DRILLS WILL BE CONDUCTED ON A QUARTERLY BASIS AND WILL INCLUDE THE SIMULATED USE OF EQUIPMENT IN EACH AREA. DRILLS WILL BE PREPLANNED AND CRITIQUED TO ESTABLISH THE TRAINING OBJECTIVE AND TO DETERMINE HOW WELL THE OBJECTIVES HAVE BEEN MET. IF IN THE FUTURE IT IS FOUND THAT AN OFFSITE FIRE DEPARTMENT IS AVAILABLE FOR BACKUP, THE DRILLS WILL INCLUDE THEIR PARTICIPATION.

	REQUIREMENT	DESIGN FEATURE
6.	TO HAVE PROPER COVERAGE DURING ALL PHASES OF OPERATION, MEMBERS OF EACH SHIFT CREW SHOULD BE TRAINED IN FIRE PROTECTION.	PVNGS WILL COMPLY BY PROVIDING FIRE PROTECTION TRAINING FOR MEMBERS OF EACH SHIFT CREW. IF IN THE FUTURE, IT IS FOUND THAT AN OFFSITE FIRE DEPARTMENT IS AVAILABLE FOR BACKUP, THE TRAINING WILL BE COORDINATED WITH THEM.
7.	NFPA 27, "PRIVATE FIRE BRIGADE" SHOULD BE FOLLOWED IN ORGANIZATION, TRAINING, AND FIRE DRILLS. THIS STANDARD ALSO IS APPLICABLE FOR THE INSPECTION AND MAINTENANCE OF FIRE FIGHTING EQUIPMENT. IN ADDITION, COURSES IN FIRE PREVENTION AND FIRE SUPPRESSION WHICH ARE RECOGNIZED AND/OR SPONSORED BY THE FIRE PROTECTION INDUSTRY SHOULD BE UTILIZED.	IN COMPLIANCE. PVNGS WILL FOLLOW NFPA 27, "PRIVATE FIRE BRIGADE" WHERE APPLICABLE FOR ORGANIZATION, TRAINING, AND FIRE DRILLS. THE FOLLOWING DOCUMENTS WILL ALSO BE UTILIZED WHERE APPLICABLE: NFPA 194, "STANDARD FOR SCREW THREADS AND GASKETS FOR FIRE HOSE COUPLINGS," NFPA 196, "STANDARD FOR FIRE HOSE," NFPA 197, "TRAINING STANDARD ON INITIAL FIRE ATTACKS," NFPA 601, "RECOMMENDED MANUAL OF INSTRUCTIONS AND DUTIES FOR THE PLANT WATCHMAN ON GUARD." COURSES IN FIRE PROTECTION AND FIRE SUPPRESSION WHICH ARE RECOGNIZED AND/OR SPONSORED BY THE FIRE PROTECTION INDUSTRY WILL BE UTILIZED AS APPROPRIATE.

REQUIREMENT	DESIGN FEATURE
C. QUALITY ASSURANCE PROGRAM	
QUALITY ASSURANCE (QA) PROGRAMS OF APPLICANTS AND CONTRACTORS SHOULD BE DEVELOPED AND IMPLEMENTED TO ASSURE THAT THE REQUIREMENTS FOR THE FIRE PROTECTION PROGRAM FOR SAFETY RELATED AREAS ARE SATISFIED. QA PROGRAM CRITERIA THAT APPLY TO THE FIRE PROTECTION PROGRAM SHOULD INCLUDE THE FOLLOWING:	PVNGS WILL DEVELOP AND IMPLEMENT A QUALITY ASSURANCE PROGRAM FOR THE FIRE PROTECTION PROGRAM FOR SAFETY RELATED AREAS. THE PVNGS FIRE PROTECTION QA PROGRAM WILL INCLUDE THE FOLLOWING:
1. DESIGN CONTROL AND PROCUREMENT DOCUMENT CONTROL	
ASSURE THAT ALL DESIGN-RELATED GUIDELINES OF THE BRANCH TECHNICAL POSITION ARE INCLUDED IN DESIGN AND PROCUREMENT DOCUMENTS AND THAT DEVIATIONS THEREFROM ARE CONTROLLED.	PVNGS WILL COMPLY.
2. INSTRUCTIONS, PROCEDURES AND DRAWINGS	
INSPECTIONS, TESTS, ADMINISTRATIVE CONTROLS, FIRE DRILLS AND TRAINING	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
THAT GOVERN THE FIRE PROTECTION PROGRAM SHOULD BE PRESCRIBED BY DOCUMENTED INSTRUCTIONS.	
3. <u>CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES</u> MEASURES SHOULD BE ESTABLISHED TO ASSURE THAT PURCHASED MATERIAL, EQUIPMENT AND SERVICES CONFORM TO THE PROCUREMENT DOCUMENTS.	PVNGS WILL COMPLY BY REQUIRING EACH SUPPLIER/SUBCONTRACTOR TO FURNISH THE FOLLOWING DOCUMENTS FOR THEIR RESPECTIVE FIRE PROTECTION EQUIPMENT OR SERVICES: • CODE COMPLIANCE DOCUMENTS WHICH ARE PREPARED BY THE MANUFACTURER OR INSTALLER AND CERTIFIED BY THE AUTHORIZED CODE INSPECTOR. • PERFORMANCE TEST VERIFICATION REPORTS (WHERE APPLICABLE). • PRESSURE TEST VERIFICATION REPORTS (HYDRO, AIR, LEAK, OR VACUUM AS APPLICABLE).

REQUIREMENT	DESIGN FEATURE
	• CERTIFICATES OF COMPLIANCE FOR SHIPMENT. • MATERIAL CERTIFICATES OF COMPLIANCE (WHERE REQUIRED BY CODE).
4. INSPECTION A PROGRAM FOR INDEPENDENT INSPECTION OF ACTIVITIES AFFECTING FIRE PROTECTION SHOULD BE ESTABLISHED AND EXECUTED.	PVNGS WILL COMPLY BY UTILIZING THE AMERICAN NUCLEAR INSURORS (ANI) THE INDEPENDENT INSPECTION ORGANIZATION. ANI WILL BE INCLUDED IN THE APPROVAL CYCLE FOR ALL INSTALLATION DRAWINGS AND SYSTEM TESTS.
5. TEST AND TEST CONTROL A TEST PROGRAM SHOULD BE ESTABLISHED AND IMPLEMENTED TO ASSURE THAT TESTING IS PERFORMED AND VERIFIED BY INSPECTION AND AUDIT TO DEMONSTRATE CONFORMANCE WITH DESIGN AND SYSTEM READINESS REQUIREMENTS. THE TESTS SHOULD BE PERFORMED IN ACCORDANCE	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
WITH WRITTEN TEST PROCEDURES; TEST RESULTS SHOULD BE PROPERLY EVALUATED AND ACTED ON.	
6. INSPECTION, TEST AND OPERATING STATUS	
MEASURES SHOULD BE ESTABLISHED TO PROVIDE FOR THE IDENTIFICATION OF ITEMS THAT HAVE SATISFACTORILY PASSED REQUIRED TESTS AND INSPECTIONS.	PVNGS WILL COMPLY.
7. NON-CONFORMING ITEMS	
MEASURES SHOULD BE ESTABLISHED TO CONTROL ITEMS THAT DO NOT CONFORM TO SPECIFIED REQUIREMENTS TO PREVENT INADVERTENT USE OF INSTALLATION.	PVNGS WILL COMPLY.
8. CORRECTIVE ACTION	
MEASURES SHOULD BE ESTABLISHED TO ASSURE THAT CONDITIONS ADVERSE TO FIRE PROTECTION, SUCH AS FAILURES,	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
MALFUNCTIONS, DEFICIENCIES, DEVIATIONS, DEFECTIVE COMPONENTS, UNCONTROLLED COMBUSTIBLE MATERIAL AND NONCONFORMANCES ARE PROMPTLY IDENTIFIED, REPORTED AND CORRECTED.	
9. RECORDS	
RECORDS SHOULD BE PREPARED AND MAINTAINED TO FURNISH EVIDENCE THAT THE CRITERIA ENUMERATED ABOVE ARE BEING MET FOR ACTIVITIES AFFECTING THE FIRE PROTECTION PROGRAM.	PVNGS WILL COMPLY.
10. AUDITS	
AUDITS SHOULD BE CONDUCTED AND DOCUMENTED TO VERIFY COMPLIANCE WITH THE FIRE PROTECTION PROGRAM INCLUDING ALL THE ABOVE ITEMS.	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
D. GENERAL GUIDELINES FOR PLANT PROTECTION	
1. BUILDING DESIGN	
(A) PLANT LAYOUTS SHOULD BE ARRANGED TO:	
(1) ISOLATE SAFETY RELATED SYSTEMS FROM UNACCEPTABLE FIRE HAZARDS, AND	PVNGS WILL COMPLY BY USING FIRE-RATED ENCLOSURES TO ISOLATE SAFETY-RELATED EQUIPMENT FROM UNACCEPTABLE FIRE HAZARDS.
(2) SEPARATE REDUNDANT SAFETY RELATED SYSTEMS FROM EACH OTHER SO THAT BOTH ARE NOT SUBJECT TO DAMAGE FROM A SINGLE FIRE HAZARD.	IN COMPLIANCE IN THAT THE REQUIREMENTS OF 10CFR50, APPENDIX R, ARE SATISFIED. WHERE MECHANICAL EQUIPMENT FOR REDUNDANT SAFETY RELATED SYSTEMS IS NOT SEPARATED BY "RATED" FIRE BARRIERS, THE USE OF SPATIAL SEPARATION IN CONJUNCTION WITH WALLS OF HEAVY CONCRETE CONSTRUCTION IS EMPLOYED. AN AREA BY AREA DESCRIPTION OF THE SEPARATION OF REDUNDANT SAFETY RELATED EQUIPMENT IS PROVIDED IN THE PVNGS "FIRE PROTECTION EVALUATION REPORT" (FPER).

SRP ACCEPTANCE CRITERIA

	REQUIREMENT	DESIGN FEATURE
(B)	IN ORDER TO ACCOMPLISH 1.(A) ABOVE, SAFETY RELATED SYSTEMS AND FIRE HAZARDS SHOULD BE IDENTIFIED THROUGHOUT THE PLANT. THEREFORE, A DETAILED FIRE HAZARD ANALYSIS SHOULD BE MADE. THE FIRE HAZARDS ANALYSIS SHOULD BE REVIEWED AND UPDATED AS NECESSARY.	PVNGS WILL COMPLY. THE FPER IDENTIFIES ALL AREAS CONTAINING SAFETY RELATED EQUIPMENT. THE FPER WILL BE REVIEWED AND UPDATED AS NECESSARY.
(C)	FOR MULTIPLE REACTOR SITES, CABLE SPREADING ROOMS SHOULD NOT BE SHARED BETWEEN REACTORS.	PVNGS WILL COMPLY BY UTILIZING TWO SEPARATE CABLE SPREADING ROOMS FOR EACH REACTOR, AND EACH ROOM WILL BE SEPARATED FROM OTHER AREAS OF THE PLANT BY THREE-HOUR RATED BARRIERS.
(D)	INTERIOR WALL AND STRUCTURAL COMPONENTS, THERMAL INSULATION MATERIALS AND RADIATION SHIELDING MATERIALS AND SOUND PROOFING SHOULD BE NON-COMBUSTIBLE.	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
(E) METAL DECK ROOF CONSTRUCTION SHOULD BE NON-COMBUSTIBLE.	IN COMPLIANCE.
(F) SUSPENDED CEILINGS AND THEIR SUPPORTS SHOULD BE OF NON-COMBUSTIBLE CONSTRUCTION. CONCEALED SPACES SHOULD BE DEVOID OF COMBUSTIBLES.	IN COMPLIANCE.
(G) HIGH VOLTAGE - HIGH AMPERAGE TRANSFORMERS INSTALLED INSIDE BUILDINGS CONTAINING SAFETY RELATED SYSTEMS SHOULD BE OF THE DRY TYPE OR INSULATED AND COOLED WITH NON-COMBUSTIBLE LIQUID.	IN COMPLIANCE.
(H) BUILDINGS CONTAINING SAFETY RELATED SYSTEMS SHOULD BE PROTECTED FROM EXPOSURE OR SPILL FIRES INVOLVING OIL FILLED TRANSFORMERS BY LOCATING SUCH TRANSFORMERS AT LEAST 50 FEET DISTANT.	IN COMPLIANCE.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
(1) FLOOR DRAINS, SIZED TO REMOVE EXPECTED FIRE FIGHTING WATER FLOW SHOULD BE PROVIDED IN THOSE AREAS WHERE FIXED WATER FIRE SUPPRESSION SYSTEMS ARE INSTALLED OR WHERE HAND HOSE LINES MAY BE USED. EQUIPMENT SHOULD BE INSTALLED ON PEDESTALS. DRAINS IN AREAS CONTAINING COMBUSTIBLE LIQUIDS SHOULD HAVE PROVISIONS FOR PREVENTING THE SPREAD OF THE FIRE THROUGHOUT THE DRAIN SYSTEM. WATER DRAINAGE FROM AREAS WHICH MAY CONTAIN RADIOACTIVITY SHOULD BE SAMPLED AND ANALYZED BEFORE DISCHARGE TO THE ENVIRONMENT.	• PVNGS WILL COMPLY WITH FLOOR DRAINS FOR ALL AREAS WHICH PRESENTLY ARE COMMITTED TO FIXED SPRINKLER AND SPRAY SYSTEMS. DRAINS ARE ALSO PROVIDED IN OTHER AREAS WHERE HAND HOSES ARE THE PRIMARY SOURCE OF FIRE PROTECTION. • ALL EQUIPMENT WILL BE INSTALLED ON PEDESTALS WITH THE EXCEPTION OF ELECTRICAL SWITCHGEAR AND CONTROL ROOM EQUIPMENT. ALL PORTIONS OF THE SWITCHGEAR WHICH IS SUSCEPTIBLE TO WATER DAMAGE IS ELEVATED APPROXIMATELY 6 INCHES ABOVE THEIR RESPECTIVE FLOORS. • DRAIN LINES FOR THE TURBINE-GENERATOR LUBE OIL STORAGE ROOM AND DIESEL FUEL OIL DAY TANK ROOM ARE EQUIPPED WITH A SHUT-OFF VALVE TO PREVENT THE SPREAD OF FIRE THROUGHOUT THE DRAIN SYSTEM. • DRAINAGE FOR ALL AREAS THAT MAY CONTAIN RADIOACTIVITY IS MONITORED BEFORE DISCHARGE TO THE ENVIRONMENT.

REQUIREMENT	DESIGN FEATURE
(J) FLOORS, WALLS AND CEILINGS ENCLOSING SEPARATE FIRE AREAS SHOULD HAVE MINIMUM FIRE RATING OF THREE HOURS. ALL PENETRATIONS IN THESE FIRE BARRIERS SHOULD BE RATED AT LEAST EQUAL TO THAT OF THE FIRE BARRIER ITSELF. DOOR OPENINGS SHOULD BE PROTECTED WITH EQUIVALENT RATED DOORS. SUCH DOORS SHOULD BE NORMALLY CLOSED AND LOCKED OR ALARMED WITH ALARM AND ANNUNCIATION IN THE CONTROL ROOM. PENETRATIONS FOR VENTILATION SYSTEM SHOULD BE PROTECTED BY A STANDARD "FIRE DOOR DAMPER" WHERE REQUIRED.	THE REQUIREMENTS OF 10CFR50, APPENDIX R ARE MET.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
2. CONTROL OF COMBUSTIBLES	
(A) SAFETY RELATED SYSTEMS SHOULD BE ISOLATED OR SEPARATED FROM COMBUSTIBLE MATERIALS. PROTECTION MAY INVOLVE A COMBINATION OF AUTOMATIC FIRE SUPPRESSION, AND CONSTRUCTION CAPABLE OF WITHSTANDING AND CONTAINING A FIRE THAT CONSUMES ALL COMBUSTIBLES PRESENT. EXAMPLES OF COMBUSTIBLE MATERIALS THAT MAY NOT BE SEPARABLE FROM THE REMAINDER OF ITS SYSTEM ARE:	• FOR DIESEL GENERATOR SYSTEM, PVNGS WILL COMPLY BY PROVIDING SEPARATE ENCLOSURES FOR DIESEL GENERATOR DAY TANKS, EACH WITH THREE-HOUR RATED BARRIERS. • FOR TURBINE-GENERATOR LUBE OIL STORAGE AND CONDITIONING, A SEPARATE TWO-HOUR RATED ENCLOSURE IS PROVIDED. IT SHOULD BE NOTED THAT THE TURBINE-GENERATOR IS NOT CONSIDERED A "SAFETY RELATED" SYSTEM.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
(1) EMERGENCY DIESEL GENERATOR FUEL OIL DAY TANKS (2) TURBINE-GENERATOR OIL AND HYDRAULIC CONTROL FLUID SYSTEMS (3) REACTOR COOLANT PUMP LUBE OIL SYSTEM	• FOR HYDRAULIC CONTROL FLUID SYSTEMS, NO PROVISIONS ARE MADE FOR SEPARATION, AS THIS FLUID WILL HAVE A HIGH AUTO-IGNITION POINT OF 1150°F. • FOR REACTOR COOLANT PUMP LUBE OIL SYSTEM, PROVISIONS ARE PROVIDED TO CHANNEL OIL LEAKAGE AWAY FROM HOT SURFACES OF THE PUMPS, PER 10CFR50 APPENDIX R. • FOR OTHER SAFETY RELATED SYSTEMS WHERE ONLY CLASS A AND CLASS B COMBUSTIBLES ARE INVOLVED AND WHERE IT IS NOT POSSIBLE TO ISOLATE THE EQUIPMENT FROM THE COMBUSTIBLES, THE FPER HAS SHOWN THAT A DESIGN BASIS FIRE WILL NOT CAUSE SERIOUS CONSEQUENCES. • FOR SAFETY RELATED SYSTEMS (SUCH AS REACTOR TRIP SWITCHGEAR, PLANT PROTECTION SYSTEM CABINET, OR THE CONTROL ELEMENT DRIVE MECHANISM PANEL) WHERE ONLY CLASS C FIRES WOULD BE INVOLVED

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
	AND WHERE IT IS NOT POSSIBLE TO SEPARATE ELECTRICAL EQUIPMENT FROM THE COMBUSTIBLES, PVNGS WILL UTILIZE EQUIPMENT THAT MEETS REGULATORY GUIDE 1.75.
(B) BULK STORAGE OF EXPLOSIVE GAS SHOULD NOT BE PERMITTED INSIDE STRUCTURES HOUSING SAFETY-RELATED EQUIPMENT. STORAGE OF FLAMMABLE GAS SUCH AS HYDROGEN, SHOULD BE LOCATED OUTDOORS OR IN SEPARATE DETACHED BUILDINGS.	• PVNGS WILL COMPLY BY NOT PERMITTING BULK STORAGE OF EXPLOSIVE GASES INSIDE BUILDINGS HOUSING SAFETY RELATED EQUIPMENT.
	• PVNGS WILL COMPLY WITH STORAGE OF HYDROGEN.
CARE SHOULD BE TAKEN TO LOCATE HIGH PRESSURE GAS STORAGE CONTAINERS WITH THE LONG AXIS PARALLEL TO BUILDING WALLS.	• PVNGS WILL COMPLY WITH PROPER ORIENTATION OF ALL HIGH PRESSURE GAS STORAGE CONTAINERS.
USE OF COMPRESSED GASES (ESPECIALLY FLAMMABLE AND FUEL GASES) INSIDE BUILDINGS SHOULD BE CONTROLLED.	• PVNGS WILL COMPLY WITH USAGE OF COMPRESSED GASES INSIDE BUILDINGS BY COMPLYING WITH NFPA 6.

