



ARKANSAS NUCLEAR ONE
CALCULATION COVER SHEET

Calc. No.: 91-E-0072-01
Calc. Title: FIRE HAZARDS ANALYSIS
(FHA)

Unit: 0 Category: FP

System(s): FD

Topic(s): FIRE

Component No(s): _____

Calc. Type: CG

Plt Area: Bldg. _____ Elev. _____

Room _____ Wall _____

Coordinates: _____

Abstract (Included Purpose/Results): TO UPDATE THE FHA TO COMPLY WITH EXISTING PLANT
CONDITIONS AND SUBMITAL TO THE NRC FOR APPROVAL

Rev. No.: 1

Verification Method: _____ Design Review: X

Alternate Calculation: _____ Qualification Testing: _____

Pages Revised and/or Added: PAGES 1 - 277 AND DRAWINGS FP-101, FP-102, FP-103, FP-104,
FP-106, FP-110, FP-2101, FP-2102, FP-2103, FP-2104, FP-2105, FP-2106, FP-2107, AND FP-2108

Purpose of Revision: TO COMPLY WITH EXISTING PLANT CONDITIONS AND SUBMITAL TO NRC

Initiating Documents	Resulting Document(s)	Key Design Input Docs.
SEE ATTACHED LIST		

Amends Calc(s): _____

Supercedes Calc(s): _____

Computer Software(Ver.): _____

By: WILLIAM MOLNAR WM / 7/7/93 Rvw'd: Ben Rispoli / BR / 7-7-93

Chk'd: TD REARDEN / TR / 7/7/93 App'd: Donald B. Lomax / DL / 7-5-93
(Print Name) (Initials)(Date) (Print Name) (Initials)(Date)

Check if Additional Revisions: _____

REVISION ONE CHANGES FOR FHA JULY 1993		
INITIATING DOCUMENT	PAGE	SECTION
DCP-89-2043	144	10.6
DCP-85-20750	65	6.2.5
LCP-90-6021	144	10.1
LCP-90-5036	104	10.1
LCP-90-5036	110	10.1
LCP-90-5036	188	10.1
CR-2-89-740, AI#3	87	10.1
CR-2-89-740, AI#3	88	10.1
CR-2-89-740, AI#3	91	10.1
CR-2-89-740, AI#3	119	10.1
CR-2-89-740, AI#3	122	10.1
CR-2-89-740, AI#3	126	10.1
CR-2-89-740, AI#3	133	10.1
CR-2-89-740, AI#3	144	10.1
CR-2-89-740, AI#3	158	10.1
CR-2-89-740, AI#3	159	10.1
QAP-17J-91-R01	3	TABLE OF CONTENTS
QAP-17J-91-R01	5	TABLE OF CONTENTS
QAP-17J-91-R01	46	5.8.4
QAP-17J-91-R01	95	10.7
QAP-17J-91-R01	96	10.7
QAP-17J-91-R01	163	9.6
QAP-17J-91-R01	164	10.1
QAP-17J-91-R01	183	9.6
QAP-17J-91-R01	184	10.0 & 10.7
QAP-17J-91-R01	200	10.8
QAP-17J-91-R01	233	9.6
QAP-17J-91-R01	234	10.1
QAP-17J-91-R01	238	9.6
QAP-17J-91-R01	239	10.1
QAP-17J-91-R01	272	12
QAP-17J-91-R01	273	12
EAR 87-334	39	5.7.6 E
OP 1015.11	61	5.9.7
DCP-90-2036	66	6.3.1
DCP-90-2036	134	10.2
DCP-90-1067	66	6.3.1
DCP-90-1067	108	10.2
LDCR	6	TABLE OF CONTENTS
LCDR	177	LIST OF FIGURES

REVISION ONE CHANGES FOR FHA JULY 1993 CON'T.		
INITIATING DOCUMENT		DRAWING NUMBER
EAR-93-174		FP-101-1-15
EAR-93-174		FP-102-1-21
EAR-93-174		FP-103-1-18
EAR-93-174		FP-104-1-22
EAR-93-174		FP-106-1-11
EAR-93-174		FP-110-1-9
EAR-93-174		FP-2101-1-12
EAR-93-174		FP-2102-1-25
EAR-93-174		FP-2103-1-19
EAR-93-174		FP-2104-1-25
EAR-93-174		FP-2105-1-20
EAR-93-174		FP-2106-1-11
PEAR-91-7253		FP-102
PEAR-91-7253		FP-2101
PEAR-91-7253		FP-2103
PEAR-91-7253		FP-2104
PEAR-91-7253		FP-2105
PEAR-91-7253		FP-2107
PEAR-91-7253		FP-2108

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
1.0 PURPOSE.....	7
2.0 SCOPE.....	7
3.0 REFERENCES.....	8
4.0 DEFINITIONS.....	9
5.0 BACKGROUND INFORMATION.....	12
6.0 FIRE PROTECTION SYSTEMS DESCRIPTION.....	63
7.0 ASSUMPTIONS.....	72
8.0 SUMMARY OF COMPLIANCE WITH 10CFR50, APPENDIX R (Table 1).....	73
9.0 FIRE AREA ANALYSIS	
10.0 FIRE ZONE ANALYSIS	
<u>AREA A</u>	76
10-EE East Decay Heat Removal Pump Room.....	77
<u>AREA B</u>	78
1-E North Emergency Diesel Generator Exhaust Fans.....	80
2-E South Emergency Diesel Generator Exhaust Fans.....	81
4-E General Access Room.....	82
12-EE Tendon Gallery Access Room.....	83
14-EE West Decay Heat Removal Pump Room.....	84
40-Y Pipeway Room (under ICW coolers).....	85
46-Y Lower South Piping Penetration Room.....	86
67-U Lab and Demineralizer Access Room.....	87
68-P Reactor Coolant Makeup Tank Room.....	88
73-W Condensate Demineralizer Room.....	89
75-AA Boiler Deaeration and Expansion Tanks Room, Ammonia Tank Room.....	90
76-W Compressor Room.....	91
77-V Upper South Piping Penetration Room.....	92
78-BB Gas Bottle Storage Room.....	93
79-U Upper North Piping Penetration Room.....	94
88-Q Communications Room.....	95
89-P Controlled Access (stairway).....	96
95-O North Battery Room.....	97
104-S Electrical Equipment Room.....	98
105-T Lower South Electrical Penetration Room.....	99
120-E Boric Acid Addition Tank & Pump Room.....	100
125-E Respirator Storage Room.....	101



TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE NO.</u>
128-E	Controlled Access.....	102
144-E	Upper South Electrical Penetration Room.....	103
149-E	Upper North Electrical Penetration Room, Hot Tool, Decon Room.....	104
157-B	Chemical Addition Room (Boric Acid Mix Tank)..	106
159-B	Spent Fuel Room.....	107
160-B	Computer Room.....	108
161-B	Ventilation Equipment Room.....	109
162-A	Stairwell No. 1.....	110
163-B	Reactor Building Purge Room.....	111
167-B	Computer Transformer Room.....	112
168-B	Transformer Room	113
170-Z	Steam Pipe Room (Penthouse).....	114
175-CC	Lube Oil Storage Tank Room.....	115
187-DD	Dirty & Clean Lube Oil Storage Tank Room.....	116
197-X	Turbine Building.....	117
2006-LL	General Access Room.....	119
2010-LL	"C" HPSI Pump Room.....	120
2011-LL	Tendon Gallery Access.....	121
2014-LL	"B" HPSI, LPSI & Containment Spray Pump Room..	122
2026-Y	Drumming Station (Unit 1).....	123
2045-XX	Turbine Lube Oil Storage Tank Room.....	124
2078-QQ	Heat Exchanger Equipment Room.....	125
2091-BB	North Electrical Equipment Room.....	126
2092-PP	Chiller Water System Equipment Room.....	127
2112-BB	Lower North Electrical Penetration Room.....	128
2114-I	EDG Air Intake Room.....	129
2147-A	Chemical Storage Room.....	130
2148-A	Corridor.....	131
2149-B	Stairwell No. 2001.....	132
2151-A	Fuel Handling Room (El. 404).....	133
2152-D	Computer Room.....	134
2153-A	Ventilation Equipment Room.....	135
2154-E	CEDM Equipment Room.....	136
2155-A	Steam Pipe Room.....	137
2156-A	Containment Purge Air Equipment Room.....	138
2158-F	Stairwell No. 2055.....	139
2172-ZZ	Storage and Shop Room.....	140
2177-YY	Neutralizer Tank Room.....	141
2178-AAA	Lube Oil Reservoir.....	142
2183-J	Upper North Electrical Penetration Room.....	143
2200-MM	Turbine Building.....	144
2223-KK	Pipeway Equipment Access Room (Aux. Bldg. Extension).....	147
2225-WW	Regenerative Waste Pump & Tank Room.....	148
2229-SS	Storage Room 2232.....	149



TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE NO.</u>
2230-RR	Drum Filling Room.....	150
2231-TT	Plant Heating Boiler Room.....	151
2242-OO	H&V Mechanical Equipment Room, AO Shack, Lab & Storage Room.....	152
2243-NN	Chemistry Lab, Kitchen & Offices.....	153
2261-UU	Plant Heating Boiler Day Tank.....	154
<u>AREA C</u>		155
20-Y	Radwaste Processing Room.....	156
31-Y	Purification Demineralizer Room.....	157
34-Y	Pipe Room.....	158
38-Y	Emergency Feedwater Pump Room.....	159
47-Y	Penetration Ventilation Room.....	161
53-Y	Lower North Piping Penetration Room.....	162
<u>AREA D</u>		163
86-G	North Emergency Diesel Generator Room.....	164
<u>AREA E</u>		165
100-N	South Switchgear Room.....	166
<u>AREA F</u>		167
110-L	South Battery Room.....	168
<u>AREA G</u>		169
97-R	Cable Spreading Room.....	170
129-F	Control Room.....	172
2098-C	Core Protection Calculator Room (New CPC Room)	174
2098-L	Cable Spreading Room.....	175
2119-H	Printer Room.....	177
2136-I	Health Physics Room.....	178
2137-I	Upper South Electrical Penetration Room.....	179
2150-G	Core Protection Calculator Room (Old CPC Room)	180
2199-G	Control Room.....	181
<u>AREA H</u>		183
87-H	South Emergency Diesel Generator Room.....	184
<u>AREA I</u>		185
98-J	Corridor.....	186
99-M	North Switchgear Room.....	187
112-I	Lower North Electrical Penetration Room.....	188



TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
<u>AREA J</u>	189
32-K North Side Containment Building.....	190
33-K South Side Containment Building.....	192
<u>AREA K</u>	194
16-Y Clean Waste Receiver Tank Room.....	195
2020-JJ Boron Holdup Tank Vault.....	196
<u>AREA L</u>	197
250 Diesel Fuel Storage Vault Corridor.....	198
251 Diesel Fuel Storage Vault (T-57A)	
252 Diesel Fuel Storage Vault (T-57B)	
253 Diesel Fuel Storage Vault (2T-57A)	
254 Diesel Fuel Storage Vault (2T-57B).....	199
<u>AREA N</u>	201
--- Intake Structure (Unit 1).....	202
--- Diesel Fire Pump Room.....	204
<u>AREA AA</u>	205
2007-LL "B" HPSI, LPSI, and Containment Spray Pump Room and Gallery.....	206
<u>AREA CC</u>	207
2024-JJ Emergency Feedwater Pump Room (Turbine Driven)	208
<u>AREA DD</u>	209
2019-JJ Boric Acid Condensate Tank Room.....	210
2032-JJ Spent Resin Storage Tank Room.....	211
2040-JJ Corridor.....	212
2068-DD Hot Machine Shop.....	213
<u>AREA EE</u>	214
2055-JJ Lower South Piping Penetration Room.....	215
2084-DD Upper South Piping Penetration Room and Waste Gas Equipment Room.....	216
2111-TT Lower South Electrical Penetration Room.....	217
<u>AREA FF</u>	218
2025-JJ Emergency Feedwater Pump Room (Motor Driven)..	219
<u>AREA GG</u>	220
2076-HH Electrical Equipment Room.....	221
2081-HH Upper North and Lower North Piping Penetration Room.....	222



<u>SECTION</u>	<u>PAGE NO.</u>
<u>AREA HH</u>	223
2063-DD Sample Room.....	224
2072-R Upper Volume Control Tank Room, Lower Tank & Pump Room.....	225
2073-DD Access Room, Pump Room, Tank Room (2B62 & Resin Addition Room).....	226
2096-M Motor Control Center (2B63).....	228
2106-R Degasifier Vacuum Pump Room.....	229
2107-N Corridor (North of Stairway 2001).....	230
 <u>AREA II</u>	 231
2101-AA North Switchgear Room.....	232
 <u>AREA JJ</u>	 233
2094-Q North Emergency Diesel Generator Room.....	234
2109-U Corridor.....	236
 <u>AREA KK</u>	 238
2093-P South Emergency Diesel Generator Room.....	239
2115-I Boric Acid Makeup Tank Room.....	241
 <u>AREA MM</u>	 242
2099-W West D.C. Equipment Room.....	243
2103-V West Battery Room.....	244
 <u>AREA NN</u>	 245
2032-K Containment Building, South Side.....	246
2033-K Containment Building, North Side.....	248
 <u>AREA OO</u>	 250
--- Intake Structure (Unit 2).....	251
 <u>AREA SS</u>	 252
2097-X East D.C. Equipment Room.....	253
2100-Z South Switchgear Room.....	254
2102-Y East Battery Room.....	255
 <u>AREA TT</u>	 256
2108-S Electrical Equipment (2B9/2B10) Room.....	257



TABLE OF CONTENTS

SECTION

PAGE NO.

11.0 MISCELLANEOUS FIRE ZONE INFORMATION

MISCELLANEOUS

Manholes - 1MH03.....	258
Manholes - 1MH04.....	259
Manholes - 1MH05.....	260
Manholes - 1MH06.....	261
Manholes - 1MH09.....	262
Manholes - 1MH010.....	263
Manholes (East) - 2MH01E.....	264
Manholes (West) - 2MH01W.....	265
Manholes (East) - 2MH02E.....	266
Manholes (West) - 2MH02W.....	267
Manholes (East) - 2MH03E.....	268
Manholes (West) - 2MH03W.....	269

12.0 CROSS REFERENCE OF FIRE AREAS/ZONES BY ELEVATIONS.....	270
---	-----

13.0 ATTACHMENTS

PRINTS

- Index
- Fire Protection (FP Prints)
- Fire Suppression (FS Prints)
- Emergency Lighting and Access Route (E Prints)



1.0 PURPOSE

The Arkansas Nuclear One (ANO) Fire Hazards Analysis (FHA) is a comprehensive document and central source of information. It is intended that this document be utilized by the ANO staff as reference in supporting the performance of fire protection related activities.

Following a fire at the Browns Ferry Nuclear Station in March 1975, the Nuclear Regulatory Commission (NRC) initiated an evaluation of the need for improving the fire protection programs at all licensed nuclear power plants and plants under construction. As part of this continuing evaluation, the NRC, in February 1976, published a report entitled, "Recommendations Related to Browns Ferry Fire," NUREG-0050. This report recommended improvements in the areas of fire prevention and fire control be made in most existing facilities and that consideration be given to design features that would increase the ability of nuclear facilities to withstand fires without the loss of important functions. To implement the report's recommendations, the NRC initiated a program for re-evaluation of the fire protection programs at all licensed nuclear power stations, and for a comprehensive review of all new license applications.

It is through the utilization of various guidelines and/or regulations that the concept of defense in depth is to be achieved at nuclear power facilities with respect to fire protection. The three major components of the fire protection program focus on achieving an adequate balance in:

- 1.1 preventing fires from starting;
- 1.2 detecting fires promptly, suppressing them quickly, and therefore limiting fire damage; and
- 1.3 designing plant safety systems so that a fire which does start will not ultimately prevent essential plant safety functions from being accomplished.

2.0 SCOPE

The scope of the FHA is to minimize both the probability and consequences of postulated fires. Fire protection is initiated with design and must be implemented during construction, modification, and operation of the facility.

The fire protection program is designed to minimize the effects of fires and to provide the capability to extinguish a fire encountered in any of the plant fire areas.



3.0 REFERENCES

3.1 REFERENCES REQUIRED

- 3.1.1 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-75/087, Section 9.5.1, Fire Protection, May 1976, which includes "Guidelines for Fire Protection for Nuclear Power Plants," (BTP-APCSB 9.5-1), May 1, 1976.
- 3.1.2 "Guidelines for Fire Protection for Nuclear Power Plants," (Appendix A to BTP-APCSB 9.5-1), August 23, 1976.
- 3.1.3 10CFR50, Appendix A, General Design Criteria for Nuclear Power Plants.
- 3.1.4 10CFR50, Appendix R, Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979.
- 3.1.5 10CFR50.48, Fire Protection.
- 3.1.6 Generic Letter 81-12, Fire Protection Rule 45FR76602, November 19, 1980.
- 3.1.7 Generic Letter 83-33, NRC Positions on Certain Requirements of Appendix R to 10CFR50, October 19, 1983.
- 3.1.8 Generic Letter 86-10, Implementation of Fire Protection Requirements, April 24, 1986.
- 3.1.9 Procedure 6020.003, "Preparation, Review, Approval and Control of Calculations."
- 3.1.10 Report No. 91-R-0002-01, "Fire Extinguishers Distribution Verification - NFPA 10, 1990."
- 3.1.11 Safe Shutdown Capability Assessment, Calc. 85E-0086-01 & 85E-0057-01.
- 3.1.12 1984 and 1985 Appendix R Analyses, OCAN088404 & OCAN088508.
- 3.1.13 1982 Appendix R Submittal.
- 3.1.14 Engineering Report No. 91R306-01, 1978 FHA.
- 3.1.15 Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications, August 2, 1988.
- 3.1.16 Combustible Loading Assessment, Calculation 85-E-0053, Parts 12 thru 42.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 8 OF 277