REQUIREMENT	DESIGN FEATURE
(c) THE USE OF PLASTIC MATERIALS SHOULD BE MINIMIZED. IN PARTICULAR, HALOGINATED PLASTICS SUCH AS POLYVINYL CHLORIDE (PVC) AND NEOPRENE SHOULD BE USED ONLY WHEN SUBSTITUTE NON-COMBUSTIBLE MATERIALS ARE NOT AVAILABLE.	PVNGS WILL COMPLY BY MINIMIZING THE USE OF HALOGENATED PLASTIC MATERIALS. THE TOTAL USAGE WITHIN BUILDINGS OF HALOGENATED PLASTICS (PVC) THROUGHOUT THE PLANT WILL BE LIMITED TO THE FOLLOWING APPLICATIONS: • APPROXIMATELY 200 FEET OF 1-1/2 INCH DIAMETER CPVC PIPE IN EACH TURBINE BUILDING FOR THE CONDENSATE POLISHING SYSTEM. (NOTE THAT THIS AREA/BUILDING DOES NOT CONTAIN ANY SAFETY RELATED SYSTEMS NOR ANY RADIOACTIVE MATERIAL.) • APPROXIMATELY 200 FEET OF 6-INCH DIAMETER CPVC IN EACH TURBINE BUILDING FOR GUARD PIPING IN CONDENSATE POLISHING SYSTEM. (NOTE THAT THIS AREA/BUILDING DOES NOT CONTAIN ANY SAFETY RELATED SYSTEMS NOR ANY RADIOACTIVE MATERIAL.) • APPROXIMATELY 100 FEET OF 2-INCH DIAMETER PVC PIPE IN EACH RADWASTE BUILDING. (NOTE THAT THIS AREA DOES NOT CONTAIN ANY SAFETY RELATED SYSTEMS.)

REQUIREMENT

DESIGN FEATURE

THE TOTAL USAGE WITHIN BUILDINGS OF OTHER PLASTIC MATERIALS THROUGHOUT THE PLANT WILL BE LIMITED TO THE FOLLOWING APPLICATIONS:

- ONE 360 GALLON POLYPROPYLENE TANK IN EACH RADWASTE BUILDING. (NOTE THAT THIS BUILDING DOES NOT CONTAIN ANY SAFETY RELATED EQUIPMENT.)

- TWO 2500 GALLON POLYPROPYLENE TANKS IN EACH RADWASTE BUILDING. (NOTE THAT THIS BUILDING DOES NOT CONTAIN ANY SAFETY RELATED EQUIPMENT.)

- FOUR SAFETY-RELATED BATTERY CASINGS IN EACH CONTROL BUILDING AT ELEVATION 100 FT. (TOTAL WEIGHT OF PLASTIC CASINGS FOR EACH CONTROL BUILDING IS APPROXIMATELY 8,500 POUNDS OF STYRENE ACRYLONITRILE).

- TWO NON-SAFETY RELATED BATTERY CASINGS IN EACH TURBINE BUILDING (TOTAL WEIGHT

REQUIREMENT	DESIGN FEATURE
	OF PLASTIC CASINGS FOR EACH TURBINE BUILDING IS APPROXIMATELY 9,500 POUNDS OF STYRENE ACRYLONITRILE).
(D) STORAGE OF FLAMMABLE LIQUIDS SHOULD, AS A MINIMUM, COMPLY WITH THE REQUIREMENTS OF NFPA 30, "FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE."	PVNGS WILL COMPLY.
3. <u>ELECTRIC CABLE CONSTRUCTION, CABLE TRAYS AND CABLE PENETRATIONS</u>	
(A) ONLY NON-COMBUSTIBLE MATERIALS SHOULD BE USED FOR CABLE TRAY CONSTRUCTION.	PVNGS WILL COMPLY BY USING ONLY METAL CABLE TRAYS.
(B) SEE SECTION F.3 FOR FIRE PROTECTION GUIDELINES FOR CABLE SPREADING ROOMS.	(SEE SECTION F.3 FOR PVNGS POSITION)

	REQUIREMENT	DESIGN FEATURE
(c)	AUTOMATIC WATER SPRINKLER SYSTEMS SHOULD BE PROVIDED FOR CABLE TRAYS OUTSIDE THE CABLE SPREADING ROOM. CABLES SHOULD BE DESIGNED TO ALLOW WETTING DOWN WITH DELUGE WATER WITHOUT ELECTRICAL FAULTING. MANUAL HOSE STATIONS AND PORTABLE HAND EXTINGUISHERS SHOULD BE PROVIDED AS BACKUP. SAFETY RELATED EQUIPMENT IN THE VICINITY OF SUCH CABLE TRAYS, THAT DOES NOT ITSELF REQUIRE WATER FIRE PROTECTION, BUT IS SUBJECT TO UNACCEPTABLE DAMAGE FROM SPRINKLER WATER DISCHARGE, SHOULD BE PROTECTED FROM SPRINKLER SYSTEM OPERATION OR MALFUNCTION.	PVNGS WILL COMPLY BY PROVIDING AUTOMATIC WATER SPRINKLER SYSTEMS FOR CABLE TRAYS IN THE WEST CORRIDOR AND EAST CORRIDOR, AT 100 FT. ELEVATION, OF THE AUXILIARY BLDG. BY PROVIDING AUTOMATIC WATER SPRINKLERS IN THE WEST AND EAST CORRIDORS, AT 120 FT. ELEVATION IN THE AUXILIARY BLDG. PVNGS WILL ALSO PROVIDE AUTOMATIC WATER SPRINKLER SYSTEM IN AREAS OF 3 OR MORE CABLE TRAYS AT 100 FT ELEVATION, IN THE TURBINE BLDG. ALL CABLE TRAYS WITHIN THE PLANT WILL BE ACCESSIBLE TO MANUAL HOSE STATIONS THAT WILL BE EQUIPPED WITH CLASS C HOSE NOZZLES.
(D)	CABLE AND CABLE TRAY PENETRATION OF FIRE BARRIERS SHOULD BE SEALED TO GIVE PROTECTION AT LEAST EQUIVALENT TO THAT FIRE	PVNGS WILL COMPLY WITH ALL REQUIREMENTS OF CABLE PENETRATION BARRIERS PENDING THE APPROVAL OF SEALING PROCEDURE FOR THE PENETRATIONS.

	REQUIREMENT	DESIGN FEATURE
	BARRIER. THE DESIGN SHOULD MEET THE REQUIREMENTS OF ASTM E-119, "FIRE TEST OF BUILDING CONSTRUCTION AND MATERIALS," INCLUDING THE HOSE STREAM TEST.	
(E)	FIRE BREAKS SHOULD BE PROVIDED AS DEEMED NECESSARY BY THE FPER. FLAME OR FLAME RETARDANT COATINGS MAY BE USED AS A FIRE BREAK FOR GROUPED ELECTRICAL CABLES TO LIMIT SPREAD OF FIRE IN CABLE VENTINGS.	PVNGS WILL COMPLY BY PROVIDING FIRE BREAKS EVERY 20 FEET IN HORIZONTAL TRAYS THAT ARE COVERED. FIRE BREAKS FOR UNCOVERED HORIZONTAL TRAYS WILL NOT BE PROVIDED WITHIN ANY GIVEN AREA. FOR VERTICAL TRAYS WHICH PASS THROUGH NON-RATED FLOORS OR CEILINGS, FIRE BREAKS WILL BE PROVIDED AT EVERY LEVEL OR AT A MINIMUM VERTICAL DISTANCE OF 20 FEET. FOR VERTICAL TRAYS WHICH PASS THROUGH RATED FLOORS OR CEILINGS, FIRE BARRIERS THAT EQUAL OR EXCEED THE RATING OF THE FLOOR PENETRATED WILL BE PROVIDED.
(F)	ELECTRIC CABLE CONSTRUCTIONS SHOULD AS A MINIMUM PASS THE CURRENT IEEE NO. 383 FLAME TEST.	IN COMPLIANCE WITH THE EXCEPTION OF LIGHTING AND COMMUNICATIONS CABLES.

REQUIREMENT	DESIGN FEATURE
(G) TO THE EXTENT PRACTICAL, CABLE CONSTRUCTION THAT DOES NOT GIVE OFF CORROSIVE GASES WHILE BURNING SHOULD BE USED.	IN COMPLIANCE.
(H) CABLE TRAYS, RACEWAYS, CONDUIT, TRENCHES, OR CULVERTS SHOULD BE USED ONLY FOR CABLES.	PVNGS WILL COMPLY.
(I) THE DESIGN OF CABLE TUNNELS, CULVERTS AND SPREADING ROOMS SHOULD PROVIDE FOR AUTOMATIC OR MANUAL SMOKE VENTING AS REQUIRED TO FACILITATE MANUAL FIRE FIGHTING CAPABILITY.	PVNGS WILL COMPLY BY PROVIDING FOR MANUALLY ACTUATED SMOKE VENTING FOR CABLE SPREADING ROOMS. PVNGS DOES NOT UTILIZE ANY UNDERGROUND CABLE TUNNELS OR CABLE CULVERTS FOR SAFETY RELATED CABLING.
(J) CABLES IN THE CONTROL ROOM SHOULD BE KEPT TO THE MINIMUM NECESSARY FOR OPERATION OF THE CONTROL ROOM. ALL CABLES ENTERING THE CONTROL ROOM SHOULD TERMINATE THERE. CABLES SHOULD NOT BE INSTALLED IN FLOOR TRENCHES OR CULVERTS IN THE CONTROL ROOM.	IN COMPLIANCE. FURTHER, CONCEALED FLOOR AND CEILING SPACES WILL NOT BE USED IN THE ENTIRE PLANT FOR CABLES.

REQUIREMENT	DESIGN FEATURE
4. VENTILATION	
(A) SMOKE AND CORROSIVE GASES SHOULD GENERALLY BE AUTOMATICALLY DISCHARGED DIRECTLY OUTSIDE TO A SAFE LOCATION. SMOKE AND GASES CONTAINING RADIOACTIVE MATERIALS SHOULD BE MONITORED IN THE FIRE AREA TO DETERMINE IF RELEASE TO THE ENVIRONMENT IS WITHIN THE PERMISSIBLE LIMITS.	IN COMPLIANCE. VENTILATION SYSTEMS FOR THE CONTAINMENT BUILDING, AUXILIARY BUILDING, FUEL BUILDING, AND RADWASTE BUILDING ARE MONITORED FOR RADIOACTIVITY CONTINUOUSLY. THE TURBINE BUILDING AND CONTROL BUILDING HAVE NO SIGNIFICANT RADIOACTIVE SOURCES, AND THE SMOKE EXHAUSTS ARE NOT MONITORED.
(B) ANY VENTILATION SYSTEM DESIGNED TO EXHAUST SMOKE OR CORROSIVE GASES SHOULD BE EVALUATED TO ENSURE THAT INADVERTENT OPERATION OR SINGLE FAILURES WILL NOT VIOLATE THE CONTROLLED AREAS OF THE PLANT DESIGN.	IN COMPLIANCE.
(C) THE POWER SUPPLY AND CONTROLS FOR MECHANICAL VENTILATION SYSTEMS SHOULD BE RUN OUTSIDE THE FIRE AREA SERVED BY THE SYSTEM.	ROUTING FOR POWER SUPPLY CABLES WILL BE OUTSIDE THE FIRE AREA SERVED EXCEPT WHEN VENTILATION FAN MOTORS ARE LOCATED WITHIN THE FIRE AREA.

REQUIREMENT	DESIGN FEATURE
(D) FIRE SUPPRESSION SYSTEMS SHOULD BE INSTALLED TO PROTECT CHARCOAL FILTERS.	PVNGS WILL MEET THE REVISED REQUIREMENTS OF REG. GUIDE 1.52 BY PROVIDING AN ANALYSIS TO SHOW THAT THE CHARCOAL FILTERS DO NOT REQUIRE AUTOMATIC SPRAY SYSTEMS. ALL CHARCOAL FILTERS WILL BE PROVIDED WITH INTERNAL SPRAY NOZZLES WITH AN OUTSIDE CONNECTION.
(E) THE FRESH AIR SUPPLY INTAKES TO AREAS CONTAINING SAFETY RELATED EQUIPMENT OR SYSTEMS SHOULD BE LOCATED REMOTE FROM THE EXHAUST AIR OUTLETS AND SMOKE VENTS OF OTHER FIRE AREAS.	IN COMPLIANCE.
(F) STAIRWELLS SHOULD BE DESIGNATED TO MINIMIZE SMOKE INFILTRATION DURING A FIRE. STAIRCASES SHOULD SERVE AS ESCAPE ROUTES AND ACCESS ROUTES FOR FIRE FIGHTING. FIRE EXIT ROUTES SHOULD BE CLEARLY MARKED. STAIRWELLS, ELEVATORS AND CHUTES SHOULD BE ENCLOSED IN	PVNGS STAIRWELLS WILL HAVE TWO-HOUR RATED ENCLOSURES IN SAFETY RELATED AREAS WITH THE EXCEPTION OF THE CONTAINMENT BUILDING, WHICH HAS OPEN STAIRWELLS. ESCAPE AND ACCESS ROUTES WILL BE ESTABLISHED AND PRACTICED IN DRILLS. THIS DEPARTURE FROM THE THREE-HOUR MASONRY STAIRWELL REQUIREMENT IS BASED ON THE FACT THAT PVNGS IS PROVIDING MULTIPLE ACCESS/EGRESS POINTS

	REQUIREMENT	DESIGN FEATURE
	MASONRY TOWERS WITH MINIMIM FIRE RATING OF THREE HOURS AND AUTOMATIC FIRE DOORS AT LEAST EQUAL TO THE ENCLOSURE CONSTRUCTION, AT EACH OPENING INTO THE BUILDING. ELEVATORS SHOULD NOT BE USED DURING FIRE EMERGENCIES.	FOR ALL AREAS TO FACILITATE ALTERNATE ROUTES OF EITHER ACCESS OR ESCAPE. STAIRWELL AND EGRESS LOCATIONS AND THEIR ASSOCIATED FIRE RATED ENCLOSURES HAVE BEEN REVIEWED AND APPROVED BY ANI.
(G)	SMOKE AND HEAT VENTS MAY BE USEFUL IN SPECIFIC AREAS SUCH AS CABLE SPREADING ROOMS AND DIESEL FUEL OIL STORAGE AREAS AND SWITCHGEAR ROOMS. IF FORCED-CONVECTION VENTILATION IS USED, 300 CFM SHOULD BE PROVIDED FOR EVERY 200 SQ. FEET OF FLOOR AREA.	PVNGS WILL COMPLY FOR TURBINE BUILDING, DIESEL GENERATOR BUILDING, AND CONTROL BUILDING. OTHER BUILDINGS WILL UTILIZE THE ONCE-THROUGH HVAC SYSTEMS FOR SMOKE EXHAUST.
(H)	SELF-CONTAINED BREATHING APPARATUS, USING FULL FACE POSITIVE PRESSURE MASKS, APPROVED BY NIOSH (NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH)	

REQUIREMENTS	DESIGN FEATURE
SHOULD BE PROVIDED FOR FIRE BRIGADE, DAMAGE CONTROL AND CONTROL ROOM PERSONNEL. CONTROL ROOM PERSONNEL MAY BE FURNISHED BREATHING AIR BY A MANIFOLD SYSTEM PIPED FROM A STORAGE RESERVOIR IF PRACTICAL. SERVICE OR OPERATING LIFE SHOULD BE A MINIMUM OF ONE HALF HOUR FOR THE SELF-CONTAINED UNITS.	
AT LEAST TWO EXTRA AIR BOTTLES SHOULD BE LOCATED ONSITE FOR EACH SELF-CONTAINED BREATHING UNIT. IN ADDITION, AN ONSITE 6-HOUR SUPPLY OF RESERVE AIR SHOULD BE PROVIDED AND ARRANGED TO PERMIT QUICK AND COMPLETE REPLENISHMENT OF EXHAUSTED SUPPLY AIR BOTTLES AS THEY ARE RETURNED. IF COMPRESSORS ARE USED AS A SOURCE OF BREATHING AIR, ONLY UNITS APPROVED FOR	PVNGS WILL COMPLY. ONLY BOTTLED AIR WILL BE USED.

REQUIREMENT	DESIGN FEATURE
BREATHING AIR SHOULD BE USED. SPECIAL CARE MUST BE TAKEN TO LOCATE THE COMPRESSOR IN AREAS FREE OF DUST AND CONTAMINANTS.	
(I) WHERE TOTAL FLOODING GAS EXTINGUISHING SYSTEMS ARE USED, AREA INTAKE AND EXHAUST VENTILATION DAMPERS SHOULD CLOSE UPON INITIATION OF GAS FLOW TO MAINTAIN NECESSARY GAS CONCENTRATION.	PVNGS WILL COMPLY FOR ALL CO_2 AND HALON 1301 TOTAL FLOODING SYSTEMS.
5. LIGHTING AND COMMUNICATION	
(A) FIXED EMERGENCY LIGHTING SHOULD CONSIST OF SEALED BEAM UNITS WITH INDIVIDUAL 8-HOUR MINIMUM BATTERY POWER SUPPLIES.	IN COMPLIANCE.
(B) SUITABLE SEALED BEAM BATTERY POWERED PORTABLE HAND LIGHTS SHOULD BE PROVIDED FOR EMERGENCY USE.	IN COMPLIANCE.