3.1.17 Combustible Loading Limits Reassessment, Calculation
85-E-0053-12.

3.1.18 NFPA Handbook, 16th Edition.

4.0 DEFINITIONS

- 4.1 ACCESS/EGRESS PATHS - Lighted pathways that operators will take in order to access equipment needed for safe shutdown of the plant.
- 4.2 ALTERNATE SHUTDOWN - At ANO, alternate shutdown refers to that equipment, and procedures for use of that equipment, that has been installed or written solely to provide means of safe shutdown in the event of a fire in an area that could potentially otherwise preclude safe shutdown.
- 4.3 ASSOCIATED CIRCUITS - Nonsafety circuits that are located in a fire zone that could adversely affect safety-related equipment required for achieving immediate hot shutdown or affect the operability of equipment required for achieving cold shutdown within 72 hours by feeding back potentially disabling conditions (e.g., hot shorts or shorts to ground) to the power supplies or control circuits of that equipment.
- 4.4 CELLULAR CONCRETE - has the general appearance of a gray spongy porous concrete, is easily scratched and is used to fill large voids in duct-lines, sleeves and conduits, both as an air seal and as a fire seal. It can be designed for a wide range of densities, from 20 pounds per cubic foot (PCF) to 120 PCF, when cured. Cellular concrete has many of the fire and thermal properties of regular concrete but it is of lower density and not as strong. Because of the porosity after curing, it can be removed easier than regular concrete with less damage to the cables, conduits, or its surroundings. In most applications, cellular concrete has been covered over with Flamemastic and will not be visible.
- 4.5 CLASS A, B, C, D FIRES -
- 4.5.1 Class A Fire: Fire of ordinary combustible materials such as wood, cloth, paper, rubber and plastics.
- 4.5.2 Class B Fire: Fires of flammable liquids, gases and greases.
- 4.5.3 Class C Fire: Fires which involve energized electrical equipment where the electrical nonconductivity of the extinguishing media is of importance. (When electrical equipment is de-energized, extinguishers for Class A or B fires may be used safely.)
- 4.5.4 Class D Fire: Fires in combustible metals, such as magnesium, titanium, zirconium, sodium and potassium.



- 4.6 F-LIST - "Non-Q fire protection equipment within the scope of the "Quality Program for Fire Protection," that is, those fire protection and detection systems, and those structures and components (such as fire doors, fire dampers, and penetration seals) which are required to restrict the damage caused by a single exposure fire to safety related equipment and equipment required to achieve and maintain safe plant shutdown.
- 4.7 FIRE AREA - That area bounded by designated 3-hour rated fire barriers with openings protected by approved doors, dampers, and penetration seals.
- 4.8 FIRE BARRIERS - Those components of construction (walls, floors, and their supports) including beams, joists, columns, penetrations or closures, and fire dampers that are rated by approving laboratories in hours of resistance to fire and are used to prevent the spread of fire, are identified as fire barriers. Any fire barrier not meeting these requirements require an engineering justification for use as a suitable fire barrier.
- 4.9 FIRE FLEX - A sealer for pipes that have movement and high operating temperature (a light grey tacky feeling material).
- 4.10 FIRE STOPS - A feature of construction (typically associated with cable trays) that prevents fire propagation along the length of cables and prevents spreading of fire to nearby combustibles within a given fire area or fire zone.
- 4.11 FIRE ZONES - A fire zone is a subdivision of a fire area that separates other fire zones within the fire area. Fire zone boundaries may or may not be 3 hour rated fire barriers.
- 4.12 FLAMEMASTIC - A waterbased mastic compound that is sprayed or troweled to form a fire resistant and moderately flexible coating. It has been used for sealing around cable trays going through walls or floors/ceilings and for sealing ductlines and conduits and as fire stops in both vertical and horizontal trays.
- 4.13 GROUT - A type of concrete that has fire and radiation properties similar to other concrete products. Heavy grout can be made by substitution of iron filings, lead particles, or other heavy metals for part of the sand and can be used as a radiation shield. Grout has been used to fill large voids in ductlines, sleeves, and conduits, as an air seal, fire seal and radiation seal.
- 4.14 IN SITU COMBUSTIBLES - Any flammable or combustible materials that are permanently installed or situated in a defined location are an in situ combustible. Cables in a conduit or totally enclosed cable trays are not considered in situ combustibles.



- 4.15 INTERVENING COMBUSTIBLE - Intervening combustibles are combustible materials which are located between redundant safe shutdown systems or components.
- 4.16 REDUNDANT SAFETY CIRCUITRY - If a zone contains separate circuits that perform similar safety functions, then redundant safety circuitry exists in that zone.
- 4.17 SAFE SHUTDOWN CAPABILITY - At least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant. 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 damage. Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.
- 4.18 SILICONE FOAM - A spongy, black material and a two-part product formed by mixing two base liquids. It expands and cures as a foamed-in-place elastomer. Silicone foam has high fire resistance properties, including low thermal conductivity, high temperature stability, and high radiation resistance. Silicone foam is used to seal around cables and cable trays where they pass through a fire barrier. It is also used for fire sealing conduit, ductlines and sleeves.
- 4.19 SUPERVISED CIRCUITS - Circuits that monitor the operation of fire detection systems and provide a "trouble" alarm whenever the system malfunctions or is de-energized.
- 4.20 TRANSIENT COMBUSTIBLES - Any flammable or combustible material that is not permanently installed or situated in a defined location is a transient combustible.
- 4.21 3M-CP-25 - A sealing material that when exposed to high temperatures, expands to act as an insulating barrier which retards the transmission of heat, smoke or fire. The material is typically found in the seismic gaps around the reactor/containment building.



5.0 BACKGROUND INFORMATION

5.1 In 1977-78, Arkansas Power & Light Company (AP&L), hereafter to be referred as Entergy Operations (EO), which manages Arkansas Nuclear One (ANO), conducted a fire hazards analysis study for ANO Units 1 and 2 to meet the criteria of Appendix A to the Auxiliary Power Conversion Systems Branch (APCSB) Technical Position 9.5-1 (BTP 9.5-1). The results of this study were submitted to the NRC in February of 1978 (ØCANØ278Ø5). Subsequent to that submittal, EO was requested via correspondence to respond to numerous additional fire protection questions and to make regulatory commitments to complete certain modifications. Additionally, the ANO fire protection program was documented in the NRC staff's ANO-1 and 2 Fire Protection Safety Evaluation Reports (SERs) dated August 22, 1978 (1CNAØ87891), and August 30, 1978 (2NCAØ87826), respectively.

On November 19, 1980, the NRC published the Fire Protection Rule, 10CFR50.48 and its guidance for implementation of that rule, Appendix R to 10CFR50. The effective date of the regulation was February 17, 1981. By letter (ØCANØ381Ø6) dated March 19, 1981, EO requested exemption from the requirements of Sections III.G and III.L of Appendix R, on the basis previous modifications conducted in accordance with the 1978 SERs assured the protection of the public health and safety, and additional modifications in accordance with Appendix R would not increase that protection significantly.

Subsequent to that request, EO stated in correspondence (ØCANØ182Ø3) dated January 15, 1982, it was unable to commit to any firm schedule for submitting specific, technically sound requests for exemption from Appendix R requirements. By letter (1CNAØ582Ø2) dated May 10, 1982, the NRC granted EO an extension to July 1, 1982, to submit specific exemption requests and proposed modifications pertaining to the requirements of 10CFR50.48 and Appendix R.

On July 1, 1982, EO submitted the results of its Appendix R compliance review and specific exemption requests via correspondence (ØCANØ782Ø2). Subsequent to that submittal, additional correspondence was sent to the NRC which provided clarification and revised exemption requests (ØCAN11821Ø). The exemptions were approved in the staff's Safety Evaluation Report (SER) (ØCANØ38328) dated March 22, 1983.

During the period following the initial Appendix R submittal date and the date the SER was received, EO received indication from its association with the Nuclear Utility Fire Protection Group (NUFPG) that the methodology used in conducting its analysis might not be consistent with NRC interpretations of the rule. Several "generic" issues were discussed at NUFPG meetings from December 1982 through February 1983.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 12 OF 277



On March 1, 1983, the NUFPG met with several NRC staff members to discuss these issues. As a result of that meeting, EO determined it would be necessary to reanalyze ANO to determine the extent of compliance with the staff's interpretations of the requirements of Section III.G of Appendix R. Hence, EO submitted a "blanket" exemption request for barriers and suppression/detection systems on March 28, 1983, (OCAN038322) to ensure it would be able to complete its reanalysis in accordance with the perceived staff interpretations.

During June and July 1983, EO had the opportunity to review, through the NUFPG, several draft versions of the staff positions regarding Appendix R requirements discussed at the March 1 meeting. These criteria were in draft form, and did not appear to be consistent between subsequent drafts. Hence, EO decided to halt its reanalysis of ANO and, in its letter dated July 12, 1983 (OCAN078305), requested definitive written guidance be provided by the NRC.

The NRC provided EO with this guidance in a letter dated September 14, 1983 (OCNA098303). Subsequent to that letter, all licensees received, via Generic Letter 83-33, that same guidance. After receiving that guidance EO reinitiated its reanalysis of ANO in accordance with the NRC staff's interpretation and undertook an extensive verification program. Additionally, EO received further regulatory clarification concerning Appendix R at the NRC fire protection workshop held in Arlington, Texas, on April 26, 1984. This report documents the result of EO's reanalysis of ANO in accordance with the NRC guidance on the requirements of Appendix R to 10CFR50 relative to Section III.G, J and O.