REQUIREMENT	DESIGN FEATURE
(c) FIXED EMERGENCY COMMUNICATION SHOULD USE VOICE POWERED HEAD SETS AT PRE-SELECTED STATIONS.	IN COMPLIANCE.
(D) FIXED REPEATERS INSTALLED TO PERMIT USE OF PORTABLE RADIO COMMUNICATION UNITS SHOULD BE PROTECTED FROM EXPOSURE FIRE DAMAGE.	IN COMPLIANCE.

E. FIRE DETECTION AND SUPPRESSION

1. FIRE DETECTION

(A) FIRE DETECTION SYSTEMS SHOULD AS A MINIMUM COMPLY WITH NFPA 72D, "STANDARD FOR THE INSTALLATION, MAINTENANCE AND USE OF PROPRIETARY PROTECTIVE SIGNALING SYSTEMS."	IN COMPLIANCE.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
(B) FIRE DETECTION SYSTEM SHOULD GIVE AUDIBLE AND VISUAL ALARM AND ANNUNCIATION IN THE CONTROL ROOM. LOCAL AUDIBLE ALARMS SHOULD ALSO SOUND AT THE LOCATION OF THE FIRE.	PVNGS WILL COMPLY BY PROVIDING AUDIBLE AND VISUAL ALARM IN THE CONTROL ROOM. CONTROL ROOM ANNUNCIATION WILL BE PROVIDED BY MEANS OF A CATHODE RAY TUBE (CRT) WHICH WILL DISPLAY A PRINTOUT DESCRIPTION OF ANY ENCOUNTERED ALARM CONDITION. LOCAL AUDIBLE ALARMS WILL BE PROVIDED IN THE AREA OF THE FIRE.
(C) FIRE ALARMS SHOULD BE DISTINCTIVE AND UNIQUE. THEY SHOULD NOT BE CAPABLE OF BEING CONFUSED WITH ANY OTHER PLANT SYSTEM ALARMS.	IN COMPLIANCE.
(D) FIRE DETECTION AND ACTUATION SYSTEMS SHOULD BE CONNECTED TO THE PLANT EMERGENCY POWER SUPPLY.	FIRE DETECTION SYSTEMS AND FIRE SUPPRESSION FOR PVNGS WILL HAVE TWO SOURCES OF AC POWER. IF FAILURE OF THE PRIMARY POWER SOURCE OCCURS, SWITCHING TO THE SECOND SOURCE WILL BE AUTOMATIC. WATER SUPPRESSION SYSTEMS FOR SAFETY RELATED AREAS HAVE 24 HOUR BATTERY BACKUP.

REQUIREMENT	DESIGN FEATURE
2. FIRE PROTECTION WATER SUPPLY SYSTEMS	
(A) AN UNDERGROUND YARD FIRE MAIN LOOP SHOULD BE INSTALLED TO FURNISH ANTICIPATED FIRE WATER REQUIREMENTS. NFPA 24 - STANDARD FOR OUTSIDE PROTECTION - GIVES NECESSARY GUIDANCE FOR SUCH INSTALLATION. APPROVED VISUALLY INDICATING SECTIONAL CONTROL VALVES, SUCH AS POST INDICATOR VALVES, SHOULD BE PROVIDED TO ISOLATE PORTIONS OF THE MAIN FOR MAINTENANCE OR REPAIR WITHOUT SHUTTING OFF THE ENTIRE SYSTEM.	PVNGS WILL COMPLY BY USING POST INDICATOR VALVES AND BY USING CEMENT LINED CAST IRON PIPE FOR THE UNDERGROUND YARD LOOP.
THE FIRE MAIN SYSTEM PIPING SHOULD BE SEPARATE FROM SERVICE OR SANITARY WATER SYSTEM PIPING.	PVNGS WILL COMPLY BY UTILIZING SEPARATE PIPING FOR FIRE PROTECTION AND SANITARY WATER. PVNGS FIRE WATER PIPING DOES CONTAIN ONE INTERCONNECTING LINE TO THE PLANT'S DOMESTIC WATER SYSTEM FOR THE PURPOSE OF MAINTAINING CONTINUOUS PRESSURE IN THE FIRE WATER HEADER. THIS

	REQUIREMENT	DESIGN FEATURE
		INTERCONNECTING LINE IS ONLY A 1-INCH PIPE, AND THE LINE DOES CONTAIN A CHECK VALVE TO PREVENT FLOW OF FIRE WATER INTO THE DOMESTIC WATER SYSTEM. SHOULD ANY SMALL QUANTITY OF WATER ACTUALLY FLOW FROM ONE SYSTEM TO THE OTHER FOR ANY REASON, IT WILL BE OF NO CONSEQUENCE SINCE THE WATER QUALITY OF THE TWO SYSTEMS IS IDENTICAL AT THE INTERCONNECTING POINT.
(B)	A COMMON YARD FIRE MAIN LOOP MAY SERVE MULTI-UNIT NUCLEAR POWER PLANT SITES, IF CROSS-CONNECTED BETWEEN UNITS. FOR SUCH INSTALLATIONS, COMMON WATER SUPPLIES MAY ALSO BE UTILIZED. THE WATER SUPPLY SHOULD BE SIZED FOR THE LARGEST SINGLE EXPECTED FLOW.	PVNGS WILL COMPLY BY UTILIZING A CROSS-CONNECTED YARD MAIN LOOP BETWEEN THE SEVERAL UNITS WITH APPROPRIATE SECTIONAL CONTROL VALVES. A COMMON WATER SUPPLY WILL SERVE ALL THREE OF THE PRESENTLY PLANNED UNITS, AND THE FLOW CAPACITY IS SIZED FOR THE LARGEST EXPECTED FLOW FOR ANY ONE UNIT.
(C)	IF PUMPS ARE REQUIRED TO MEET SYSTEM PRESSURE OR FLOW REQUIREMENTS, A SUFFICIENT NUMBER OF PUMPS SHOULD BE PROVIDED SO THAT	PVNGS WILL COMPLY WITH THE EXCEPTION THAT 2-HOUR WALLS ARE USED VS 3-HOUR WALLS TO CUT OFF DIESEL-DRIVEN FIRE PUMP ROOMS FROM OTHER AREAS.

REQUIREMENT	DESIGN FEATURE
100% CAPACITY WILL BE AVAILABLE WITH ONE PUMP INACTIVE (E.G., THREE 50% PUMPS OR TWO 100% PUMPS). THE CONNECTION TO THE YARD FIRE MAIN LOOP FROM EACH FIRE PUMP SHOULD BE WIDELY SEPARATED. EACH PUMP SHOULD HAVE ITS OWN DRIVER WITH INDEPENDENT POWER SUPPLIES AND CONTROL. AT LEAST ONE PUMP SHOULD BE DRIVEN BY NON-ELECTRICAL MEANS, PREFERABLY DIESEL ENGINE. PUMPS AND DRIVERS SHOULD BE LOCATED IN ROOMS SEPARATED FROM THE REMAINING PUMPS AND EQUIPMENT BY A MINIMUM THREE-HOUR FIRE WALL. ALARMS INDICATING PUMP RUNNING, DRIVER AVAILABILITY, OR FAILURE TO START SHOULD BE PROVIDED IN THE CONTROL ROOM.	
DETAILS OF THE FIRE PUMP INSTALLATION SHOULD AS A MINIMUM CONFORM TO NFPA 20, "STANDARD	FIRE PUMP INSTALLATION WILL COMPLY TO NFPA 20.

REQUIREMENT	DESIGN FEATURE
FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."	
(D) TWO SEPARATE RELIABLE WATER SUPPLIES SHOULD BE PROVIDED. IF TANKS ARE USED, TWO 100% (MINIMUM OF 300,000 GALLONS EACH) SYSTEM CAPACITY TANKS SHOULD BE INSTALLED. THEY SHOULD BE SO INTERCONNECTED THAT PUMPS CAN TAKE SUCTION FROM EITHER OR BOTH. HOWEVER, A LEAK IN ONE TANK OR ITS PIPING SHOULD NOT CAUSE BOTH TANKS TO DRAIN. THE MAIN PLANT FIRE WATER SUPPLY CAPACITY SHOULD BE CAPABLE OF REFILLING EITHER TANK IN A MINIMUM OF EIGHT HOURS.	PVNGS PROVIDES TWO 500,000 GALLON TANKS, AND BOTH TANKS WILL BE PREVENTED FROM DRAINING AFTER A LEAK OCCURS IN ONLY ONE TANK BY THE FOLLOWING EVENTS: • LOW-LEVEL ALARM WILL SOUND AT THE 311,000 GALLON LEVEL INDICATING A LEAK OR FAILURE OF REFILLING SYSTEM. (NOTE: EACH OF TWO TANKS CONTAINS 300,000 GALLONS FOR FIRE PROTECTION, BUT OTHER SYSTEMS UTILIZE THE TANKS WHEN THE WATER LEVEL IS ABOVE THE 311,000-GALLON LEVEL.) • OPERATOR SHOULD CHECK FOR LEAK AND VALVE OFF ONE TANK IF NECESSARY.
COMMON TANKS ARE PERMITTED FOR FIRE AND SANITARY OR SERVICE WATER STORAGE. HOWEVER, MINIMUM	PVNGS WILL UTILIZE COMMON TANKS FOR FIRE WATER AND SANITARY WATER (PRIOR TO TREATMENT), AND MINIMUM FIRE WATER STORAGE IS

SRP ACCEPTANCE CRITERIA

	REQUIREMENT	DESIGN FEATURE
	FIRE WATER STORAGE REQUIREMENTS SHOULD BE DEDICATED.	DEDICATED BY MEANS OF LOCATING THE SUCTION INLET FOR SANITARY WATER PUMPS ABOVE THE MINIMUM FIRE WATER LEVEL.
(E)	THE FIRE WATER SUPPLY (TOTAL CAPACITY AND FLOW RATE) SHOULD BE CALCULATED ON THE BASIS OF THE LARGEST EXPECTED FLOW RATE FOR A PERIOD OF TWO HOURS, BUT NOT LESS THAN 300,000 GALLONS. THIS FLOW RATE SHOULD BE BASED (CONSERVATIVELY) ON 1,000 GPM FOR MANUAL HOSE STREAMS PLUS THE GREATER OF:	PVNGS UTILIZES THE TWO 300,000 GALLON TANKS AND 0.2 TPM FOR 10,000 FT. PLUS 500 GPM FOR HOSES.
	(1) ALL SPRINKLER HEADS OPENED AND FLOWING IN THE LARGEST DESIGNED FIRE AREA; OR	
	(2) THE LARGEST OPEN HEAD DELUGE SYSTEM(S) OPERATING.	

REQUIREMENT	DESIGN FEATURE
(F) LAKES OR FRESH WATER PONDS OF SUFFICIENT SIZE MAY QUALIFY AS SOLE SOURCE OF WATER FOR FIRE PROTECTION.	NOT APPLICABLE TO PVNGS.
(G) OUTSIDE MANUAL HOSE INSTALLATION SHOULD BE SUFFICIENT TO REACH ANY LOCATION WITH AN EFFECTIVE HOSE STREAM. TO ACCOMPLISH THIS HYDRANTS SHOULD BE INSTALLED APPROXIMATELY EVERY 250 FEET ON THE YARD MAIN SYSTEM. THE LATERAL TO EACH HYDRANT FROM THE YARD MAIN SHOULD BE CONTROLLED BY A VISUALLY INDICATING OR KEY OPERATED (CURB) VALVE. A HOSE HOUSE, EQUIPPED WITH HOSE AND COMBINATION NOZZLE, AND OTHER AUXILIARY EQUIPMENT RECOMMENDED IN NFPA 24, "OUTSIDE PROTECTION", SHOULD BE PROVIDED AS NEEDED BUT AT LEAST EVERY 1,000 FEET.	IN COMPLIANCE.

REQUIREMENT	DESIGN FEATURE
THREADS COMPATIBLE WITH THOSE USED BY LOCAL FIRE DEPARTMENTS SHOULD BE PROVIDED ON ALL HYDRANTS, HOSE COUPLINGS AND STANDPIPE RISERS.	
3. <u>WATER SPRINKLERS AND HOSE STANDPIPE SYSTEMS</u>	
(A) EACH AUTOMATIC SPRINKLER SYSTEM AND MANUAL HOSE STATION STANDPIPE SHOULD HAVE AN INDEPENDENT CONNECTION TO THE PLANT UNDERGROUND WATER MAIN. THE HEADER ARRANGEMENT SHOULD BE SUCH THAT NO SINGLE FAILURE CAN IMPAIR BOTH THE PRIMARY AND BACKUP FIRE PROTECTION SYSTEMS.	PVNGS WILL COMPLY FOR THE TURBINE, CONTROL, AND AUXILIARY BUILDINGS BY PROVIDING HEADERS THAT ARE FED FROM EACH END FOR EACH RESPECTIVE BUILDING. THESE HEADERS WILL SERVE MULTIPLE SPRINKLER SYSTEMS AND ALSO THE HOSE RACK/REEL STATIONS FOR EACH RESPECTIVE BUILDING, AND NO SINGLE FAILURE WILL RESULT IN ANY OF THE FOLLOWING SITUATIONS: • FOR THE TURBINE BUILDING, PRIMARY SPRINKLER SYSTEMS AND BACKUP HOSE STATIONS IMPAIRED AT ONCE..

REQUIREMENT	DESIGN FEATURE
	• FOR THE CONTROL BUILDING, PRIMARY WATER SPRAY SYSTEMS AND ALL HOSE STATIONS FOR ANY SPECIFIC HAZARD AREA IMPAIRED AT ONCE. • FOR THE AUXILIARY BUILDING, THE SUPPRESSION CAPABILITY FOR BOTH TRAIN A AND TRAIN B SAFETY RELATED SYSTEMS IMPAIRED AT ONCE.
(B) ALL VALVES IN THE FIRE WATER SYSTEMS SHOULD BE ELECTRICALLY SUPERVISED. THE ELECTRICAL SUPERVISION SIGNAL SHOULD INDICATE IN THE CONTROL ROOM AND OTHER APPROPRIATE COMMAND LOCATIONS IN THE PLANT.	PVNGS WILL COMPLY BY SUPERVISING THE POSITION OF ALL VALVES WITHIN THE POWER BLOCK BUILDINGS WITH CONTINUOUS READOUT CAPABILITY ON CRT SYSTEM OF ANY ABNORMAL STATUS.
(C) AUTOMATIC SPRINKLER SYSTEMS SHOULD AS A MINIMUM CONFORM TO REQUIREMENTS OF APPROPRIATE STANDARDS SUCH AS NFPA 13, "STANDARD FOR THE INSTALLATION	IN COMPLIANCE.

REQUIREMENT	DESIGN FEATURE
OF SPRINKLER SYSTEMS", AND NFPA 15, "STANDARD FOR WATER SPRAY FIXED SYSTEMS."	
(D) INTERIOR MANUAL HOSE INSTALLATION SHOULD BE ABLE TO REACH ANY LOCATION WITH AT LEAST ONE EFFECTIVE HOSE STREAM. TO ACCOMPLISH THIS, STANDPIPES WITH HOSE CONNECTIONS, EQUIPPED WITH A MAXIMUM OF 75 FEET OF 1-1/2-INCH WOVEN JACKET-LINED FIRE HOSE AND SUITABLE NOZZLES SHOULD BE PROVIDED IN ALL BUILDINGS, INCLUDING CONTAINMENT, ON ALL FLOORS AND SHOULD BE SPACED AT NOT MORE THAN 100-FOOT INTERVALS. INDIVIDUAL STANDPIPES SHOULD BE OF AT LEAST 4-INCH DIAMETER FOR MULTIPLE HOSE CONNECTIONS AND 2-1/2-INCH DIAMETER FOR SINGLE HOSE CONNECTIONS. THESE SYSTEMS SHOULD FOLLOW THE REQUIREMENTS OF	PVNGS WILL COMPLY WITH INTERIOR HOSE STATION REQUIREMENTS WITH THE EXCEPTION OF THE 100-FOOT SPACING INTERVALS. GENERALLY HOSE STATIONS ARE SPACED FROM 100 FEET TO 125 FEET, WITH ISOLATED INSTANCES OF 150 FEET SPACING AND ASSOCIATED HOSE LENGTHS OF 100 FEET FOR THE HOSE STATIONS THAT ARE INVOLVED.

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REQUIREMENT	DESIGN FEATURE
NFPA 14, "STANDPIPE AND HOSE SYSTEMS" FOR SIZING, SPACING AND PIPE SUPPORT REQUIREMENTS.	
HOSE STATIONS SHOULD BE LOCATED OUTSIDE ENTRANCES TO NORMALLY UNOCCUPIED AREAS AND INSIDE NORMALLY OCCUPIED AREAS. STANDPIPES SERVING HOSE STATIONS IN AREAS HOUSING SAFETY RELATED EQUIPMENT SHOULD HAVE SHUT OFF VALVES AND PRESSURE REDUCING DEVICES (IF APPLICABLE) OUTSIDE THE AREA.	PVNGS WILL COMPLY BY PROVIDING HOSE RACKS OR HOSE REELS AT APPROPRIATE LOCATIONS DEPENDING UPON THE AREA BEING OCCUPIED OR UNOCCUPIED WITH THE EXCEPTION OF THE CONTROL ROOM. ADEQUATE VALVES OUTSIDE SAFETY RELATED AREAS AND PRESSURE REDUCING DEVICES WILL BE PROVIDED AS APPLICABLE.
PROVISIONS SHOULD BE MADE TO SUPPLY WATER AT LEAST TO STANDPIPE AND HOSE CONNECTIONS FOR MANUAL FIRE FIGHTING IN AREAS WITHIN HOSE REACH OF EQUIPMENT REQUIRED FOR SAFE PLANT SHUTDOWN IN THE EVENT OF A SAFE SHUTDOWN EARTHQUAKE (SSE). THE STANDPIPE	PVNGS DOES NOT PROVIDE A SOURCE OF WATER TO THESE AREAS FOLLOWING AN SSE AS THIS IS NOT REQUIRED BY APPENDIX R.

	REQUIREMENT	DESIGN FEATURE
	SYSTEM SERVING SUCH HOSE STATIONS SHOULD MAINTAIN SYSTEM PRESSURE INTEGRITY.	
(E)	THE PROPER TYPE OF HOSE NOZZLES TO BE SUPPLIED TO EACH AREA SHOULD BE BASED ON THE FIRE HAZARD ANALYSIS. ELECTRICALLY SAFE NOZZLES SHOULD BE PROVIDED AT LOCATIONS WHERE ELECTRICAL EQUIPMENT OR CABLING IS LOCATED.	IN COMPLIANCE.
(F)	CERTAIN FIRES SUCH AS THOSE INVOLVING FLAMMABLE LIQUIDS RESPOND WELL TO FOAM SUPPRESSION. CONSIDERATION SHOULD BE GIVEN TO USE OF ANY OF THE AVAILABLE FOAMS FOR SUCH SPECIALIZED PROTECTION APPLICATION.	PVNGS WILL COMPLY WHERE APPLICABLE.

REQUIREMENT	DESIGN FEATURE
4. HALON SUPPRESSION SYSTEMS	
THE USE OF HALON FIRE EXTINGUISHING AGENTS SHOULD AS A MINIMUM COMPLY WITH THE REQUIREMENTS OF NFPA 12A AND 12B, "HALOGENATED FIRE EXTINGUISHING AGENT SYSTEMS - HALON 1301 AND HALON 1211." ONLY UL OR FM APPROVED AGENTS SHOULD BE USED.	IN COMPLIANCE.
IN ADDITION TO THE GUIDELINES OF NFPA 12A AND 12B, PREVENTATIVE MAINTENANCE AND TESTING OF THE SYSTEMS, INCLUDING CHECK WEIGHING OF THE HALON CYLINDERS SHOULD BE DONE AT LEAST QUARTERLY.	PVNGS WILL COMPLY BY CHECK-WEIGHING THE HALON CYLINDERS EVERY 6 MONTHS.
PARTICULAR CONSIDERATION SHOULD ALSO BE GIVEN TO:	IN THE DETERMINATION OF THE USE OF HALON 1301, THESE CONSIDERATIONS WERE WEIGHED ACCORDINGLY.
(A) MINIMUM REQUIRED HALON CONCENTRATION AND SOAK TIME	

REQUIREMENT	DESIGN FEATURE
(B) TOXICITY OF HALON	
(C) TOXICITY AND CORROSIVE CHARACTERISTICS OF THERMAL DECOMPOSITION PRODUCTS OF HALON.	
5. CARBON DIOXIDE SUPPRESSION SYSTEMS	
THE USE OF CARBON DIOXIDE EXTINGUISHING SYSTEMS SHOULD AS A MINIMUM COMPLY WITH THE REQUIREMENTS OF NFPA 12, "CARBON DIOXIDE EXTINGUISHING SYSTEMS."	IN COMPLIANCE.
PARTICULAR CONSIDERATION SHOULD ALSO BE GIVEN TO:	IN THE DETERMINATION OF THE USE OF CO_2, THESE CONSIDERATIONS WERE WEIGHED ACCORDINGLY.
(A) MINIMUM REQUIRED CO_2 CONCENTRATION AND SOAK TIME;	
(B) TOXICITY OF CO_2;	
(C) POSSIBILITY OF SECONDARY THERMAL SHOCK (COOLING) DAMAGE;	

REQUIREMENT	DESIGN FEATURE
(D) OFFSETTING REQUIREMENTS FOR VENTING DURING CO_2 INJECTION TO PREVENT OVERPRESSURIZATION VERSUS SEALING TO PREVENT LOSS OF AGENT;	
(E) DESIGN REQUIREMENTS FROM OVER-PRESSURIZATION; AND	
(F) POSSIBILITY AND PROBABILITY OF CO_2 SYSTEMS BEING OUT-OF-SERVICE BECAUSE OF PERSONNEL SAFETY CONSIDERATION.	
6. <u>PORTABLE EXTINGUISHERS</u>	
FIRE EXTINGUISHERS SHOULD BE PROVIDED IN ACCORDANCE WITH GUIDELINES OF NFPA 10 AND 10A, "PORTABLE FIRE EXTINGUISHERS, MAINTENANCE AND USE." DRY CHEMICAL EXTINGUISHERS SHOULD BE INSTALLED WITH DUE CONSIDERATION GIVEN TO CLEANUP PROBLEMS AFTER USE AND	PVNGS WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
POSSIBLE ADVERSE EFFECTS ON EQUIPMENT INSTALLED IN THE AREA.	
F. GUIDELINES FOR SPECIFIC PLANT AREAS	
1. PRIMARY AND SECONDARY CONTAINMENT	
(A) NORMAL OPERATION	
FIRE PROTECTION SHOULD BE PROVIDED FOR THE SPECIFIC IDENTIFIED HAZARDS:	
• LUBRICATING OIL OR HYDRAULIC FLUID SYSTEM FOR THE PRIMARY COOLANT PUMPS	• PVNGS WILL COMPLY WITH A NON-LEAKING OIL SYSTEM OR BY PROVIDING A DESIGN FOR RC PUMPS WHICH CHANNELS LUBE OIL LEAKAGE AWAY FROM HOT SURFACES OF PUMP TO AN OIL COLLECTION TANK PER 10CFR50, APPENDIX R.
• CABLE TRAY ARRANGEMENTS AND CABLE PENETRATIONS	• PVNGS WILL COMPLY BY PROVIDING FIXED WATER SPRAY SYSTEMS FOR ONLY THE CABLE PENETRATION ROOMS. CABLE TRAYS WITHIN

REQUIREMENT	DESIGN FEATURE
	THE CONTAINMENT WILL BE ACCESSIBLE FROM MANUAL HOSE STATIONS.
• CHARCOAL FILTERS	• PVNGS WILL COMPLY WITH THE REQUIREMENTS OF REVISION 1 TO REG. GUIDE 1.52 CONCERNING FIRE PROTECTION FOR CHARCOAL FILTERS. DETAILS OF FIRE PROTECTION EQUIPMENT THAT PVNGS WILL PROVIDE FOR CHARCOAL FILTERS ARE GIVEN IN SECTION D4 ABOVE.
BECAUSE OF THE GENERAL INACCESSABILITY OF THESE AREAS DURING NORMAL PLANT OPERATIONS, PROTECTION SHOULD BE PROVIDED BY AUTOMATIC FIXED SYSTEMS.	PVNGS DOES NOT PROVIDE ANY AUTOMATIC FIXED SUPPRESSION SYSTEMS WITHIN THE CONTAINMENT BASED ON RESULTS OF THE FPER. THE ANALYSIS HAS SHOWN THAT ANY DESIGN BASIS FIRE OCCURRING WITH THE PVNGS CONTAINMENT WILL NOT RESTRICT THE CAPABILITY OF SAFE-SHUTDOWN SYSTEMS TO ACCOMPLISH A SAFE SHUTDOWN OF THE REACTOR. MANUAL ACTION IS REQUIRED TO OPEN A FIRE WATER SUPPLY VALVE TO THE HOSE STATIONS.

REQUIREMENT	DESIGN FEATURE
OPERATION OF THE FIRE PROTECTION SYSTEMS SHOULD NOT COMPROMISE INTEGRITY OF THE CONTAINMENT OR THE OTHER SAFETY RELATED SYSTEMS.	IN COMPLIANCE
FIRE DETECTION SYSTEMS SHOULD ALARM AND ANNUNICIATE IN THE CONTROL ROOM. THE TYPE OF DETECTION USED AND THE LOCATION OF THE DETECTORS SHOULD BE MOST SUITABLE TO THE PARTICULAR TYPE OF FIRE THAT COULD BE EXPECTED FROM THE IDENTIFIED HAZARD.	IN COMPLIANCE
B) <u>REFUELING AND MAINTENANCE</u>	
MANUAL FIRE FIGHTING CAPABILITY SHOULD BE PERMANENTLY INSTALLED IN CONTAINMENT. STANDPIPES WITH HOSE STATIONS, AND PORTABLE FIRE EXTINGUISHERS, SHOULD BE INSTALLED AT STRATEGIC LOCATIONS THROUGHOUT CONTAINMENT FOR ANY REQUIRED MANUAL FIRE FIGHTING OPERATIONS.	IN COMPLIANCE

REQUIREMENT	DESIGN FEATURE
ADEQUATE SELF-CONTAINED BREATHING APPARATUS SHOULD BE PROVIDED NEAR THE CONTAINMENT ENTRANCES FOR FIRE FIGHTING AND DAMAGE CONTROL PERSONNEL.	IN COMPLIANCE
2. CONTROL ROOM	
THE CONTROL ROOM MUST BE PROTECTED AGAINST DISABLING FIRE DAMAGE AND SHOULD BE SEPARATED FROM OTHER AREAS OF THE PLANT BY FLOORS, WALLS AND ROOFS HAVING MINIMUM FIRE RESISTANCE RATINGS OF THREE HOURS.	IN COMPLIANCE
MANUAL FIRE FIGHTING CAPABILITY SHOULD BE PROVIDED FOR THE FOLLOWING HAZARDS TO CONTROL ROOM CABINETS AND CONSOLES:	
(A) FIRE ORIGINATING WITHIN A CABINET OR CONSOLE; AND	
(B) EXPOSURE FIRE INVOLVING COMBUSTIBLES IN THE GENERAL ROOM AREA.	

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
HOSE STATIONS AND PORTABLE WATER AND HALON EXTINGUISHERS SHOULD BE LOCATED IN THE CONTROL ROOM.	PVNGS WILL COMPLY BY PROVIDING A HOSE STATION ADJACENT TO EACH ENTRANCE TO CONTROL ROOM PLUS PORTABLE CO_2 EXTINGUISHERS INSIDE THE CONTROL ROOM.
NOZZLES THAT ARE COMPATIBLE WITH THE HAZARDS AND EQUIPMENT IN THE CONTROL ROOM SHOULD BE PROVIDED.	IN COMPLIANCE
FIRE DETECTION IN THE CONTROL ROOM CABINETS, AND CONSOLES SHOULD BE PROVIDED BY SMOKE AND HEAT DETECTORS IN EACH FIRE AREA. ALARM AND ANNUNCIATION SHOULD BE PROVIDED IN THE CONTROL ROOM. FIRE ALARMS IN OTHER PARTS OF THE PLANT SHOULD ALSO BE ALARMED AND ANNUNCIATED IN THE CONTROL ROOM.	PVNGS WILL COMPLY WITH SMOKE DETECTORS FOR THOSE CABINETS THAT CONTAIN REDUNDANT SAFETY RELATED CHANNELS. AREA SMOKE DETECTORS WILL ALSO BE PROVIDED FOR THE ENTIRE CONTROL ROOM, AND ALL FIRE ALARMS IN THE PLANT WILL BE ANNUNCIATED IN THE CONTROL ROOM.

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
BREATHING APPARATUS FOR CONTROL ROOM OPERATORS SHOULD BE READILY AVAILABLE. CONTROL ROOM ENVELOPE SHOULD BE DESIGNED TO A MINIMUM FIRE RATING OF THREE HOURS. ALL PENETRATION SEALS SHOULD BE AIR TIGHT.	PVNGS WILL COMPLY WITH THREE-HOUR RATINGS FOR CONTROL ROOM AND AVAILABILITY OF BREATHING APPARATUS. CONTROL ROOM IN-LEAK RATE WILL BE 170 FT^3/MIN. PENETRATION SEALS WILL BE AIR TIGHT.
THE CONTROL ROOM VENTILATION INTAKE SHOULD BE PROVIDED WITH SMOKE DETECTION CAPABILITY TO AUTOMATICALLY ALARM LOCALLY AND ISOLATE THE CONTROL ROOM VENTILATION SYSTEM. MANUAL VENTING FOR VISIBILITY SHOULD BE AVAILABLE.	IN COMPLIANCE
CABLES SHOULD NOT BE LOCATED IN CONCEALED FLOOR AND CEILING SPACES. CABLES THAT ENTER THE CONTROL ROOM SHOULD TERMINATE IN THE CONTROL ROOM.	IN COMPLIANCE

REQUIREMENT	DESIGN FEATURE
SAFETY RELATED EQUIPMENT SHOULD BE MOUNTED ON PEDESTALS OR THE CONTROL ROOM SHOULD HAVE CURBS AND DRAINS TO DIRECT WATER AWAY FROM SUCH EQUIPMENT.	NOT APPLICABLE
3. <u>CABLE SPREADING ROOM</u>	
THE PRIMARY FIRE SUPPRESSION IN THE CABLE SPREADING ROOM SHOULD BE AN AUTOMATIC WATER SYSTEM. LOCATION OF SPRINKLER HEADS OR SPRAY NOZZLES SHOULD CONSIDER CABLE TRAY SIZING AND ARRANGEMENTS TO ASSURE ADEQUATE WATER COVERAGE. CABLES SHOULD BE DESIGNED TO ALLOW WETTING DOWN WITH DELUGE WATER WITHOUT ELECTRICAL FAULTING.	PVNGS WILL COMPLY BY UTILIZING OPEN DIRECTIONAL SPRAY NOZZLES WITH CROSS-ZONED DETECTORS TO PREVENT INADVERTENT OPERATION. IN ORDER TO PREVENT A SINGLE FAILURE FROM DEPRIVING THE ENTIRE AREA OF AUTOMATIC PROTECTION, EACH CABLE SPREADING ROOM WILL ALSO BE DIVIDED INTO SIX AREAS, WITH EACH AREA BEING PROTECTED BY A SEPARATE WATER SPRAY DELUGE SYSTEM. CABLES ARE DESIGNED TO ALLOW WETTING WITHOUT FAULTING.
OPEN HEAD DELUGE AND OPEN DIRECTIONAL SPRAY SYSTEMS SHOULD BE ZONED TO THAT A SINGLE FAILURE WILL NOT DEPRIVE THE ENTIRE AREA OF AUTOMATIC FIRE SUPPRESSION CAPABILITY.	

SRP ACCEPTANCE CRITERIA

REQUIREMENT	DESIGN FEATURE
AN AUTOMATIC WATER SUPPRESSION SYSTEM WITH MANUAL HOSES AND PORTABLE EXTINGUISHER BACKUP IS ACCEPTABLE.	
ELECTRIC CABLE CONSTRUCTION SHOULD, AS A MINIMUM, PASS THE FLAME TEST IN IEEE STD 383.	IN COMPLIANCE
REDUNDANT SAFETY RELATED CABLE DIVISION SHOULD BE SEPARATED BY WALLS WITH A THREE-HOUR FIRE RATING.	
FOR MULTIPLE-REACTOR UNIT SITES, CABLE SPREADING ROOMS SHOULD NOT BE SHARED BETWEEN REACTORS.	IN COMPLIANCE
SMOKE VENTING SYSTEMS SHOULD BE CONTROLLED AUTOMATICALLY BY THE FIRE DETECTION OR SUPPRESSION SYSTEM AS APPROPRIATE. CAPABILITY FOR REMOTE MANUAL CONTROL SHOULD ALSO BE PROVIDED.	SMOKE VENTING FOR THE CABLE SPREADING ROOMS IS MANUALLY OPERATED FROM THE CONTROL ROOM.

REQUIREMENT	DESIGN FEATURE
4. PLANT COMPUTER ROOM	
SAFETY RELATED COMPUTERS SHOULD BE SEPARATED FROM OTHER AREAS OF THE PLANT BY BARRIERS HAVING A MINIMUM THREE-HOUR FIRE RESISTANT RATING. AUTOMATIC FIRE DETECTION SHOULD BE PROVIDED TO ALARM AND ANNUNCIATE IN THE CONTROL ROOM AND ALARM LOCALLY. MANUAL HOSE STATIONS AND PORTABLE WATER AND HALON FIRE EXTINGUISHERS SHOULD BE PROVIDED.	PVNGS COMPLIES WITH THE EXCEPTION OF TWO-HOUR SEPARATION VS THREE-HOUR SEPARATION. THIS EXCEPTION IS BASED ON A FIXED HALON FLOODING SYSTEM WITHIN THE COMPUTER ROOM VS PORTABLES THAT ARE REQUIRED BY THE BTP. CARBON DIOXIDE EXTINGUISHERS ARE PROVIDED FOR PERSONNEL SAFETY.
5. SWITCHGEAR ROOMS	
SWITCHGEAR ROOMS SHOULD BE SEPARATED FROM THE REMAINDER OF THE PLANT BY MINIMUM THREE-HOUR RATED FIRE BARRIERS, IF PRACTICABLE. AUTOMATIC FIRE DETECTION SHOULD ALARM AND ANNUNCIATE IN THE CONTROL ROOM AND ALARM LOCALLY. FIRE HOSE STATIONS AND PORTABLE EXTINGUISHERS SHOULD BE READILY AVAILABLE.	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
ACCEPTABLE PROTECTION FOR CABLES THAT PASS THROUGH THE SWITCHGEAR ROOM IS AUTOMATIC WATER OR GAS AGENT SUPPRESSION.	PVNGS WILL COMPLY BY PROVIDING FIXED CO_2 FLOODING SYSTEMS FOR THE ESF SWITCHGEAR ROOMS.
6. <u>REMOTE SAFETY RELATED PANELS</u>	
THE GENERAL AREA HOUSING REMOTE SAFETY RELATED PANELS SHOULD BE PROVIDED WITH AUTOMATIC FIRE DETECTORS THAT ALARM LOCALLY AND ALARM AND ANNUNCIATE IN THE CONTROL ROOM. COMBUSTIBLE MATERIALS SHOULD BE CONTROLLED AND LIMITED TO THOSE REQUIRED FOR OPERATION. PORTABLE EXTINGUISHERS AND MANUAL HOSE STATIONS SHOULD BE PROVIDED.	IN COMPLIANCE

REQUIREMENT	DESIGN FEATURE
7. STATION BATTERY ROOMS	
BATTERY ROOMS SHOULD BE PROTECTED AGAINST FIRE EXPLOSIONS. ROOM ENCLOSURES SHOULD HAVE A MINIMUM FIRE RATING OF THREE-HOURS. HYDROGEN CONCENTRATION WELL BELOW 2 VOL. % HYDROGEN CONCENTRATION SHOULD BE MAINTAINED. STANDPIPE AND HOSE AND PORTABLE EXTINGUISHERS SHOULD BE PROVIDED.	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
8. <u>TURBINE LUBRICATION AND CONTROL OIL STORAGE AND USE AREAS</u>	
A BLANK FIRE WALL HAVING A MINIMUM RESISTANCE RATING OF THREE HOURS SHOULD SEPARATE ALL AREAS CONTAINING SAFETY RELATED SYSTEMS AND EQUIPMENT FROM THE TURBINE OIL SYSTEM.	PVNGS WILL COMPLY BY PROVIDING A THREE-HOUR BARRIER BETWEEN THE BUILDING THAT HOUSES THE TURBINE OIL HAZARDS AND ALL OTHER BUILDINGS THAT HOUSE SAFETY RELATED SYSTEMS AND EQUIPMENT. PVNGS WILL ALSO PROVIDE OPEN HEAD DELUGE PROTECTION FOR THE TURBINE OIL HAZARDS.
9. <u>DIESEL GENERATOR AREAS</u>	
DIESEL GENERATORS SHOULD BE SEPARATED FROM EACH OTHER AND OTHER AREAS OF THE PLANT BY FIRE BARRIERS HAVING A MINIMUM FIRE RESISTANCE RATING OF THREE HOURS.	IN COMPLIANCE
AUTOMATIC FIRE SUPPRESSION SHOULD BE INSTALLED. AUTOMATIC FIRE DETECTION SHOULD BE PROVIDED TO ALARM AND ANNUNCIATE IN THE CONTROL ROOM AND ALARM LOCALLY.	PVNGS WILL COMPLY BY PROVIDING AN AUTOMATIC PREACTION SPRINKLER SYSTEM FOR EACH DIESEL GENERATOR AREA. THE PREACTION SYSTEMS ALSO PROVIDE AUTOMATIC FIRE DETECTION CAPABILITY AND ALARMS AT THE CONTROL ROOM AND LOCALLY.