5.2 ORIGINAL FIRE HAZARDS ANALYSIS

On February 28, 1978, the original FHA was completed for ANO Units 1 and 2 to evaluate the fire protection features in each fire zone and examine the cable and equipment locations with respect to initiating and maintaining safe shutdown conditions. Details of the original FHA are provided below.

5.2.1 METHODOLOGY

By color tracing raceway routing drawings, a graphic indication of the relative location of safety-related cable with respect to other safety-related cables was developed. Using the zone drawings and the color coded raceway routing drawings, a list of safety-related circuits, by number, within each zone was generated and grouped by color code. The function of each circuit was identified and functions which could disable a redundant capability to accomplish the originally identified function were identified. The list of circuits was then searched to see if it included any of these redundant functions.



If redundant circuits were identified within a zone, the acceptability of the consequences of their loss was determined relative to the ability to safely shutdown the plant. The conditions assumed were a fire coincident with loss of off-site power. No additional accident was postulated.

If the consequences of the loss of redundant circuits located within a zone was determined to be unacceptable, the potential for loss had to be determined.

The potential for loss was determined as necessary based on proximity and qualitative judgements about the area combustibles. If such qualitative judgements could not clearly be made, fire loadings were calculated and used to determine the acceptability of the potential for damage due to fire.

Redundant equipment within a zone was evaluated in the same manner as described above for redundant circuits.

5.2.2 CRITERIA USED TO DETERMINE ACCEPTABILITY

- A. No safety equipment or cables in zone;
- B. No redundant safety equipment or cables in zone;
- C. Redundant safety equipment or cables within zone but no exposed combustibles other than transient within zone;
- D. Redundant safety equipment or cables are within the zone but are separated by sufficient distance without a combustible bridge between or by sufficient distance and barriers, e.g., walls, to make the probability of a single fire affecting both extremely small;
- E. Redundant safety equipment or cables are within the zone but heat loads from combustion of combustibles within zone not sufficient to damage both redundant components;
- F. Redundant safety equipment or cables are within the zone but loss of both is acceptable with respect to plant safety and/or plant shutdown for reasons specific to the equipment involved; and
- G. Redundant safety cables are within the zone but the equipment which it affects is outside the zone, is accessible, and can be manually operated. A reasonable amount of time is available to operate the equipment.



Where a large potential for unacceptable loss consequences was identified, the need for a modification was determined. If the zone had fire protection, the adequacy of that protection was evaluated. If inadequate, a choice was made between the alternatives of upgraded systems protection or some type of increased separation based on economic and practicality considerations. If protection was not provided, a choice was made between the alternatives of increased separation by relocation or other means, or by providing protection and/or detection. This choice was again based on economic and practicality considerations.

5.2.3 CONSERVATISM

A substantial amount of conservatisms were incorporated in this analysis to assure the results were accurate, thus providing a high degree of confidence for those individuals utilizing the information. Examples of these conservatisms are as follows:

- A. In performing redundancy checks on equipment with an installed spare, only the minimum number required operable by Technical Specification was considered (e.g., if two service water pumps were affected, the third pump was assumed out for maintenance).
- B. If circuitry involving a piece of equipment was lost due to the postulated fire within the zone, that equipment was deemed lost regardless of whether the cable was power, control, or instrumentation.
- C. Where credit was taken for manual operation, considerable research was done to determine the amount of time available for manual operation, to determine the feasibility of access, and the amount of time to and method of notification of the operators.

5.3 APPENDIX R EVALUATION

5.3.1 ASSUMPTIONS

Certain assumptions were required to perform the Appendix R compliance review of July 1982. Since portions of the original FHA were used in preparation for the Appendix R review, the assumptions and conditions required in the original analysis also apply to the Appendix R review. Briefly, these assumptions are listed below.

- A. The minimum equipment operability requirements as per Technical Specifications were considered inservice. Spare equipment was considered out of operation.



- B. If circuitry involving a piece of equipment was lost due to the postulated fire within the zone, that equipment was deemed lost regardless of the function of the cable in question. In some instances where cables were lost between the control room and the breaker and no damage was sustained at the breaker or to the equipment it controlled, credit was taken for manual operation from the breaker.
- C. In certain cases, credit for manual operation of equipment was taken if controls (and power for valves) could possibly be damaged by a fire. Such credit was taken only if:
 - 1. The component to be operated was not located in the affected fire zone, although the cable might be damaged by fire;
 - 2. Sufficient time was available to perform the required manual operations; and
 - 3. Sufficient personnel were available beyond the fire brigade to perform the manual actions.
- D. For valves required for cold shutdown only, credit for manual operation was taken where the valve was physically located within the area of fire damage.
- E. No credit was taken for manual actions which were considered repairs, such as rewiring, determining a lead, etc., as allowed by Appendix R for cold shutdown considerations.
- F. Fire damaged cables were assumed to fail in their worst mode for the condition being assessed.
- G. The heat load calculations of the original fire hazard analysis, which considered larger amounts of combustible materials and higher heat values than actually exist in the plant, were used for the Appendix R analysis.
- H. The cable insulation was considered as combustible material.
- I. No credit was taken for cable coatings to act as a thermal or radiant barrier to protect cables.
- J. The safe shutdown analysis for Appendix R was done assuming the loss of off-site power.
- K. No failures were considered other than those that could result from the fire itself.



- L. Embedded conduit was assumed to be protected equivalent to three hours.

5.3.2 METHOD OF EVALUATION

The July 1982 detailed evaluation performed in order to compare ANO-1 and ANO-2 to the requirements of Appendix R contained the several major tasks summarized below.

- A. The original FHA was used as a basis for this review. Fire zones containing safe shutdown components and any redundancies thereof were identified.
- B. A separate evaluation of associated circuits was used to identify circuits of concern.
- C. Modifications made to the plants subsequent to issuance of the original FHA were reviewed and incorporated where applicable.
- D. As the definition of fire zones in the original FHA did not require zone boundaries of 3-hour fire rating, adjacent zones as well as zones within 20 feet of the zone in question were considered. Additional redundancies were identified by this comparison.
- E. Additional redundancies identified in D above were evaluated for their effects on safe shutdown capabilities.
- F. For redundancies that were still identified as potential safe shutdown concerns following the above review, specific physical separation, barriers, intervening combustibles, and suppression systems were evaluated to determine compliance with Section III.G of Appendix R.
- G. For those redundancies remaining as a potential safe shutdown concern following F above, alternative means for accomplishing the necessary function were reviewed.
- H. Required modifications were identified to bring zones into full compliance, or to a level of fire protection safety judged equivalent to alternatives of Appendix R.
- I. Engineering design concepts for necessary alternate shutdown capability were developed.
- J. Necessary exemption requests were prepared.
- K. Special consideration was given to the cold shutdown requirements of Appendix R.



L. The review of compliance with Appendix R did not involve the use of a required shutdown systems list. Because of the multiple combinations of systems available to accomplish shutdown, such a list was considered inappropriate. Instead of making such a list and checking each zone for the presence of those components or cables to those components, the following analysis was performed:

1. A list of safe shutdown cabling and the components which they serve was compiled for each zone. When multiple trains of a single system were involved, such was identified as a redundancy.
2. A review was then undertaken to determine whether the unit could be safely shutdown without use of any redundant trains found in each zone. This review was not based on a check against a system list, but on the capability to accomplish shutdown functions of negative reactivity insertion, heat removal and RCS inventory makeup.
3. The reactivity function was accomplished by determining that a fire could not prevent control rods from dropping and by restricting inventory makeup to supplies of borated water.
4. The capability to accomplish the functions of heat removal and inventory makeup became the criteria for the zone review.

Although some systems are always required for these capabilities, others are only required as a backup to systems which are unavailable. Even those systems that are always required may have multiple sources of water and multiple water delivery paths so that multiple combinations of components within that system are available to accomplish the shutdown functions. The partial loss of these systems may not result in failure of the systems to perform their designated functions. Due to the many combinations of systems and components which can perform shutdown functions under various situations, a required shutdown systems list has not been compiled.

5.4 ASSOCIATED CIRCUITS STUDY

- 5.4.1 The associated circuits study encompasses areas of the plant, whether or not they contain safe shutdown cables.



For all but the cable upreading room and the control room, the spurious operation review method has been utilized. This method requires that redundancy checks are based on functional redundancies and include consideration of the potential for spurious operation of a component or components disabling one method for accomplishing a shutdown function.

For the cable spreading and control rooms, it was determined that no functions needed to be accomplished during the time period required to take control from outside the control room, and that there were no valves whose spurious operation would prevent adequate corrective action and accomplishment of the intended function after taking control from outside the control room.

Plant design criteria ensure that power sources feeding safety grade equipment are electrically protected from circuits by coordinated breakers, fuses, or similar devices. To ensure that spurious signal and common enclosure concerns were evaluated, every component with a connection through the affected zone that could be spuriously operated was considered. For each case, the effect of such spurious operation on safe shutdown capability was evaluated.