REQUIREMENT	DESIGN FEATURE
DRAINAGE FOR FIRE FIGHTING WATER AND MEANS FOR LOCAL MANUAL VENTING OF SMOKE SHOULD BE PROVIDED.	
DAY TANKS WITH TOTAL CAPACITY UP TO 1100 GALLONS ARE PERMITTED IN THE DIESEL GENERATOR AREA UNDER THE FOLLOWING CONDITIONS:	
(A) THE DAY TANK IS LOCATED IN A SEPARATE ENCLOSURE, WITH A MINIMUM FIRE RESISTANCE RATING OF THREE HOURS. THE ENCLOSURE SHOULD BE VENTILATED.	PVNGS WILL COMPLY BY PROVIDING THREE-HOUR ENCLOSURES FOR EACH OF THE DAY TANK AREAS, AND THE ENCLOSURES WILL BE ADEQUATELY VENTED.
(B) THE ENCLOSURE SHOULD BE PROTECTED BY AN AUTOMATIC FIRE SUPPRESSION SYSTEM.	DAY TANK ENCLOSURES WILL BE PROTECTED BY AUTOMATIC PREACTION SPRINKLER SYSTEMS.
10. <u>DIESEL FUEL OIL STORAGE AREAS</u>	
DIESEL FUEL OIL TANKS WITH A CAPACITY GREATER THAN 1100 GALLONS SHOULD NOT BE LOCATED INSIDE THE	PVNGS WILL COMPLY BY PROVIDING AN UNDER-GROUND LOCATION FOR THE DIESEL FUEL OIL TANKS THAT ARE LARGER THAN 1100 GALLONS.

	REQUIREMENT	DESIGN FEATURE
	BUILDINGS CONTAINING SAFETY RELATED EQUIPMENT. BURIED TANKS ARE CONSIDERED AS MEETING THE THREE HOUR FIRE RESISTANCE REQUIREMENTS.	
	TANKS, UNLESS BURIED, SHOULD NOT BE LOCATED DIRECTLY ABOVE OR BELOW SAFETY RELATED SYSTEMS OR EQUIPMENT REGARDLESS OF THE FIRE RATING OF SEPARATING FLOORS OR CEILINGS.	PVNGS WILL COMPLY BY PROVIDING THREE-HOUR RATED ENCLOSURES FOR THE DAY TANKS THAT ARE LOCATED DIRECTLY ABOVE DIESEL GENERATORS, AND DAY TANK FLOORS WILL BE LIQUID TIGHT WITH DRAINS DESIGNED TO REMOVE OIL AND FIRE WATER TO A SAFE LOCATION.
11.	<u>SAFETY RELATED PUMPS</u>	
	PUMP HOUSES AND ROOMS HOUSING SAFETY RELATED PUMPS OR OTHER SAFETY RELATED EQUIPMENT SHOULD BE SEPARATED FROM OTHER AREAS OF THE PLANT BY FIRE BARRIERS HAVING AT LEAST THREE-HOUR RATINGS. THESE ROOMS SHOULD BE PROTECTED BY AUTOMATIC SPRINKLER PROTECTION UNLESS A FIRE HAZARDS ANALYSIS CAN DEMONSTRATE THAT A FIRE WILL	PVNGS COMPLIES BY DEMONSTRATING IN THE FPER THAT A FIRE IN ANY SAFETY RELATED PUMP ROOM WILL NOT ENDANGER OTHER SAFETY RELATED EQUIPMENT REQUIRED FOR SAFE PLANT SHUTDOWN. PVNGS WILL ALSO COMPLY BY PROVIDING EARLY WARNING AND LOCAL HOSE STATIONS FOR ALL SAFETY RELATED PUMP AREAS.

REQUIREMENT	DESIGN FEATURE
NOT ENDANGER OTHER SAFETY RELATED EQUIPMENT REQUIRED FOR SAFE PLANT SHUTDOWN. EARLY WARNING FIRE DETECTION SHOULD BE INSTALLED WITH ALARM AND ANNUNCIATION LOCALLY AND IN THE CONTROL ROOM. LOCAL HOSE STATIONS AND PORTABLE EXTINGUISHERS SHOULD ALSO BE PROVIDED.	
EQUIPMENT PEDESTALS OR CURBS AND DRAINS SHOULD BE PROVIDED TO REMOVE AND DIRECT WATER AWAY FROM SAFETY RELATED EQUIPMENT.	
PROVISIONS SHOULD BE MADE FOR MANUAL CONTROL OF THE VENTILATION SYSTEM TO FACILITATE SMOKE REMOVAL IF REQUIRED FOR MANUAL FIRE FIGHTING OPERATION.	
12. <u>NEW FUEL AREA</u>	
HAND PORTABLE EXTINGUISHERS SHOULD BE LOCATED WITHIN THIS AREA. ALSO,	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
LOCAL HOSE STATIONS SHOULD BE LOCATED OUTSIDE BUT WITHIN HOSE REACH OF THIS AREA. AUTOMATIC FIRE DETECTION SHOULD ALARM AND ANNUNCIATE IN THE CONTROL ROOM AND ALARM LOCALLY. COMBUSTIBLES SHOULD BE LIMITED TO A MINIMUM IN THE NEW FUEL AREA. THE STORAGE AREA SHOULD BE PROVIDED WITH A DRAINAGE SYSTEM TO PRECLUDE ACCUMULATION OF WATER.	
THE STORAGE CONFIGURATION OF NEW FUEL SHOULD ALWAYS BE SO MAINTAINED AS TO PRECLUDE CRITICALITY FOR ANY WATER DENSITY THAT MIGHT OCCUR DURING FIRE WATER APPLICATION.	
13. <u>SPENT FUEL POOL AREA</u>	
PROTECTION FOR THE SPENT FUEL POOL AREA SHOULD BE PROVIDED BY LOCAL HOSE STATIONS AND PORTABLE EXTINGUISHERS. AUTOMATIC FIRE DETECTION SHOULD BE PROVIDED TO ALARM AND ANNUNCIATE IN	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
THE CONTROL ROOM AND TO ALARM LOCALLY.	
14. RADWASTE BUILDING	
SHOULD BE SEPARATED FROM OTHER AREAS OF THE PLANT BY FIRE BARRIERS HAVING AT LEAST THREE-HOUR RATINGS. AUTOMATIC SPRINKLERS SHOULD BE USED IN ALL AREAS WHERE COMBUSTIBLE MATERIALS ARE LOCATED. AUTOMATIC FIRE DETECTION SHOULD BE PROVIDED TO ANNUNCIATE AND ALARM IN THE CONTROL ROOM AND ALARM LOCALLY. DURING A FIRE, THE VENTILATION SYSTEMS IN THESE AREAS SHOULD BE CAPABLE OF BEING ISOLATED. WATER SHOULD DRAIN TO LIQUID RADWASTE BUILDING SUMPS.	PVNGS WILL COMPLY
ACCEPTABLE ALTERNATIVE FIRE PROTECTION IS AUTOMATIC FIRE DETECTION TO ALARM AND ANNUNCIATE IN THE CONTROL ROOM, IN ADDITION TO MANUAL HOSE STATIONS AND PORTABLE EXTINGUISHERS	

	REQUIREMENT	DESIGN FEATURE
	CONSISTING OF HAND HELD AND LARGE WHEELED UNITS.	
15.	DECONTAMINATION AREAS	
	THE DECONTAMINATION AREAS SHOULD BE PROTECTED BY AUTOMATIC SPRINKLERS IF FLAMMABLE LIQUIDS ARE STORED.	NO FLAMMABLE LIQUID STORAGE IS PLANNED IN DECONTAMINATION AREAS AND PVNGS WILL THUS COMPLY WITHOUT PROVIDING A FIXED SPRINKLER SYSTEM.
16.	SAFETY RELATED WATER TANKS	
	STORAGE TANKS THAT SUPPLY WATER FOR SAFE SHUTDOWN SHOULD BE PROTECTED FROM THE EFFECTS OF FIRE. LOCAL HOSE STATIONS AND PORTABLE EXTINGUISHERS SHOULD BE PROVIDED. PORTABLE EXTINGUSIHERS SHOULD BE LOCATED IN NEARBY HOSE HOUSES. COMBUSTIBLE MATERIALS SHOULD NOT BE STORED NEXT TO OUTDOOR TANKS. A MINIMUM OF 50 FEET OF SEPARATION SHOULD BE PROVIDED BETWEEN OUTDOOR TANKS AND COMBUSTIBLE MATERIALS WHERE FEASIBLE.	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
17. COOLING TOWERS	
COOLING TOWERS SHOULD BE OF NON-COMBUSTIBLE CONSTRUCTION OR SO LOCATED THAT A FIRE WILL NOT ADVERSELY AFFECT ANY SAFETY RELATED SYSTEMS OR EQUIPMENT. COOLING TOWERS SHOULD BE OF NON-COMBUSTIBLE CONSTRUCTION WHEN THE BASINS ARE USED FOR THE ULTIMATE HEAT SINK OR FOR THE FIRE PROTECTION WATER SUPPLY.	PVNGS WILL COMPLY BY USING NON-COMBUSTIBLE COOLING TOWERS.
18. MISCELLANEOUS AREAS	
MISCELLANEOUS AREAS SUCH AS RECORDS STORAGE AREAS, SHOPS, WAREHOUSES, AND AUXILIARY BOILER ROOMS SHOULD BE SO LOCATED THAT A FIRE OR EFFECTS OF A FIRE, INCLUDING SMOKE, WILL NOT ADVERSELY AFFECT ANY SAFETY RELATED SYSTEMS OR EQUIPMENT. FUEL OIL TANKS FOR AUXILIARY BOILERS SHOULD BE BURIED OR PROVIDED WITH DIKES TO CONTAIN THE ENTIRE TANK CONTENTS.	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
G. SPECIAL PROTECTION GUIDELINES	
1. WELDING AND CUTTING, ACETYLENE - OXYGEN FUEL GAS SYSTEMS	
THIS EQUIPMENT IS USED IN VARIOUS AREAS THROUGHOUT THE PLANT. STORAGE LOCATIONS SHOULD BE CHOSEN TO PERMIT FIRE PROTECTION BY AUTOMATIC SPRINKLER SYSTEMS. LOCAL HOSE STATIONS AND PORTABLE EQUIPMENT SHOULD BE PROVIDED AS BACKUP. THE REQUIREMENTS OF NFPA 51 AND 51B ARE APPLICABLE TO THESE HAZARDS. A PERMIT SYSTEM SHOULD BE REQUIRED TO UTILIZE THIS EQUIPMENT.	PVNGS WILL COMPLY
2. STORAGE AREAS FOR DRY ION EXCHANGE RESINS	
DRY ION EXCHANGE RESINS SHOULD NOT BE STORED NEAR ESSENTIAL SAFETY RELATED SYSTEMS. DRY UNUSED RESINS SHOULD BE PROTECTED BY AUTOMATIC WET PIPE SPRINKLER INSTALLATIONS.	DRY ION EXCHANGE RESIN STORAGE AREAS WITHIN THE PROTECTED AREA WILL COMPLY.

REQUIREMENT	DESIGN FEATURE
DETECTION BY SMOKE AND HEAT DETECTORS SHOULD ALARM AND ANNUNCIATE IN THE CONTROL ROOM AND ALARM LOCALLY. LOCAL HOSE STATIONS AND PORTABLE EXTINGUISHERS SHOULD PROVIDE BACKUP FOR THESE AREAS. STORAGE AREAS OF DRY RESIN SHOULD HAVE CURBS AND DRAINS.	
3. <u>HAZARDOUS CHEMICALS</u>	
HAZARDOUS CHEMICALS SHOULD BE STORED AND PROTECTED IN ACCORDANCE WITH THE RECOMMENDATIONS OF NFPA 49, "HAZARDOUS CHEMICALS DATA." CHEMICALS STORAGE AREAS SHOULD BE WELL VENTILATED AND PROTECTED AGAINST FLOODING CONDITIONS SINCE SOME CHEMICALS MAY REACT WITH WATER TO PRODUCE IGNITION.	PVNGS WILL COMPLY

REQUIREMENT	DESIGN FEATURE
4. MATERIALS CONTAINING RADIOACTIVITY	
MATERIALS THAT COLLECT AND CONTAIN RADIOACTIVITY SUCH AS SPENT ION EXCHANGE RESINS, CHARCOAL FILTERS, AND HEPA FILTERS SHOULD BE STORED IN CLOSED METAL TANKS OR CONTAINERS THAT ARE LOCATED IN AREAS FREE FROM IGNITION SOURCES OR COMBUSTIBLES.	PVNGS WILL COMPLY

B. 10 CFR 50, APPENDIX R

1. GENERAL REQUIREMENTS

	REQUIREMENT	DESIGN FEATURE
A.	A FIRE PROTECTION PROGRAM SHALL BE ESTABLISHED AT EACH NUCLEAR POWER PLANT.	PVNGS IS IN COMPLIANCE
B.	PERFORM A FIRE HAZARDS ANALYSIS.	PVNGS WILL COMPLY, AND THE EVALUATION OF EACH FIRE HAZARD HAS BEEN PERFORMED IN THE FIRE PROTECTION EVALUATION REPORT (FPER)
C.	FIRE PREVENTION FEATURES	
	1. IN SITU FIRE HAZARDS SHALL BE IDENTIFIED AND PROTECTION PROVIDED	PVNGS COMPLIES, AND THE INFORMATION IS PROVIDED IN THE FPER
	2. TRANSIENT FIRE HAZARDS SHALL BE IDENTIFIED AND ELIMINATED, OR CONTROLLED AND PROTECTION PROVIDED	PVNGS WILL COMPLY. THE PLANT MANAGER OR DESIGNATE WILL REVIEW CONDITIONS OR OPERATIONS. ONLY FIRE RETARDANT TREATED WOOD SHALL BE USED. OTHER COMBUSTIBLE MATERIALS WILL BE CONTROLLED

	REQUIREMENT	DESIGN FEATURE
3.	FIRE DETECTION SYSTEMS, PORTABLE EXTINGUISHERS, AND STANDPIPE AND HOSE STATIONS SHALL BE INSTALLED	PVNGS COMPLIES
4.	FIRE BARRIERS OR AUTOMATIC SUPPRESSION SYSTEMS OR BOTH SHALL BE INSTALLED TO PROTECT REDUNDANT SYSTEMS OR COMPONENTS NECESSARY FOR SAFE SHUTDOWN	PVNGS COMPLIES
5.	A SITE FIRE BRIGADE SHALL BE ESTABLISHED, TRAINED AND ON-SITE AT ALL TIMES	PVNGS COMPLIES
6.	FIRE DETECTION AND SUPPRESSION SYSTEMS SHALL BE DESIGNED, INSTALLED, MAINTAINED AND TESTED BY PROPERLY QUALIFIED PERSONNEL	PVNGS WILL COMPLY
7.	SURVEILLANCE PROCEDURES SHALL BE ESTABLISHED TO ENSURE THAT FIRE BARRIERS ARE IN PLACE AND THAT FIRE SUPPRESSION SYSTEMS AND COMPONENTS ARE OPERABLE	PVNGS WILL COMPLY

EXHIBIT 4B-2

2. SPECIFIC REQUIREMENTS

	REQUIREMENT	DESIGN FEATURE
A.	TWO SEPARATE WATER SUPPLIES SHALL BE PROVIDED. THESE SUPPLIES SHALL BE REDUNDANT, AND CAPABLE OF SUPPLYING FOR 2 HOURS THE MAXIMUM DEMAND FOR SAFETY-RELATED AREAS. OTHER SYSTEMS MAY BE USED AS A FIRE WATER SUPPLY.	PVNGS COMPLIES. TWO SEPARATE FIRE TANKS EACH WITH 300,000 GAL DEDICATED CAPACITY ARE PROVIDED. THREE 50% CAPACITY PUMPS ARE PROVIDED. PVNGS DOES NOT USE OTHER SYSTEMS AS A FIRE WATER SUPPLY.
B.	SECTIONAL ISOLATION VALVES, SUCH AS POST-INDICATOR OR KEY-LOCK SHALL BE INSTALLED IN THE MAIN FIRE LOOP.	PVNGS PROVIDES POST-INDICATOR VALVES TO ISOLATE PORTIONS OF THE MAIN LOOP.
C.	HYDRANT ISOLATION VALVES SHALL BE INSTALLED TO ISOLATE OUTSIDE HYDRANTS WITHOUT INTERRUPTING THE WATER SUPPLY TO SAFETY-RELATED AREAS.	PVNGS PROVIDES HYDRANT ISOLATION VALVES.

	REQUIREMENT	DESIGN FEATURE
D.	STANDPIPES AND HOSE SYSTEMS SHALL BE INSTALLED SO THAT ONE EFFECTIVE HOSE STREAM WILL BE ABLE TO REACH ANY LOCATION THAT CONTAINS OR PRESENTS AN EXPOSURE HAZARD TO SAFETY-RELATED STRUCTURES, SYSTEMS, OR COMPONENTS	PVNGS COMPLIES. HOWEVER, THE DIESEL GENERATOR BUILDING RELIES ON OUTSIDE HYDRANTS OR HOSE STATIONS INSIDE THE CONTROL BUILDING
	ACCESS FOR THE FIRE BRIGADE SHALL BE PROVIDED	PVNGS COMPLIES
	STANDPIPE AND HOSE STATIONS SHALL BE INSIDE PWR CONTAINMENTS THAT ARE NOT INERTED.	PVNGS COMPLIES, ALTHOUGH THE STANDPIPE IS PRESSURIZED ONLY DURING CONTAINMENT ENTRY.
E.	FIRE HOSE SHALL BE HYDROSTATICALLY TESTED	PVNGS WILL COMPLY.
F.	AUTOMATIC FIRE DETECTION SYSTEMS SHALL BE INSTALLED IN ALL AREAS THAT CONTAIN OR PRESENT AN EXPOSURE FIRE HAZARD TO SAFE-SHUTDOWN OR SAFETY RELATED SYSTEMS OR COMPONENTS. THESE FIRE DETECTION SYSTEMS SHALL BE CAPABLE OF OPERATING WITH OR WITHOUT OFFSITE POWER.	PVNGS COMPLIES. SOME DETECTORS ALSO ACTUATE AUTOMATIC SUPPRESSION SYSTEMS. ALL DETECTORS ALARM TO THE CONTROL ROOM. POWER IS SUPPLIED TO ALL LOCAL CONTROL PANELS FROM THE CLASS IE ESSENTIAL LIGHTING PANELS. THE CLASS IE SYSTEM

REQUIREMENT	DESIGN FEATURE
	IS POWERED BY TWO OFF-SITE SOURCES AND THE ON-SITE DIESEL GENERATORS. IN ADDITION, 24 HOUR BATTERIES ARE SUPPLIED AT EACH PANEL SERVING SAFETY RELATED AREAS. THE CENTRAL SUPERVISORY STATION (PLANT SECURITY SYSTEM) IS POWERED BY NON-CLASS IE POWER AND TWO INDEPENDENT NON-CLASS IE DIESEL GENERATORS.

REQUIREMENT	DESIGN FEATURE
G.	
1. FIRE PROTECTION FEATURES SHALL BE PROVIDED FOR STRUCTURES, SYSTEMS, AND COMPONENTS IMPORTANT TO SAFE SHUTDOWN. THESE FEATURES SHALL BE CAPABLE OF LIMITING FIRE DAMAGE SO THAT:	PVNGS PROVIDES A COMBINATION OF FIRE BARRIERS, AUTOMATIC WATER SUPPRESSION SYSTEMS AND AUTOMATIC DETECTION SYSTEMS, AND REDUNDANT CONTROL POINTS WITH ELECTRICAL DISCONNECT TO ENSURE THAT ONE TRAIN OF REDUNDANT SYSTEMS NECESSARY TO ACHIEVE AND MAINTAIN COLD SHUTDOWN IS FREE FROM FIRE DAMAGE.
A. ONE TRAIN OF SYSTEMS NECESSARY TO ACHIEVE AND MAINTAIN HOT SHUTDOWN CONDITIONS FROM EITHER THE CONTROL ROOM OR EMERGENCY CONTROL STATION(S) IS FREE OF FIRE DAMAGE; AND	
B. SYSTEMS NECESSARY TO ACHIEVE AND MAINTAIN COLD SHUTDOWN FROM EITHER THE CONTROL ROOM OR EMERGENCY CONTROL STATION(S) CAN BE REPAIRED WITHIN 72 HOURS.	

REQUIREMENT	DESIGN FEATURE
2. EXCEPT AS PROVIDED FOR PARAGRAPH G.3 OF THIS SECTION, WHERE CABLES OR EQUIPMENT, INCLUDING ASSOCIATED NON-SAFETY CIRCUITS THAT COULD PREVENT OPERATION OR CAUSE MALOPERATION DUE TO HOT SHORTS, OPEN CIRCUITS, OR SHORTS TO GROUND, OR REDUNDANT TRAINS OF SYSTEMS NECESSARY TO ACHIEVE AND MAINTAIN HOT SHUTDOWN CONDITIONS ARE LOCATED WITHIN THE SAME FIRE AREA OUTSIDE OF PRIMARY CONTAINMENT, ONE OF THE FOLLOWING MEANS OF ENSURING THAT ONE OF THE REDUNDANT TRAINS IS FREE OF FIRE DAMAGE SHALL BE PROVIDED:	

REQUIREMENT	DESIGN FEATURE
A. SEPARATION OF CABLES AND EQUIPMENT AND ASSOCIATED NON-SAFETY CIRCUITS OF REDUNDANT TRAINS BY A FIRE BARRIER HAVING A 3-HOUR RATING. STRUCTURAL STEEL FORMING A PART OF OR SUPPORTING SUCH FIRE BARRIERS SHALL BE PROTECTED TO PROVIDE FIRE RESISTANCE EQUIVALENT TO THAT REQUIRED OF THE BARRIER;	PVNGS UTILIZES 3 HOUR BARRIERS, AND SUPPRESSION SYSTEMS WITH SEPARATION OR BARRIERS. IF WATER CANNOT BE USED AS A SUPPRESSANT, THREE HOUR BARRIERS ARE USED. HOWEVER, NEITHER SUPPRESSION NOR BARRIERS ARE PROVIDED BETWEEN SAFETY RELATED PANELS IN THE CONTROL ROOM. (A STUDY TO VERIFY SEPARATION WILL BE DISCUSSED UNDER FUTURE WORK)
B. SEPARATION OF CABLES AND EQUIPMENT AND ASSOCIATED NON-SAFETY CIRCUITS OF REDUNDANT TRAINS BY A HORIZONTAL DISTANCE OF MORE THAN 20 FEET WITH NO INTEVENING COMBUSTIBLE OR FIRE HAZARDS. IN ADDITION, FIRE DETECTORS AND AN AUTOMATIC FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED IN THE FIRE AREA; OR	

REQUIREMENT	DESIGN FEATURE
c. ENCLOSURE OF CABLE AND EQUIPMENT AND ASSOCIATED NON-SAFETY CIRCUITS OF ONE REDUNDANT TRAIN IN A FIRE BARRIER HAVING A 1-HOUR RATING. IN ADDITION, FIRE DETECTORS AND AN AUTOMATIC FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED IN THE FIRE AREA;	

REQUIREMENT	DESIGN FEATURE
INSIDE NONINERTED CONTAINMENTS ONE OF THE FIRE PROTECTION MEANS SPECIFIED ABOVE OR ONE OF THE FOLLOWING FIRE PROTECTION MEANS SHALL BE PROVIDED:	
D. SEPARATION OF CABLES AND EQUIPMENT AND ASSOCIATED NON-SAFETY CIRCUITS OF REDUNDANT TRAINS BY A HORIZONTAL DISTANCE OF MORE THAN 20 FEET WITH NO INTERVENING COMBUSTIBLES OR FIRE HAZARDS;	A STUDY TO VERIFY SEPARATION WILL BE DISCUSSED UNDER FUTURE WORK.
E. INSTALLATION OF FIRE DETECTORS AND AN AUTOMATIC FIRE SUPPRESSION SYSTEM IN THE FIRE AREA; OR	
F. SEPARATION OF CABLES AND EQUIPMENT AND ASSOCIATED NON-SAFETY CIRCUITS OF REDUNDANT TRAINS BY A NON-COMBUSTIBLE RADIANT ENERGY SHIELD.	

REQUIREMENT	DESIGN FEATURE
3. ALTERNATIVE OR DEDICATED SHUTDOWN CAPABILITY AND ITS ASSOCIATED CIRCUITS, INDEPENDENT OF CABLES, SYSTEMS OR COMPONENTS IN THE AREA, ROOM OR ZONE UNDER CONSIDERATION, SHALL BE PROVIDED:	
A. WHERE THE PROTECTION OF SYSTEMS WHOSE FUNCTION IS REQUIRED FOR HOT SHUTDOWN DOES NOT SATISFY THE REQUIREMENT OF PARAGRAPH G.2 OF THIS SECTION; OR	PVNGS PROVIDES ALTERNATIVE SHUTDOWN CAPABILITY AT LOCATIONS OUTSIDE THE MAIN CONTROL ROOM. THESE AREAS OR ROOMS HAVE DETECTION AND FIXED SUPPRESSION SYSTEMS.
B. WHERE REDUNDANT TRAINS OF SYSTEMS REQUIRED FOR HOT SHUTDOWN LOCATED IN THE SAME FIRE AREA MAY BE SUBJECT TO DAMAGE FROM FIRE SUPPRESSION ACTIVITIES OR FROM THE RUPTURE OR INADVERTENT OPERATION OF FIRE SUPPRESSION SYSTEMS.	
IN ADDITION, FIRE DETECTION AND A FIXED FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED IN THE AREA, ROOM, OR ZONE UNDER CONSIDERATION.	

	REQUIREMENT	DESIGN FEATURE
H.	A SITE FIRE BRIGADE SHALL BE ESTABLISHED, TRAINED, AND EQUIPPED FOR MANUAL FIREFIGHTING.	PVNGS WILL COMPLY WITH ALL REQUIREMENTS.
I.	THE FIRE BRIGADE TRAINING PROGRAM SHALL ENSURE THAT THE CAPABILITY TO FIGHT POTENTIAL FIRES IS ESTABLISHED AND MAINTAINED.	PVNGS WILL COMPLY WITH ALL TRAINING REQUIREMENTS.

REQUIREMENT	DESIGN FEATURE
J. EMERGENCY LIGHTING UNITS WITH AT LEAST 8-HOUR BATTERY SUPPLY SHALL BE PROVIDED IN ALL AREAS NEEDED FOR OPERATION OF SAFE SHUTDOWN EQUIPMENT AND IN ACCESS AND EGRESS ROUTES THERETO.	PVNGS COMPLIES
K. ADMINISTRATIVE CONTROLS SHALL BE IMPLEMENTED TO MINIMIZE FIRE HAZARDS IN AREAS IMPORTANT TO SAFETY.	THE PVNGS PLANT MANAGER SHALL ESTABLISH CONTROLS AS REQUIRED.
L.	
1. ALTERNATIVE OR DEDICATED SHUTDOWN CAPABILITY PROVIDES FOR A SPECIFIC AREA SHALL BE ABLE TO ACHIEVE AND MAINTAIN COLD SHUTDOWN. DURING THE POSTFIRE SHUTDOWN, THE REACTOR COOLANT SYSTEM PROCESS VARIABLES SHALL BE MAINTAINED WITHIN THOSE FOR A LOSS OF NORMAL A.C. POWER.	PVNGS ALTERNATIVE SHUTDOWN CAPABILITY, WHICH IS PROVIDED ONLY FOR THE CONTROL ROOM, HAS THIS CAPABILITY
2. THE PERFORMANCE GOALS FOR THE SHUTDOWN FUNCTIONS SHALL BE:	PVNGS ALTERNATIVE SHUTDOWN CAPABILITY PROVIDES THESE FUNCTIONS
A. THE REACTIVITY CONTROL FUNCTION SHALL BE CAPABLE OF ACHIEVING AND MAINTAINING COLD SHUTDOWN REACTIVITY CONDITIONS.	

REQUIREMENT	DESIGN FEATURE
B. THE REACTOR COOLANT MAKEUP FUNCTION SHALL BE CAPABLE OF MAINTAINING THE REACTOR COOLANT LEVEL ABOVE THE TOP OF THE CORE FOR BWRs AND BE WITHIN THE LEVEL INDICATION IN THE PRESSURIZER FOR PWRs.	
C. THE REACTOR HEAT REMOVAL FUNCTION SHALL BE CAPABLE OF ACHIEVING AND MAINTAINING DECAY HEAT REMOVAL.	
D. THE PROCESS MONITORING FUNCTION SHALL BE CAPABLE OF PROVIDING DIRECT READINGS OF THE PROCESS VARIABLES NECESSARY TO PERFORM AND CONTROL THE ABOVE FUNCTIONS.	
E. THE SUPPORTING FUNCTIONS SHALL BE CAPABLE OF PROVIDING THE PROCESS COOLING, LUBRICATION, ETC., NECESSARY TO PERMIT THE OPERATION OF THE EQUIPMENT USED FOR SAFE SHUTDOWN FUNCTIONS.	

REQUIREMENT	DESIGN FEATURE
3. THE SHUTDOWN CAPABILITY FOR SPECIFIC FIRE AREAS MAY BE UNIQUE FOR EACH SUCH AREA, OR IT MAY BE ONE UNIQUE COMBINATION OF SYSTEMS FOR ALL SUCH AREAS. IN EITHER CASE, THE ALTERNATIVE SHUTDOWN CAPABILITY SHALL BE INDEPENDENT OF THE SPECIFIC FIRE AREA(S) AND SHALL ACCOMMODATE POSTFIRE CONDITIONS WHERE OFFSITE POWER IS AVAILABLE AND WHERE OFFSITE POWER IS NOT AVAILABLE FOR 72 HOURS. PROCEDURES SHALL BE IN EFFECT TO IMPLEMENT THIS CAPABILITY.	PVNGS PROVIDES INDEPENDENT ALTERNATIVE SHUTDOWN CAPABILITY, AND CAN BE POWERED BY ON-SITE POWER.

REQUIREMENT	DESIGN FEATURE
4. IF THE CAPABILITY TO ACHIEVE AND MAINTAIN COLD SHUTDOWN WILL NOT BE AVAILABLE BECAUSE OF FIRE DAMAGE, THE EQUIPMENT AND SYSTEMS COMPRISING THE MEANS TO ACHIEVE AND MAINTAIN THE HOT STANDBY OR HOT SHUTDOWN CONDITION SHALL BE CAPABLE OF MAINTAINING SUCH CONDITIONS UNTIL COLD SHUTDOWN CAN BE ACHIEVED. IF SUCH EQUIPMENT AND SYSTEMS WILL NOT BE CAPABLE OF BEING POWERED BY BOTH ONSITE AND OFFSITE ELECTRIC POWER SYSTEMS BECAUSE OF FIRE DAMAGE, AN INDEPENDENT ONSITE POWER SYSTEM SHALL BE PROVIDED. THE NUMBER OF OPERATING SHIFT PERSONNEL, EXCLUSIVE OF FIRE BRIGADE MEMBERS, REQUIRED TO OPERATE SUCH EQUIPMENT AND SYSTEMS SHALL BE ON SITE AT ALL TIMES.	A STUDY WILL BE PERFORMED TO DEMONSTRATE THAT FIRE DAMAGE WILL NOT PRECLUDE COLD SHUTDOWN

REQUIREMENT	DESIGN FEATURE
5. EQUIPMENT AND SYSTEMS COMPRISING THE MEANS TO ACHIEVE AND MAINTAIN COLD SHUTDOWN CONDITIONS SHALL NOT BE DAMAGED BY FIRE; OR THE FIRE DAMAGE TO SUCH EQUIPMENT AND SYSTEMS SHALL BE LIMITED SO THAT THE SYSTEMS CAN BE MADE OPERABLE AND COLD SHUTDOWN ACHIEVED WITHIN 72 HOURS. MATERIALS FOR SUCH REPAIRS SHALL BE READILY AVAILABLE ON SITE AND PROCEDURES SHALL BE IN EFFECT TO IMPLEMENT SUCH REPAIRS. IF SUCH EQUIPMENT AND SYSTEMS USED PRIOR TO 72 HOURS AFTER THE FIRE WILL NOT BE CAPABLE OF BEING POWERED BY BOTH ONSITE AND OFFSITE ELECTRIC POWER SYSTEMS BECAUSE OF FIRE DAMAGE, AN INDEPENDENT ONSITE POWER SYSTEM SHALL BE PROVIDED. EQUIPMENT AND SYSTEMS USED AFTER 72 HOURS MAY BE POWERED BY OFF-SITE POWER ONLY.	PVNGS EQUIPMENT AND SYSTEMS NECESSARY FOR COLD SHUTDOWN WILL NOT BE DAMAGED BY A SINGLE FIRE.

	REQUIREMENT	DESIGN FEATURE
6.	SHUTDOWN SYSTEMS INSTALLED TO ENSURE POSTFIRE SHUTDOWN CAPABILITY NEED NOT BE DESIGNED TO MEET SEISMIC CATEGORY I CRITERIA, SINGLE FAILURE CRITERIA, OR OTHER DESIGN BASIS ACCIDENT CRITERIA, EXCEPT WHERE REQUIRED FOR OTHER REASONS, E.G., BECAUSE OF INTERFACE WITH OR IMPACT ON EXISTING SAFETY SYSTEMS, OR BECAUSE OF ADVERSE VALVE ACTIONS DUE TO FIRE DAMAGE.	NOT APPLICABLE

REQUIREMENT	DESIGN FEATURE
7. THE SAFE SHUTDOWN EQUIPMENT AND SYSTEMS FOR EACH FIRE AREA SHALL BE KNOWN TO BE ISOLATED FROM ASSOCIATED NON-SAFETY CIRCUITS IN THE FIRE AREA SO THAT HOT SHORTS, OPEN CIRCUITS, OR SHORTS TO GROUND IN THE ASSOCIATED CIRCUITS WILL NOT PREVENT OPERATION OF THE SAFE SHUTDOWN EQUIPMENT. THE SEPARATION AND BARRIERS BETWEEN TRAYS AND CONDUITS CONTAINING ASSOCIATED CIRCUITS OF ONE SAFE SHUTDOWN DIVISION AND TRAYS AND CONDUITS CONTAINING ASSOCIATED CIRCUITS OR SAFE SHUTDOWN CABLES FROM THE REDUNDANT DIVISION, OR THE ISOLATION OF THESE ASSOCIATED CIRCUITS FROM THE SAFE SHUTDOWN EQUIPMENT, SHALL BE SUCH THAT A POSTULATED FIRE INVOLVING ASSOCIATED CIRCUITS WILL NOT PREVENT SAFE SHUTDOWN.	PVNGS ROUTES ASSOCIATED CIRCUITS AS IF THEY WERE CLASS IE CIRCUITS. SHORTS, GROUNDS, OR OPEN CIRCUITS ARE ELECTRICALLY ISOLATED FROM SAFE SHUTDOWN CIRCUITS.