The circuit overcurrent protective devices prevent electrical distribution of the fire from one zone to another. Also, circuits in the same zone, including those in common enclosures, are assumed to be damaged in the worst failure mode. This "worst failure mode" analysis is consistent with the overall Appendix R approach and therefore this also covers cases of common enclosures such as raceway panels, junction boxes, etc., within a single fire zone.

5.5 APPENDIX R SUBMITTALS

Subsequent to the July 1982 Appendix R submittal, the NRC provided EO with guidance regarding the interpretation of 10CFR50 Appendix R. Based upon the guidance contained in that document, Generic Letter 83-33, EO initiated its reanalysis of AND in accordance with the NRC interpretation. The results of that reanalysis are documented in ~~Ø~~CANØ884Ø4, dated August 15, 1984. As a result of fire protection modifications made during refueling outages subsequent to that submittal, the document was later supplemented by ~~Ø~~CANØ885Ø8, dated August 30, 1985.

5.5.1 INITIAL CONDITIONS AND ASSUMPTIONS

- A. The safe shutdown analysis for Appendix R is performed assuming loss of off-site power.



- B. No failures are considered other than those that may result from damage caused by the fire or by ponded water due to suppression activities.
- C. Fire damaged cables are assumed to fail in the worst mode for the conditions being assessed. For example, if it is more limiting for a valve to open rather than remain shut, it is assumed that associated cabling failed in such a way as to cause the valve to open.
- D. Credit for manual operation of manually operable valves and breakers can be taken if adequate time is available for operation, and the valve or breaker is neither physically located within the postulated area of fire damage nor inaccessible due to the access route being blocked by the fire.
- E. For valves required for cold shutdown only, credit for manual operation may be taken where the valve is physically located within the area of fire damage.
- F. Manual actions that are considered repairs such as rewiring, determining a lead, etc., may only be included for achieving cold shutdown and may not be considered for hot shutdown.
- G. Embedded conduits are assumed to have adequate separation.

5.5.2 ANALYSIS

The analysis required prior to future plant modifications takes into consideration the general requirements. Methods by which these requirements are achieved and maintained are presented in the following sections.

A. ACHIEVING HOT SHUTDOWN

1. Shut down the reactor. This is accomplished by driving in control rods or allowing them to fall in from gravitational forces. Fire damage cannot prevent this action from occurring.
2. To maintain the reactor subcritical, fire damage must not be permitted to dilute the boron concentration in the reactor coolant system.



3. Reactor coolant inventory must be maintained by providing borated water to the reactor coolant system to replace volume lost from leakage and/or shrinkage due to RCS cooling.
4. The reactor decay heat must be removed. This is normally accomplished by providing water to the steam generators.
5. With loss of off-site power, the reactor coolant pumps are de-energized and core cooling depends on establishment of natural circulation of the reactor coolant system loops.
6. Feedwater can be supplied to the steam generators for cooling by the steam driven emergency feedwater pump powered by steam produced in the steam generators. There is a minimum of 4½ hours supply of water from CST and after that service water is available.
7. Inventory replacement may be delayed for approximately 1½ hours by limiting the rate of cooldown and maintaining an average (or no greater than Technical Specification limit) leakage rate. With the loss of off-site power, one diesel generator is required to provide power to energize a makeup (Unit-1) or charging (Unit-2) pump to provide borated water to the reactor coolant system. Inventory replacement may be intermittent as it is dependent on RCS leak rate and cooldown rate.
8. The diesel generator requires service water for cooling, diesel generator exhaust fans, and diesel fuel, which must be pumped from the fuel storage tank to the day tank.
9. Service water may also be required to feed the steam generators for cooling when the event normal tank supply is exhausted.
10. Instrumentation and power supplies which are adequate to support both the monitoring of system conditions and the control of removal of decay heat and inventory replacement must be available.



11. Auxiliary equipment required for operability of equipment specified above needed to maintain hot shutdown conditions must be available. Any equipment auxiliaries necessary for operability of the equipment used to perform these functions must also be available.

B. ACHIEVING COLD SHUTDOWN

1. Similar functions to those required for hot shutdown must be accomplished through the use of different components and systems for cold shutdown.
2. Continuous AC power availability is required for maintaining cold shutdown.
3. The reactor coolant system must be depressurized to achieve cold shutdown.
4. The cold shutdown evaluation considers only those components and indications not considered for hot shutdown.

C. SEPARATION CRITERIA

1. Sufficient components required to achieve hot or cold shutdown must be operable given a fire in any location in the plant. Those components that are of interest in determining whether sufficient components for shutdown are operable are compiled in a "Components of Interest List."
2. The operability of any component and associated electrical cables is determined by determining if separation exists from the postulated fire.
3. These separation requirements are specified in Appendix R Section III G.
4. Not only must the component be separated, but any electrical cables that because of fire damage could render the component inoperable must also be separated.
5. If separation does not exist, a specific exemption from the requirements of Appendix R must be granted from the NRC or modifications must be performed to comply with the criteria.



NOTE

This section is intended to provide the bases for ANO-1's "Components of Interest." The Components of Interest list contains a basic set of components which will be shown to make at least one train of required safe shutdown equipment available for any single fire scenario. By so doing the capability to accomplish the required "Safe Shutdown Goals" can be systematically demonstrated.

This list is not intended to specify the method an operator must use to accomplish the "Safe Shutdown Goals," only to assure that these goals can be accomplished if all other methods fail.

5.6.1 ASSUMPTIONS

- A. A of off-site power will be assumed to occur unless such a loss somehow proves advantageous in which case the components being considered will be evaluated from both conditions.
- B. This list will be kept to a minimum number of components. "Nice to have" items will not be included.
- C. No failures will be considered other than those that may result from damage caused by the fire.
- D. When a component is listed, it will initially be assessed to determine whether or not it can be remotely operated from the control room. Remote control from the control room is the desired mode of control however, where remote control is lost, local manual is an acceptable method of control.
- E. Instrumentation listed will be assessed from the transmitter through all processing electronics to the indicator/indicators.

5.6.2 SAFE SHUTDOWN GOALS

- A. Achieve and Maintain Shutdown Reactivity Conditions
 - 1. The reactor is initially shutdown by a reactor trip. There are sufficient diverse methods of tripping the reactor (deenergizing the control rod drive motors) that it is assumed no single fire can prevent a reactor trip. The following methods can accomplish a reactor trip:



- a. Remote undervoltage coil trip of CRD breakers (operator or RPS)
- b. Remote shunt coil trip of CRD breakers (operator or RPS)
- c. Remote or local trip of CRD breakers
- d. Remote or local trip of CRD feeder breakers (load centers B-6 and A-2)

- Components of Interest: None

2. The reactor is maintained at shutdown conditions by preventing dilution of the reactor coolant system. Assuming that sufficient failures result in a condensate flowpath to the suction of an operating makeup pump and this goes undetected by the normal means (valve position indication and makeup tank level), then the operator would be alerted to the dilution by an increasing count rate and increasing pressurizer level.

- Components of Interest:

Source Range Counts and Pressurizer Level

3. The reactor is maintained at shutdown conditions by off-setting the xenon decay (and resulting positive reactivity insertion) following a reactor trip. Initially, the xenon builds up for 6-8 hours (increasing the shutdown margin) and then begins to decay. Typically the xenon concentration would reach its initial value approximately 24 hours after a trip.

Procedurally we are required to maintain an available shutdown margin of 1.5% $\Delta K/K$. This assumes a stuck rod with a worth greater than 1.5% $\Delta K/K$. If this additional failure (stuck rod) is neglected, then a shutdown margin of at least 3% $\Delta K/K$ can be shown to exist for the first 24 hours following a reactor trip with no operator action.

It is assumed that a plant shutdown and cooldown would begin within this time frame and boration would be accomplished as described below (during plant cooldown).

- Components of Interest: None



4. The reactor must be maintained at shutdown conditions during a plant cooldown. This will necessitate the RCS being borated to offset the positive reactivity being added (fuel and moderator coefficients). Calculations (PER #1-84-21) have shown that there will be sufficient RCS boration due to makeup for RCS shrinkage during cooldown. This goal is therefore accomplished indirectly by the "Maintain RCS Inventory" goal. The boric acid pumps were considered as an alternate method of boration but were not included because of the additional equipment and instrumentation necessary to support this boration method (valves and MUT instruments).

- Components of Interest: None

B. Maintain RCS Inventory and Pressure

This criteria must be addressed from two aspects, the direct loss of inventory (due to RCS leak paths) and the indirect or apparent loss of inventory (due to RCS overcooling). The capability to increase the RCS inventory and control the RCS pressure must also be shown to exist.

1. Direct RCS leak paths are summarized below.
 - a. RCS high point vent solenoids (T_{11} , reactor head and pressurizer) must be considered because failure in the open position would result in the need for RCS makeup in less than the assumed 1.5 hours. Also significant RCS leakage to the reactor building might necessitate additional components of interest for reactor building cooling. It should be noted that these valves are energized to open, and in all cases two valves must open to provide an RCS leak path.
 - b. RCS letdown flow must be terminated to eliminate this loss path.
 - c. The electromatic relief valve must be closed or isolated.
 - d. RCS sample system control valves were considered but eliminated because of the acceptably low flow rates through these systems when in service.
 - e. Reactor coolant pump seal bleedoff isolation valves must be closed to prevent leakoff of high temperature water which can result in seal failure. This is addressed procedurally.