REQUIREMENT	DESIGN FEATURE
M. FIRE BARRIER CABLE PENETRATION SEAL QUALIFICATION PENETRATION SEAL DESIGNS SHALL UTILIZE ONLY NONCOMBUSTIBLE MATERIALS AND SHALL BE QUALIFIED BY TESTS THAT ARE COMPARABLE TO TESTS USED TO RATE FIRE BARRIERS. THE ACCEPTANCE CRITERIA FOR THE TEST SHALL INCLUDE: 1. THE CABLE FIRE BARRIER PENETRATION SEAL HAS WITHSTOOD THE FIRE ENDURANCE TEST WITHOUT PASSAGE OF FLAME OR IGNITION OF CABLES ON THE UNEXPOSED SIDE FOR A PERIOD OF TIME EQUIVALENT TO THE FIRE RESISTANCE RATING REQUIRED OF THE BARRIER; 2. THE TEMPERATURE LEVELS RECORDED FOR THE UNEXPOSED SIDE ARE ANALYZED AND DEMONSTRATE THAT THE MAXIMUM TEMPERATURE IS SUFFICIENTLY BELOW THE CABLE INSULATION IGNITION TEMPERATURE; AND	PVNGS PENETRATION SEALS WILL BE QUALIFIED BY ACCEPTABLE TESTS

REQUIREMENT	DESIGN FEATURE
3. THE FIRE BARRIER PENETRATION SEAL REMAINS INTACT AND DOES NOT ALLOW PROJECTION OF WATER BEYOND THE UNEXPOSED SURFACE DURING THE HOSE STREAM TEST.	
N. FIRE DOORS	
FIRE DOORS SHALL BE SELF-CLOSING OR PROVIDED WITH CLOSING MECHANISMS AND SHALL BE INSPECTED SEMIANNUALLY TO VERIFY THAT AUTOMATIC HOLD-OPEN, RELEASE, AND CLOSING MECHANISMS AND LATCHES ARE OPERABLE.	PVNGS USES AN APPLICABLE OPTION, FOR THE PARTICULAR DOOR OR AREA REQUIRING PROTECTION.
ONE OF THE FOLLOWING MEASURES SHALL BE PROVIDED TO ENSURE THEY WILL PROTECT THE OPENING AS REQUIRED IN CASE OF FIRE:	
1. FIRE DOORS SHALL BE KEPT CLOSED AND ELECTRICALLY SUPERVISED AT A CONTINUOUSLY MANNED LOCATION;	
2. FIRE DOORS SHALL BE LOCKED CLOSED AND INSPECTED WEEKLY TO VERIFY THAT THE DOORS ARE IN THE CLOSED POSITION;	

REQUIREMENT	DESIGN FEATURE
3. FIRE DOORS SHALL BE PROVIDED WITH AUTOMATIC HOLD-OPEN AND RELEASE MECHANISMS AND INSPECTED DAILY TO VERIFY THAT DOORWAYS ARE FREE OF OBSTRUCTIONS; OR	
4. FIRE DOORS SHALL BE KEPT CLOSED AND INSPECTED DAILY TO VERIFY THAT THEY ARE IN THE CLOSED POSITION.	
THE FIRE BRIGADE LEADER SHALL HAVE READY ACCESS TO KEYS FOR ANY LOCKED FIRE DOORS.	THE FIRE BRIGADE LEADER WILL HAVE THE ABILITY TO OPEN LOCKED OR SECURITY DOORS.
AREAS PROTECTED BY AUTOMATIC TOTAL FLOODING GAS SUPPRESSION SYSTEMS SHALL HAVE ELECTRICALLY SUPERVISED SELF-CLOSING FIRE DOORS OR SHALL SATISFY OPTION 1 ABOVE.	ALTHOUGH NO CREDIT IS TAKEN FOR CARBON DIOXIDE FLOODING SYSTEMS, THESE AREAS HAVE CLOSED SUPERVISED FIRE DOORS.

	REQUIREMENT	DESIGN FEATURE
O.	OIL COLLECTION SYSTEM FOR REACTOR COOLANT PUMP THE REACTOR COOLANT PUMP SHALL BE EQUIPPED WITH AN OIL COLLECTION SYSTEM IF THE CONTAINMENT IS NOT INERTED DURING NORMAL OPERATION. THE OIL COLLECTION SYSTEM SHALL BE SO DESIGNED, ENGINEERED, AND INSTALLED THAT FAILURE WILL NOT LEAD TO FIRE DURING NORMAL OR DESIGN BASIS ACCIDENT CONDITIONS AND THAT THERE IS REASONABLE ASSURANCE THAT THE SYSTEM WILL WITHSTAND THE SAFE SHUTDOWN EARTHQUAKE.	PVNGS PROVIDES A LUBE OIL COLLECTION SYSTEM WHICH WILL PREVENT OIL FROM CONTACTING HOT SURFACES FOLLOWING THE SAFE SHUTDOWN EARTHQUAKE, OR A LUBE OIL SYSTEM WHICH WILL NOT LEAK FOLLOWING THE SAFE SHUTDOWN EARTHQUAKE.

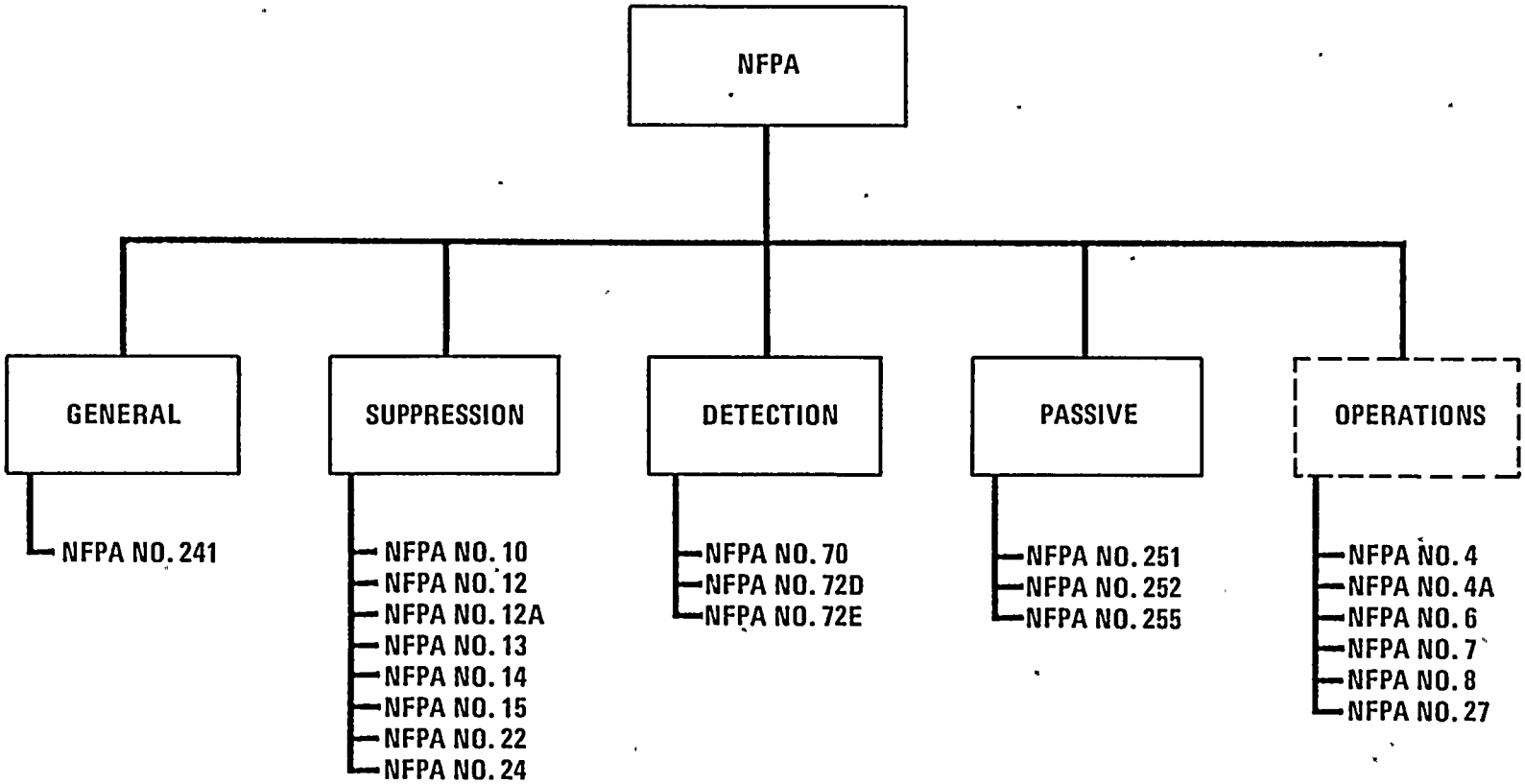

NFPA
GENERAL
NFPA NO. 241
SUPPRESSION
NFPA NO. 10
NFPA NO. 12
NFPA NO. 12A
NFPA NO. 13
NFPA NO. 14
NFPA NO. 15
NFPA NO. 22
NFPA NO. 24
DETECTION
NFPA NO. 70
NFPA NO. 72D
NFPA NO. 72E
PASSIVE
NFPA NO. 251
NFPA NO. 252
NFPA NO. 255
OPERATIONS
NFPA NO. 4
NFPA NO. 4A
NFPA NO. 6
NFPA NO. 7
NFPA NO. 8
NFPA NO. 27

FIGURE 4C-1

EXCEPTIONS TO NFPA CODES

A. NFPA 14-1976 (STANDPIPE AND HOSE SYSTEMS)

	REQUIREMENT	PVNGS DESIGN*
4-1.2	APPROVED INDICATING TYPE VALVES SHALL BE PROVIDED AT THE MAIN RISER FOR CONTROLLING THE OCCUPANT'S HOSE OUTLETS.	PVNGS DOES NOT PROVIDE VALVES.
6-2.	VALVES SHALL BE PROVIDED TO PERMIT ISOLATING A STANDPIPE RISER.	SOME RISERS DO NOT HAVE ISOLATION VALVES.
6-6.1	AN APPROVED PRESSURE GAUGE SHALL BE LOCATED AT THE TOP OF EACH STANDPIPE.	PVNGS DOES NOT PROVIDE THESE GAUGES.

*PVNGS DESIGN HAS BEEN APPROVED BY AMERICAN NUCLEAR INSURERS

EXHIBIT 4C-1

B. NFPA 72D-1975 (PROPRIETARY PROTECTIVE SIGNALING SYSTEMS)

	REQUIREMENT	PVNGS DESIGN*
1121.	THE CENTRAL SUPERVISING STATION SHALL BE LOCATED IN A FIRE RESISTIVE DETACHED BUILDING OR SUITABLY CUT-OFF ROOM AND SHALL NOT BE NEAR OR EXPOSED TO THE HAZARDOUS PARTS OF THE PREMISES PROTECTED.	THE CONTROL ROOM COMMUNICATION CONSOLE (CRCC), WHICH IS THE CENTRAL SUPERVISING STATION FOR EACH UNIT, IS LOCATED IN THE MAIN CONTROL ROOM WHERE A FIRE POTENTIAL EXISTS.
2231.	POWER FOR REMOTELY LOCATED UNITS OR OTHER EQUIPMENT SHALL HAVE A PRIMARY AND SECONDARY POWER SUPPLY.	POWER IS SUPPLIED FROM THE ESSENTIAL LIGHTING PANELS, WHICH ARE FED FROM A CLASS 1E POWER SUPPLY THROUGH AN ISOLATION DEVICE, FOR ALL REMOTE CONTROL UNITS. THE CLASS 1E POWER SYSTEM HAS TWO OFFSITE SOURCES, AND ONSITE DIESEL GENERATOR BACKUP. CONTROL UNITS FOR SAFETY RELATED AREAS ALSO HAVE 24-HOUR BACKUP BATTERIES. THE FIRE PUMP HOUSE TRANSMITTER UNIT IS FED FROM NON-CLASS 1E POWER SUPPLY AND HAS 24-HOUR BACKUP BATTERIES.

*APPROVED BY INSURERS

3422.	SIGNALS TRANSMITTED SHALL INDICATE DISTINCTIVELY THE PARTICULAR ELEMENT OF THE AUTOMATIC SPRINKLER SYSTEM WHICH IS ABNORMAL AND ITS RETURN TO A NORMAL CONDITION.	ALARMS ARE DISTINCTIVE FOR EACH ELEMENT. ALARM CEASES UPON RETURN TO NORMAL. RETURN TO NORMAL CONDITION IS NOT INDICATED.
3443.	PRESSURE SUPERVISORY SIGNAL FOR DRY PIPE SYSTEMS SHALL INDICATE HIGH AND LOW PRESSURE.	PVNGS INDICATES ONLY LOW PRESSURE.
3443.	WATER STORAGE CONTAINERS SHALL BE SUPERVISED TO OBTAIN TWO SEPARATE AND DISTINCTIVE SIGNALS, ONE INDICATING HIGH OR LOW WATER LEVEL, AND THE OTHER INDICATING RESTORATION TO NORMAL LEVEL.	PVNGS USES WATER TANKS SHARED WITH THE DOMESTIC WATER SYSTEM. A HIGH LEVEL ALARM IS PROVIDED AT THE OVERFLOW LEVEL. AN ALARM IS PROVIDED AT THE POINT THE DOMESTIC WATER LEVEL IS LOW, WHICH APPROXIMATELY CORRESPONDS TO THE FIRE WATER RESERVE LEVEL. THIS ALARM DISAPPEARS UPON RESTORATION OF LEVEL, BUT A DISTINCTIVE ALARM IS NOT PROVIDED.
3445.	WATER TANK TEMPERATURE (LOW) SHALL BE SUPERVISED.	PVNGS IS NOT REQUIRED PER NFPA 22 TO HEAT THE TANKS. THEREFORE, TEMPERATURE SUPERVISION IS NOT REQUIRED.

3541 A SMOKE DETECTING COMBINATION OF A "CLASS A" PROPRIETARY SYSTEM SHALL BE CAPABLE OF OPERATING FOR A SMOKE ALARM SIGNAL DURING A SINGLE BREAK OR GROUND FAULT CONDITION OF THE CIRCUIT WIRING CONDUCTORS BETWEEN THE SMOKE ALARM SIGNAL TRANSMITTER AND THE SMOKE DETECTOR CONTROL UNIT, UNLESS THESE ARE IN A COMMON ENCLOSURE, OR SEPARATED BY LESS THAN THREE FEET WITH THE CIRCUITS RUN IN CONDUIT.

A "CLASS A" WIRING SYSTEM IS PROVIDED FROM THE LOCAL CONTROL UNITS TO THE SIGNAL TRANSMITTER ONLY FOR SUPPRESSION SYSTEMS SERVING SAFETY-RELATED AREAS.

EXHIBIT 4C-4

5. FUTURE WORK

EXHIBIT 5-1

CONTROL ROOM FIRE

1. DISCONNECT/TRANSFER SWITCHES WILL BE USED TO MITIGATE INTERFERENCE FROM CONTROL ROOM CIRCUIT FAILURES TO ENABLE CONTROL FROM THE REMOTE SHUTDOWN PANEL OR LOCALLY OF ONE TRAIN OF EQUIPMENT REQUIRED FOR HOT SHUTDOWN. PROCEDURES WILL BE UTILIZED TO REMOVE FUSES, DISCONNECT WIRES, ETC. TO ENABLE LOCAL CONTROL OF EQUIPMENT REQUIRED FOR COLD SHUTDOWN.

2. NO DESIGN BASIS ACCIDENTS ARE ASSUMED TO OCCUR CONCURRENT WITH THE CONTROL ROOM FIRE. LOSS OF OFFSITE POWER IS ASSUMED CONCURRENT WITH THE CONTROL ROOM FIRE.

3. THE EFFECTS OF NON-IE OR SPURIOUS CIRCUIT FAILURES WILL NOT BE CONSIDERED.

4. AUTOMATIC CONTROL FUNCTIONS WILL NOT BE DISCONNECTED UNLESS CIRCUIT FAILURES DUE TO CONTROL ROOM FIRE WILL POTENTIALLY INTERFERE WITH LOCAL CONTROL.

EXHIBIT 5A-1

CONTROL ROOM FIRE TASK PLAN AND SCHEDULE

ITEM	DESCRIPTION
1.	REVIEW AND FIRM UP EQUIPMENT LIST.
2.	DESIGN APPROVAL.
3.	ESTABLISH WHAT EQUIPMENT REQUIRES DISCONNECT SWITCHES OR ANALOG TRANSFER.
4.	ESTABLISH PHYSICAL LOCATION FOR DISCONNECT SWITCHES, CABINET, AND ANALOG ELECTRONICS.
5.	ESTABLISH CORRECTIVE MEASURES FOR REMOTE SHUTDOWN PANEL PHYSICAL SEPARATION/FIRE BARRIER.
6.	REVISE ELEMENTARIES, LOOP DIAGRAMS, VENDOR DRAWINGS, LOGIC DIAGRAMS AND REROUTE CABLES.
7.	PURCHASE CABINET, SWITCHES, AND ANALOG ELECTRONICS.