- f. Decay heat suction valves must remain closed to prevent a very rapid loss of RCS inventory. It should be noted that two valves must fail to cause RCS leakage.
- g. Reactor Coolant Pump start control circuits are considered in that spurious starts of an RCP could lead to operation without the necessary systems to prevent mechanical seal damage. Seal damage can result in a loss of RCS inventory greater than that originally assumed.

- Components of Interest:

SV-1071, SV-1072, SV-1073 and SV-1074, Reactor Head Vents
SV-1077 and SV-1079, Pressurizer Vents
SV-1081, SV-1082, SV-1083, SV-1084, SV-1091/1092/
SV-1093/1094, T_H Vents
CV-1214, CV-1216 and CV-1221, Letdown Isolation Valves
PSV-1000 and CV-1000, ERV and ERV Isolation Valve
SV-1270/1271/1272/1273, RCP Seal Bleedoff Valves
CV-1270/1271/1272/1273, RCP Seal Bleedoff Valves
CV-1274 and CV-1295, RCP Seal Bleedoff Block Valves
CV-1050 and CV-1410, Decay Heat Isolation Valves
Reactor coolant pump start circuits

- 2. Steam generator overcooling paths which result in RCS shrinkage are summarized below.
 - a. Steam generator blowdown through the atmospheric dump valves should be prevented.
 - b. Steam generator blowdown through the turbine bypass valves can be prevented by closure of the main steam isolation valves or sufficient time is available for manual closure of the turbine bypass valves. For these reasons the TBVs are not considered components of interest.
 - c. Failure of the main turbine to trip can cause overcooling of the RCS following a trip. However, there are sufficiently diverse methods of tripping the turbine (including local manual trip) to assure that the turbine can be tripped. Additionally, closure of the MSIVs will stop any overcooling caused by failure of the main turbine to trip. For these reasons the main turbine trip circuit is not considered a component of interest.

- d. Steam generator blowdown through the mechanical steam relief valves must not occur. It is assumed that these valves are not susceptible to fire induced failure and will not therefore be included as components of interest.
- e. Uncontrolled full flow emergency feedwater can cause a significant RCS overcooling. Because there are sufficiently diverse methods of preventing this and all operators are taught the importance of preventing an overcooling, this concern will not generate any components of interest. The operator actions required to prevent this overcooling are also addressed in plant emergency operating procedures.

- Components of Interest:

CV-2618 and CV-2668, Atmospheric Dump Block Valves
CV-2619 and CV-2676, Atmospheric Dump Valves
CV-2691 and CV-2692, Main Steam Isolation Valves

- 3. Reactor coolant system makeup and pressure control component requirements are summarized below. If the inventory loss paths addressed in items A and B above are prevented, then RCS makeup should not be required for the first one and one-half hours of any scenario. It is assumed that within that time frame (and realistically much quicker) the vital 4.16 KV and 480 VAC power can be restored. This is necessary to provide RCS inventory makeup and pressure control.
 - a. RCS makeup will be assured by intermittent operation of the high pressure injection pumps. They will be aligned to take suction from the BWST and discharge through the high pressure injection valves. The motor driven auxiliary lube oil pumps are important to satisfy the interlocks for manual starts of the HPI pumps, however, the breakers may be operated by local/manual control if the lube oil pumps are not available.
(reference memo #ONEL-066-25 date June 6, 1986)
 - b. Service water inlet valves to the HPI pump lube oil and room coolers are important to maintain lube oil temperatures within an acceptable range.
 - c. HPI pump room cooler fans are not considered critical because of the intermittent rotating use of the pumps and also because of the physical construction of the rooms (open in the overhead).



- d. The normal makeup control valve was considered, but because of its tie to the instrument air system and to the plant Non-Nuclear Instrumentation System, this path was not considered necessary.
- e. Pressurizer vital powered heaters were considered but were determined to not be required to safely shutdown the plant (Reference Calculation 85E-00070-01).
- f. RCS pressure reduction and pressurizer cooldown can be accomplished by either insurging/outsurging the pressurizer or intermittent operation of the ERV, if available.
- g. BWST level instrumentation was considered but not included because of the excess amount of water available above that needed to reach cold shutdown.
- h. Pressurizer level (compensated) is required because it is the only indication of RCS inventory.
- i. Reactor coolant system pressure is required (wide range) so the operator can maintain the correct pressure/temperature relationships.
- j. HPI flow was considered but not included because the flow rate is not critical and the desired effect (inventory increase) can be observed on pressurizer level instruments.
- k. The Reactor Building Sump to Decay Heat Suction Valves are to be added to the Components of Interest list due to a spurious operation concern. If these valves should spuriously open due to fire at the same time that CV-1407 and CV-1408 are open, would drain the BWST to the reactor building sump. Though makeup could still be accomplished by "piggybacking" through the decay heat pumps, information necessary to inform the operator of the need to align for "piggybacking" has not been assured and makeup pump damage due to loss of suction could result.

• Components of Interest:

P-36A, B, C, High Pressure Injection Pumps
CV-3808, 3809, 3810, Service Water Inlet Valves
to HPI Pump BWST Lube Oil Coolers
CV-1407, 1408, BWST Outlet Valves
CV-1219, 1220, 1227, 1228, 1278, 1279, 1284, 1285
High Pressure Injection Valves
Wide Range RCS Pressure
Compensated Pressure Level



C. Decay Heat Removal

1. Decay heat removal for both hot shutdown and cooldown to less than 280°F will be via the steam generators and natural circulation of the reactor coolant. The assured method of control will be either remote manual (electrical) control or local manual (physical) control. The components considered to accomplish these goals are summarized below.
 - a. P-7A turbine requires one of two sets of steam supply valves to open to provide steam. Also the turbine governor requires a valve position feedback signal to release the governor to ramp turbine speed. The governor itself requires DC control power and a full speed signal from the control room to allow normal turbine operation. Local manual operation of the turbine is available in the event of governor failure or loss of DC control power.
 - b. P-7B requires 4.16 KV power from bus A-3 and breaker closure.
 - c. Both pumps P-7A and P-7B require suction valve alignment initially to the CST and ultimately to service water.
 - d. Both pumps require their respective flow control valves and steam generator feed block valves to be opened to feed the steam generators.
 - e. Both pumps require that their respective recirc test loop isolation valves be closed to provide sufficient flow/pressure to the steam generators.
 - f. Most of the components described above have auto/manual pushbuttons. Since operator remote manual is the desired method of operation, the ability to select manual and remotely control these components should be identified for the various fire scenarios.



- g. Steam release from the steam generators will initially be controlled by the main steam safeties. These will not be components of interest, however, because they are assumed to be unsusceptible to fire induced failure. Ultimately steam release will be controlled by the atmospheric dump block or control valves. The atmospheric dump valves are not considered components of interest because of their tie to instrument air and the Integrated Control System. It is assumed that these valves will be failed open and the block valves (electrically operated) used to control pressure, or the block valves failed open and the atmospheric dump valves manually operated.
- h. The emergency feed pump room coolers are not components of interest because of the open nature of the area. Also these coolers are cooled by a non-safety grade cooling water system.
- i. The instrumentation considered necessary to achieve and maintain natural circulation cooling is as follows:
- A and B OTSG pressures
 - A and B OTSG compensated levels (wide ranges)
 - A and B RCS loop wide range temperatures (T_H and T_C)
 - CST level indication (or local mechanical indication)
 - P-7A local mechanical discharge pressure indication to allow for local manual control of P-7A
- j. Other instrumentation considered but not included is as follows:
- Emergency feedwater flow is not included because the OTSG parameters can be used to assess the EFW flow requirements.
 - P-7A and P-7B remote discharge pressure is not included because the OTSG parameters can be used to assess the EFW system performance.
 - Local (at atmospheric dump valves) steam generator pressure indication is not included because this is considered more an operator aid than an absolute requirement for local control of OTSG pressure.



- Components of Interest:
 - P-7A, Emergency Feedwater Pump and Turbine
 - P-7B, Emergency Feedwater Pump and Turbine
 - CV-3851 and CV-3850, Service Water to EFW Pumps
 - CV-2803 and CV-2806, Service Water to EFW Pumps
 - CV-2800 and CV-2802, Condensate to EFW Pumps
 - CV-2620 and CV-2626, EFW Block Valves to "B" OTSG
 - CV-2627 and CV-2670, EFW Block Valves to "A" OTSG
 - CV-2617 and CV-2667, P-7A Steam Supply Block Valves
 - CV-2663/SV-2663, P-7A Steam Supply Valves
 - CV-2613/SV-2613, P-7A Steam Supply Valves
 - CV-2645/CV-2646, EFW Flow Control Valves to "A" OTSG
 - CV-2647/CV-2648, EFW Flow Control Valves to "B" OTSG
 - CV-2869/CV-2870/CV-2888, EFW Test Recirc Isolation Valves
 - A and B OTSG Pressure Instruments
 - A and B OTSG Level Instruments (Compensated)
 - Condensate Storage Tank Level Instrument (including Local Level Instrument at T41)
 - P-7A Local Discharge Pressure Instrument

2. Decay heat removal below 280°F will be via the decay heat removal system. Because of their ties to instrument air and the plant Non-Nuclear Instrumentation System, the decay heat cooler outlet and bypass valves will be assured by local manual operation and not listed as components of interest.

Other components considered are listed below.

- a. P-34A or P-34B are necessary to recirculate reactor coolant through the decay heat removal heat exchanger.
- b. Decay heat room coolers were considered however calculations were performed (Ref. Calc #05E 00081-01) to demonstrate that these coolers were not required for safe shutdown.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 31 OF 277



- c. Decay heat flow was considered but not included because the specific flow rate is not critical, only the fact that the RCS is being cooled. Maximum flowrates can be established, if necessary, using pump ΔP .
- d. Decay heat suction temperature is required because this will provide the only true indication of RCS core temperatures (core exit thermocouples are not listed as components of interest). RCS T_H and T_C temperatures are not representative of core temperatures because there is no loop flow.

- Components of Interest:

Decay Heat Suction Temperature Instruments
CV-3821 and CV-3822, Service Water to Decay Heat
Coolers
CV-1400 and CV-1401, Decay Heat Injection Valves
CV-1050, 1410 and 1404, Decay Heat Suction
Isolation Valves
P34 A & B, Decay Heat/LPI Pumps

D. Support Systems Required

- 1. Electrical power to the required busses is assured from one or both diesel generators. These engines have been demonstrated to be capable of local manual starting independent of all control power; however, the preferred method for starting from an Appendix R standpoint would be an electric start (either automatically or operator initiated). Availability of the control circuits required to accomplish an electric start must therefore be identified. The components considered for diesel generator support are summarized below:
 - a. The diesel generator service water inlet valves must open to provide engine cooling.
 - b. For extended operation one diesel generator exhaust fan and its associated dampers must actuate or be actuated to assure adequate room cooling and prevent equipment failure.
 - c. The diesel fuel oil transfer pumps are required for extended diesel operation.



- Components of Interest:

K4A and K4B, Diesel Generators
CV-3806 and CV-3807, Diesel Cooling Water Valves
P-16A and P-16B, Diesel Fuel Oil Transfer Pumps
VEF-24A, B, C, D, Diesel Exhaust Fans and Dampers

2. Distribution of the diesel generator's vital power is required through the below listed busses, MCCs, etc.

- a. Bus A-3 and A-4 (4.16 KV)
- b. Bus B-5 and B-6 (480 VAC)
- c. MCCs 51, 52, 53, 55, 56, 61, 62 and 63 (480 VAC)

it should be noted that valves which are components of interest and powered from MCC's 51, 52, 53, 56, 61, 62 and 63 are manually operable. MCC's 51 and 61 also power emergency diesel generator exhaust fans and fuel oil transfer pumps which must be energized to be available.

- d. Battery chargers DO-3, 4 and 5 are needed to prevent battery drawdown and subsequent loss of DC power. DC power is required to assure proper operation of the inverters and to provide the desired remote control of various components of interest.
- e. Inverters Y-11 (and RS-1), Y-22 (and RS-2), Y-13 (and RS-3) and Y-24 (and RS-4) are required to provide RPS power which in turn provides wide range T_H instrumentation for certain fire scenarios, also for most other "red" safe shutdown instrumentation.
- f. Inverter Y-28 is required for the "green" safe shutdown (alternate shutdown) instrumentation.
- g. Battery busses and banks (DO-1, 2 and DO-6, 7) and DC distribution panels (D-11, 21 and RA-1 and 2) must be available to support various control circuits and back up the inverters (if diesels must be started manually).
- h. 4160 volt and 480 volt vital bus crossconnect breakers must be evaluated in that spurious closure of these breakers could cause out of phase paralleling of the vital powered busses with resulting bus/breaker/cable damage.



- Components of Interest:

Bus A-3 and A-4, 4.16 KV Vital Power and
interconnecting
power breakers
Bus B-5 and B-6, 480 VAC Vital Power and
interconnection power breakers
MCC 51, 52, 53, 55, 56, 61, 62, 63
Battery Chargers DO-3, 4, 5
DO-1 and 2, Battery Busses
DO-6 and 7, Battery Banks
Inverters, Y-11, 22, 13, 24 and 28
RS Panels 1-4
D-11 and D-21 DC distribution panels
RA-1 and RA-2 DC distribution panels

3. Service water is a critical support system to each of the other required systems. The components considered are summarized below.
- a. P-4A, B or C are required to provide cooling water and possibly feedwater to the other required systems.
 - b. The service water crossover valves and loop isolation valves are required so that service water loops separation can be assured.
 - c. The ICW cooler isolation valves are not required because one service water pump could support the other required components of interest without isolation of the ICW cooler flowpath.
 - d. The service water return isolation valves were considered but not included because the power breakers are locked open and valve operation is not required.
 - e. The service water sluice gates must be considered to assure the availability of suction to the service water pumps (i.e., there is a potential for a "hot short" loss of pump suction).
 - f. Service water system pressure was considered but not included for two reasons: inclusion of various system boundary valves assures the capability of providing adequate service water pressure, and there are service water mechanical pressure instruments located in the auxiliary building and intake structure if it becomes necessary to monitor service water pressure.



- Components of Interest:

P-4A, B, C, Services Water Pumps
CV-3640/3646/3642/3644, Service Water Crossover
Valves
CV-3641/3643/3645, Service Water Loop Isolation
Valves
Sluice Gates 1-7

5.7 COMPONENTS OF INTEREST - (UNIT 1)

5.7.1 Reactor Coolant Inventory Maintenance

A. Reactor Coolant System Makeup & Pressure Control

P36A - Makeup/HPI Pump "A"
P36B - Makeup/HPI Pump "B"
P36C - Makeup/HPI Pump "C"

CV3808 - Service Water Inlet Valve (Green) to P-36A Oil
Cooler
CV3809 - Service Water Inlet Valve (Swing) to P-36B Oil
Cooler
CV3810 - Service Water Inlet Valve (Red) to P-36C Oil
Cooler
CV1405 & CV1406 - Reactor Building Sump to Decay Heat
Suction
Valves CV1407 & CV1408 - BWST Outlet Valves
CV1219, CV1220, CV1227, CV1228, CV1278, CV1279, CV1284,
CV1285 - High Pressure Injection Valves
RUB 36, 37, 38, 39 - Pressurizer Vital Heaters

B. Direct RCS Leak Paths

SV-1071, SV-1072, SV-1073, SV-1074, - RX Head Hi Point Vent
SV-1077 & SV-1079 - Pressurizer Hi Point Vent SV-1081,
SV-1082, SV-1083 & SV-1084 - E24A Hi Point Vent SV-1091,
SV-1092, SV1093 & SV-1094 - E24B Hi Point Vent CV-1214,
CV-1216 & CV-1221 - Letdown Isolation Valves PSV-1000 - ERV
on Pressurizer CV-1000 - ERV Block Valve SV-1270 & CV-1270
- RCP P32 D Seal Bleedoff SV-1271 & CV-1271 - RCP P32 C
Seal Bleedoff SV-1272 & CV-1272 - RCP P32 B Seal Bleedoff
SV-1273 & CV-1273 - RCP P32 A Seal Bleedoff CV-1274 &
CV-1295 - RCP Seal Bleedoff Block Valves CV-1050 & CV-1410
- Decay Heat Isolation Valves

C. Steam Generator Overcooling Paths

CV-2619 & CV-2676 - Atmospheric Dump Block Valves CV-2618 &
CV-2668 - Atmospheric Dump Valves CV-2691 & CV-2692 - Main
Steam Isolation Valves



5.7.2 Reactor Decay Heat Removal for Hot Shutdown to 280°F

A. P-7A - Emergency Feedwater Pump (Turbine) P-7B - Emergency Feedwater Pump (Motor)

B. EFW Pump Suction Paths

CV-2806 & CV-3851 - Service Water to P7A
CV-2803 & CV-3850 - Service Water to P7B
CV-2800 - Condensate to P7A
CV-2802 - Condensate to P7B
CV-2617 & CV-2667 - P7A Steam Supply Block Valves
CV-2663 & SV-2663 - P7A Steam Supply Valves
CV-2613 & SV-2613 - P7A Steam Supply Valves

C. EFW Pump Discharge Paths

CV-2620 - P7A Block Valve to "B" OTSG
CV-2626 - P7B Block Valve to "B" OTSG
CV2627 - P7A Block Valve to "A" OTSG
CV2670 - P7B Block Valve to "A" OTSG
CV-2647 - P7A Discharge to "B" OTSG
CV-2648 - P7B Discharge to "B" OTSG
CV-2645 - P7A Discharge to "A" OTSG
CV-2646 - P7B Discharge to "A" OTSG
CV-2869, CV-2870 & CV-2888 - EFW Test Recirculation Isolation Valves