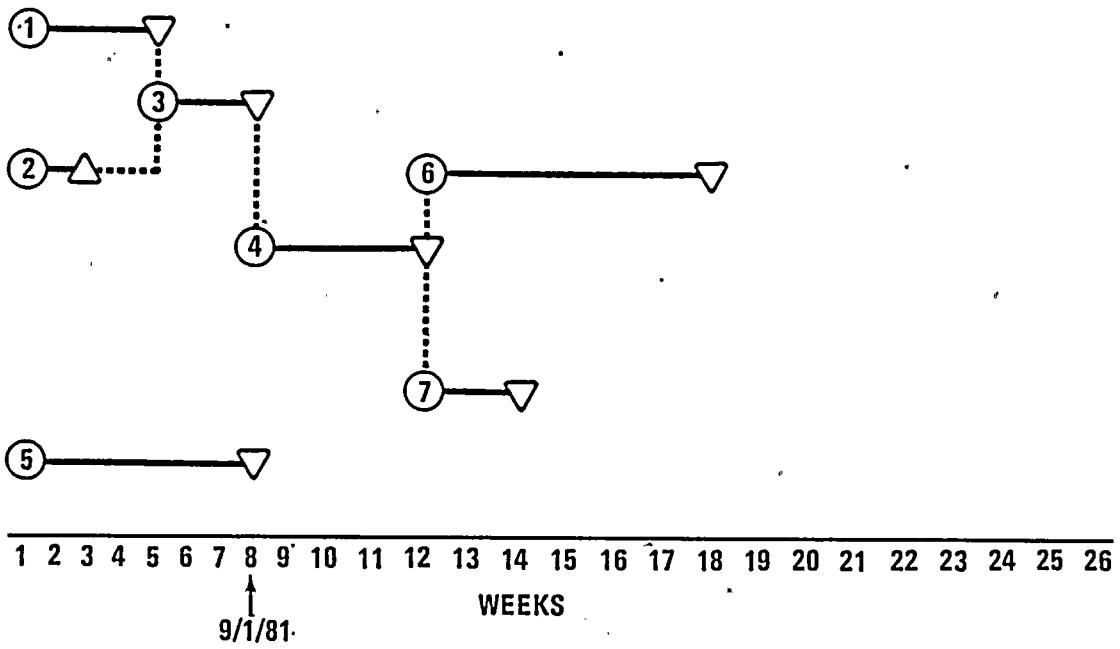


EXHIBIT 5A-2

REACTOR COOLANT PUMP LUBE OIL SYSTEM
SCHEDULE AND WORK PLAN

1. PUMP SUPPLIER (COMBUSTION ENGINEERING) PROVIDED WITH COPY OF APPENDIX R, ITEM O AND CRITERIA ON DECEMBER 31, 1980.

2. COST AND SCHEDULE BY OCTOBER 1, 1981

   A) ANALYZE AND REVISE LUBE OIL SYSTEM TO WITHSTAND AN SSE WITHOUT LEAKAGE AND/OR

   B) PROVIDE A COLLECTION SYSTEM TO CONTAIN ANY LEAKAGE OR

   C) INVESTIGATE USE OF FIRE-RETARDANT OIL.

3. DETERMINATION OF MODIFICATIONS BY OCTOBER 1, 1981

4. FINALIZE DESIGN BY JANUARY 1, 1982

5. IMPLEMENT MODIFICATIONS BY JULY 1, 1982

EXHIBIT 5B-1

WORK PLAN TO MEET CABLE AND RACEWAY SEPARATION PER APPENDIX R

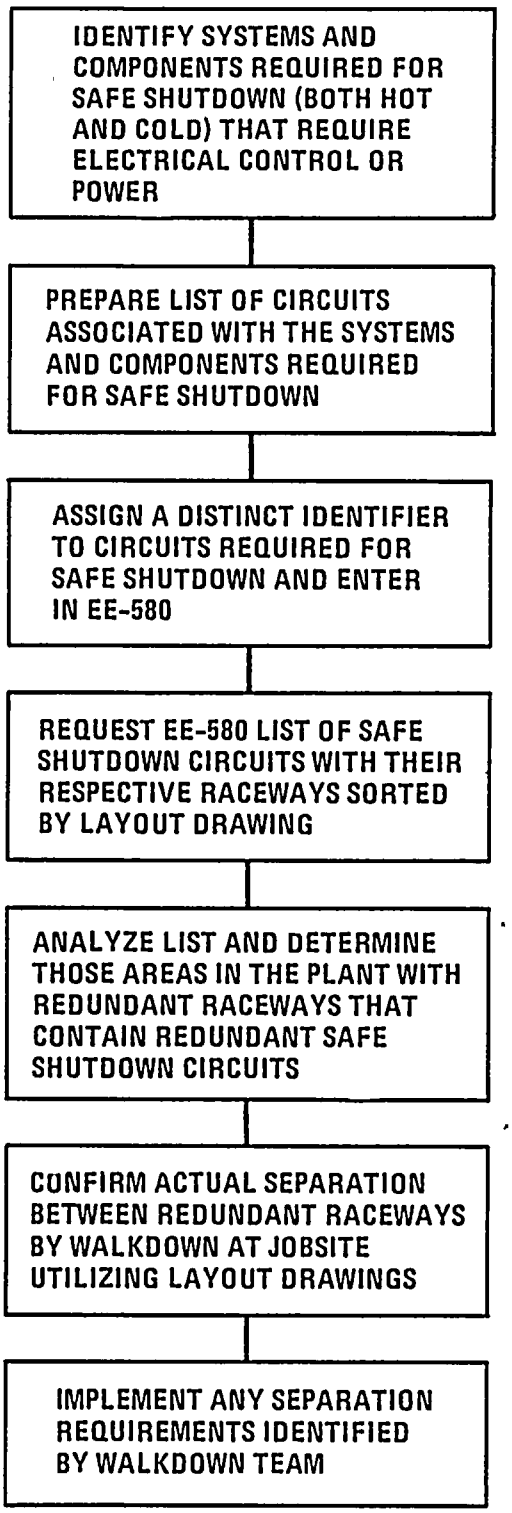
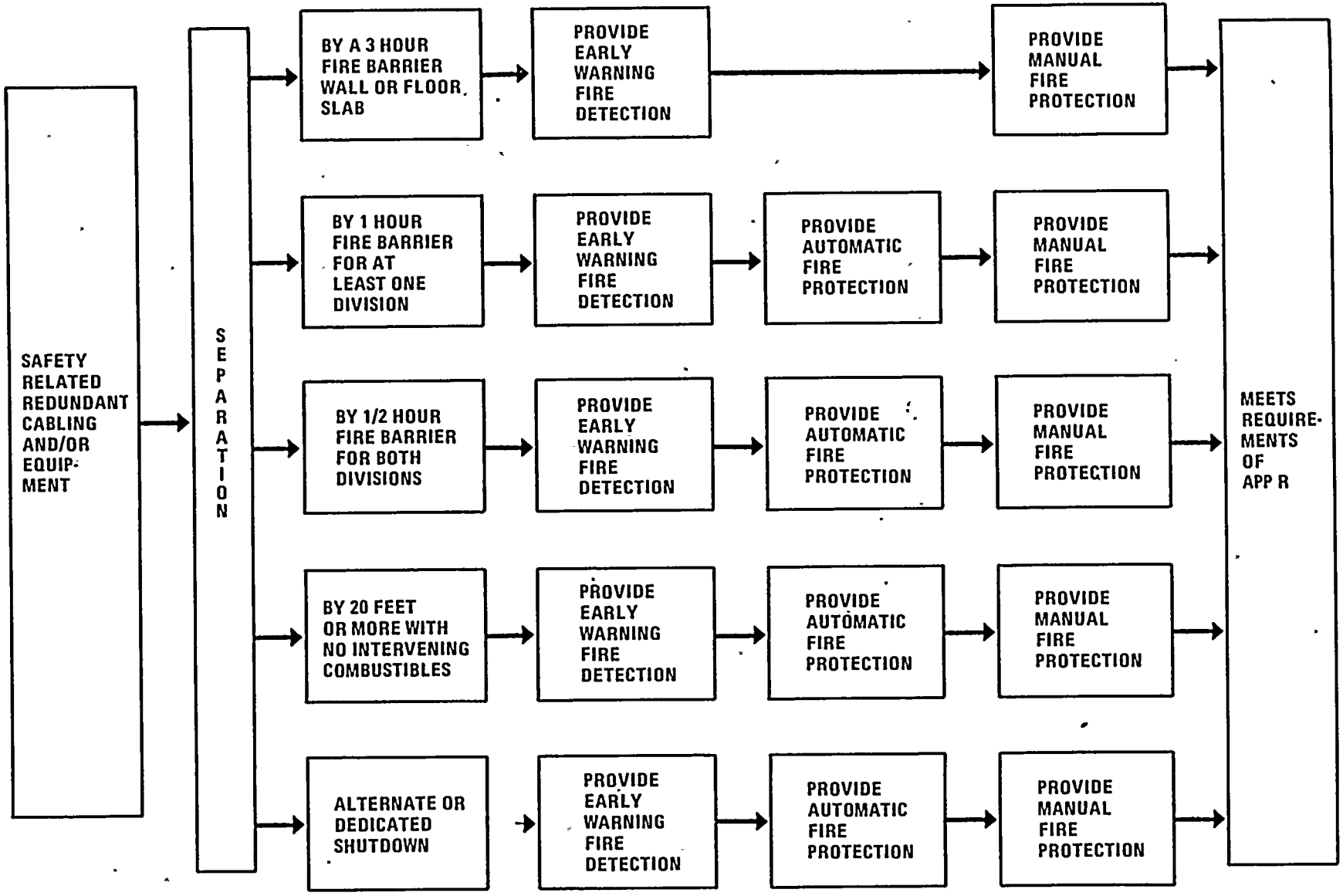
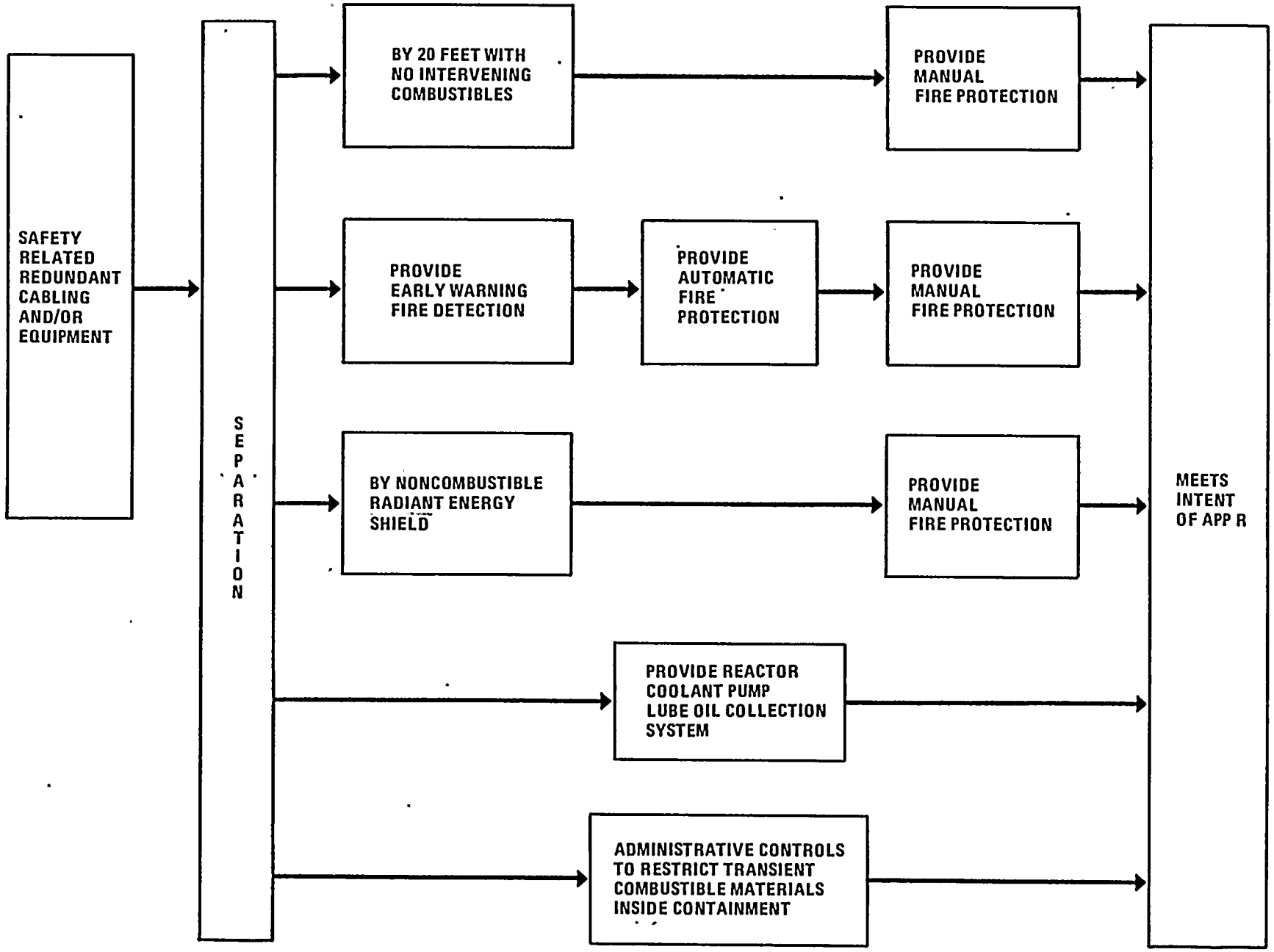


FIGURE 5C-1



PVNGS SEPARATION CRITERIA FOR STRUCTURES OTHER THAN THE CONTAINMENT BUILDING

FIGURE 5C-2



PVNGS SEPARATION CRITERIA FOR THE CONTAINMENT BUILDING
FIGURE 5C-3

SOLUTIONS TO ASSURE ADEQUATE CABLE AND RACEWAY SEPARATION

1. REROUTE CONDUIT OR TRAY TO MEET SEPARATION CRITERIA.

2. SEPARATION USING AN APPROVED 3-HOUR RATED BARRIER.

3. SEPARATION BY A HORIZONTAL DISTANCE OF 20 FEET WITH NO INTERVENING COMBUSTIBLES IN ADDITION TO FIRE DETECTORS AND AUTOMATIC FIRE SUPPRESSION SYSTEM.

4. PROTECTION BY ENCLOSING IN A FIRE BARRIER HAVING A 1-HOUR RATING IN ADDITION TO PROVIDING FIRE DETECTORS AND AN AUTOMATIC FIRE SUPPRESSION SYSTEM.

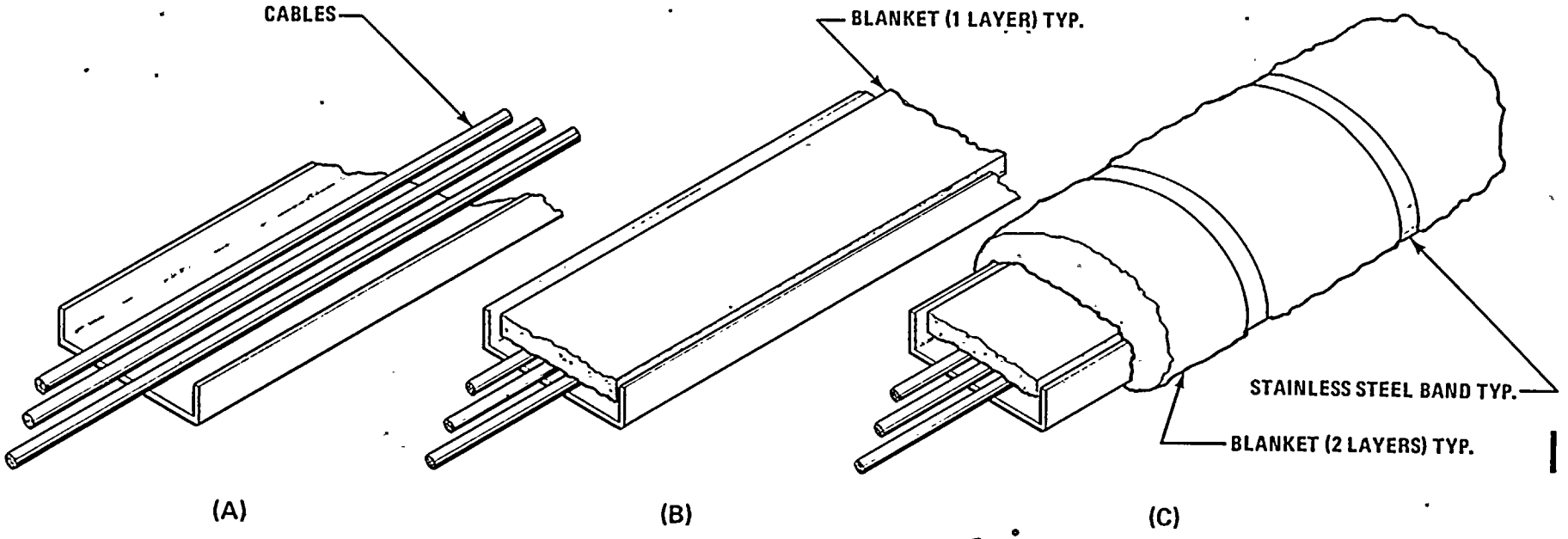
   A) INSTALLATION OF 1-INCH KAOWOOL (OR APPROVED EQUIVALENT), MINERAL FIRE RETARDANT MATERIAL, LAID INTO TOP OF TRAYS, AND

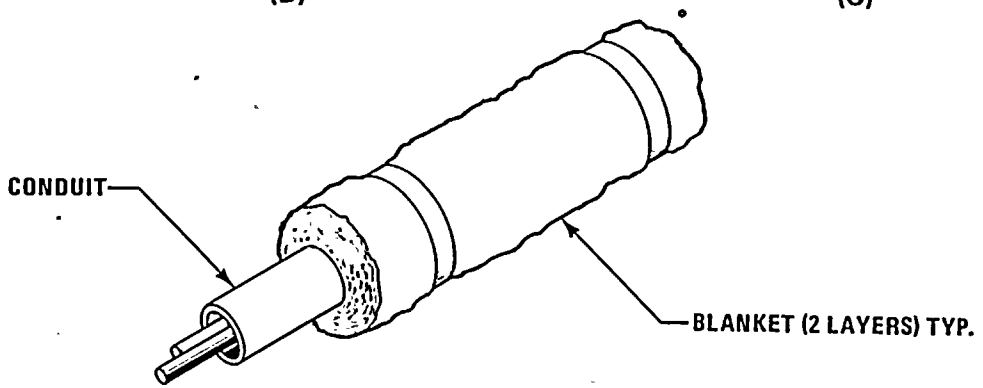
   B) TWO 1-INCH THICK LAYERS OF KAOWOOL (OR APPROVED EQUIVALENT), EQUIVALENT TO A 60-MINUTE FIRE BARRIER, TO BE WRAPPED AROUND CONDUITS AND TRAYS, AND

   C) STAINLESS STEEL BANDING WILL BE USED TO SECURE KAOWOOL (OR APPROVED EQUIVALENT) AROUND CONDUITS AND TRAYS.

EXHIBIT 5C-1

KAOWOOL (OR APPROVED EQUIVALENT) INSTALLED ON TRAY





KAOWOOL (OR APPROVED EQUIVALENT) INSTALLED ON CONDUIT

FIGURE 5C-4