5.7.3 Reactor Decay Heat Removal Below 280°F (Cold Shutdown)

P34A - Decay Heat/LPI Pump "A"
P34B - Decay Heat/LPI Pump "B"
CV-3821 - Service Water to Decay Heat Coolers E35B & E36B
CV-3822 - Service Water to Decay Heat Coolers E35A & E36A
CV-1400 - Decay Heat Cooler E-35B Isolation
CV-1401 - Decay Heat Cooler E-35A Isolation
CV-1050 - Decay Heat Suction Isolation Valve
CV-1410 - Decay Heat Suction Isolation Valve
CV-1404 - Decay Heat Suction Isolation Valve



5.7.4 Service Water System

P4A - Service Water Pump "A"
P4B - Service Water Pump "B"
P4C - Service Water Pump "C"
CV-3640 - Service Water Crossover Valve
CV-3641 - Service Water Discharge to Loop II
CV-3642 - Service Water Crossover Valve
CV-3643 - Service Water Discharge to Aux. Cooling Water
CV-3644 - Service Water Crossover Valve
CV-3645 - Service Water Discharge to Loop I
CV-3646 - Service Water Crossover Valve
SG 1-7 - Intake Structure Sluice Gates

5.7.5 Electrical Power

A. Power to Vital Busses

K4A - Emergency Diesel Generator (Red)
K4B - Emergency Diesel Generator (Green)
CV-3806 - Service Water to Diesel Jacket Cooler E-20A
CV-3807 - Service Water to Diesel Jacket Cooler E-20B
P-16A - Diesel Fuel Transfer Pump (Red)
P-16B - Diesel Fuel Transfer Pump (Green)
VEF-24A & B & Dampers - EDG Room K4A Exhaust Fans
VEF-24C & D & Dampers - EDG Room K4B Exhaust Fans

B. Distribution of Vital Power

1. 6.9KV

BUS H1 Feeder Breakers - 6.9KV to RCP
BUS H2 Feeder Breakers - 6.9KV to RCP

2. 4.16KV

Bus A3 & Feeder/Crosstie Breakers - 4.16KV (Red) Bus
A4 & Feeder/Crosstie Breakers - 4.16KV (Green)

3. 480VAC

Bus B5 & Feeder/Crosstie Breakers - 480VAC (Red) Bus
B6 & Feeder/Crosstie Breakers - 480VAC (Green) MCC's
51, 52, 53, 55, 56 - 480VAC (Red) MCC's 61, 62, 63 -
480VAC (Green)

All necessary components on MCC's B52, B53, B56, B62 &
B63 are manually operable.



4. 125VDC (Red)

DO1 - 125VDC Distribution Center Y-11 - 125 VDC/120VAC Inverter for RS-1 Y-13 - 125VDC/120VAC Inverter for RS-3 RS-1 - 120VAC Vital Bus No. 1 RS-3 - 120VAC Vital Bus No. 3 DO7 - 125VDC Battery Bank "A" ***RA-1 - 125VDC Distribution Panel ***D-11 - 125VDC Distribution Panel

5. 125VDC (Green)

DO2 - 125VDC Distribution Center Y22 - 125VDC/120VAC Inverter for RS2 Y24 - 125VDC/120VAC Inverter for RS4 RS2 - 120VAC Vital Bus No. 2 RS4 - 120VAC Vital Bus No. 4 DO6 - 125VDC Battery Bank "B" ***RA-2 - 125VDC Distribution Panel ***D21 - 125VDC Distribution Panel

6. Misc.

Y-28 - SPDS Instrument Power Supply **D03 - Battery Charger #1 (Red) **D04 - Battery Charger #2 (Green) **D05 - Battery Charger #3 (Swing)

5.7.6 Instrumentation

A. Local

LI-4292 - Condensate Storage Tank (T41) Local Level Indication
TIT-1404 - P34A Suction Inlet Temperature Indication (Local)
TIT-1405 - P34B Suction Inlet Temperature Indication (Local)
*PI-2682 - OTSG A Main Steam Line Pressure (Local)
*PI-2683 - OTSG B Main Steam Line Pressure (Local)
PI-2811A - P7A Discharge Pressure Indication (Local)

B. Steam Generator Level

LT-2620 - OTSG A Level Hi Range (Red) to SPDS or LI-2620 on CO-9
LT-2618 - OTSG A Level Lo Range (Red) to SPDS or LI-2618 on CO-9
LT-2624 - OTSG A Level Hi Range (Green) to SPDS or LI-2624 on CO-9
LT-2622 - OTSG A Level Lo Range (Green) to SPDS or LI-2622 on CO-9
LT-2669 - OTSG B Level Hi Range (Red) to SPDS or LI-2669 on CO-9



LT-2667 - OTSG B Level Lo Range (Red) to SPDS or LI-2667 on CO-9
LT-2673 - OTSG B Level Hi Range (Green) to SPDS or LI-2673 on CO-9
LT-2671 - OTSG B Level Lo Range (Green) to SPDS or LI-2671 on CO9

C. Pressurizer Level

LT-1001 & TE-1001A - Pzr. Level (Red) to SPDS or LRS-1001 on C04
LT-1002 & TE-1002A - Pzr. Level (Green) to SPDS or LIS-1002 on CO-4

Note: Indicators LRS-1001 & LIS-1002 are to be installed 1R7 under DCP 83-1075B.

D. Source Range

NE-501 - Source Range (Red) to SPDS or NI-501 on CO3
NE-502 - Source Range (Green) to SPDS or NI-502 on CO3

E. RCS Pressure

PT1041 - RCS Pressure Wide Range (Green) to SPDS or PI-1041
PT-1042 - RCS Pressure Wide Range (Red) to SPDS or PR-1042
PT-1022 - RCS Pressure Wide Range (Green) to SPDS (Safe Shutdown Display) or Indication on C89



F. Steam Generator Pressure

PT-2618A - OTSG "A" Pressure (Red) to SPDS or PI-2618A on CO9
PT-2618B - OTSG "A" Pressure (Green) to SPDS or PI-2618B on CO9
PT-2667A - OTSG "B" Pressure (Red) to SPDS or PI-2667A on CO9
PT-2667B - OTSG "B" Pressure (Green) to SPDS or PI-2667B on CO9

G. RCS T_{Cold} (Wide Range)

TE-1115 - RCS Loop A Cold Leg Temp. (Green) to SPDS or TI-1115 on CO3
TE-1117 - RCS Loop A Cold Leg Temp. (Red) to SPDS
TE-1147 - RCS Loop B Cold Leg Temp. (Green) to SPDS or TI-1147 on CO3
TE-1144 - RCS Loop B Cold Leg Temp. (Red) to SPDS



H. RCS T_{Hot} (Wide Range)

- TE-1112 - RCS Loop A Hot Leg Temp. (Black/Green) to SPDS
- TE-1111 - RCS Loop A Hot Leg Temp. (Red) to SPDS or TI-1111 on C03
- TE-1012 - RCS Loop A Hot Leg Temp. to Tsat Monitor via C-41 ("A" RPS)
- TE-1013 - RCS Loop A Hot Leg Temp. to Tsat Monitor via C-42 ("B" RPS)
- TE-1139 - RCS Loop B Hot Leg Temp. (Green) to SPDS or TR-1139 on C03
- TE-1040 - RCS Loop B Hot Leg Temp. (Red) to Tsat Monitor via C43 ("C" RPS)
- TE-1041 - RCS Loop B Hot Leg Temp. (Green) to Tsat Monitor via C44 ("D" RPS)

Note: Instruments TI-1111 and TR-1139 are to be installed 1R7 under DCP 84-1041B.

I. Condensate Storage Tank Level (T41B)

- LT-4204 - CST T41B Level (Red) to SPDS or LRS-4204 on C09
- LT-4205 - CST T41B Level (Green) to SPDS or LIS-4205 on C09

5.7.7 ALTERNATE SHUTDOWN

In the event a fire renders both trains of safe shutdown equipment inoperable from the control room/remote shutdown panel, alternate shutdown is required. Current revisions to procedure No.'s 1203.002 and 2203.014 provide guidelines to comply with 10 CFR 50 Appendix R and to mitigate the consequences of a fire in a safety related area.

* Operator Aid Only

** Battery Chargers are required to assure continued DC power which is required to provide the desired continued remote control of various Components of Interest.

*** 125VDC Distribution Panels are required to assure continued DC Power which is needed to provide the desired remote control of various Components of Interest.



5.8 Bases for Components of Interest List (UNIT 2)

5.8.1 Reactor Coolant Inventory Maintenance

- A. A way to maintain adequate inventory in the Reactor Coolant System to keep the fuel from overheating must be provided. In addition, any inventory added must have sufficient boron concentration to keep the core subcritical. Any one of the three "prime movers" is capable of adding inventory to the RCS at pressure. These "prime movers" are charging pumps A, B, & C whose equipment numbers are 2P36A, 2P36B and 2P36C respectively.
- B. The inventory sources would be the Refueling Water Tank (RWT) or the Boric Acid Tanks. The flow path would be through any one of the last three valves to the charging pumps suction header.
1. 2CV-4873-1 - Volume Control Tank to Charging Pump Suction Header
 2. 2CV-4950-2 - Refueling Water Tank to Charging Pump Suction Header
 3. 2CV-4920-1 - Boric Acid Makeup to Charging Pump Suction Header
 4. 2CV-4921-1 - Boric Acid Makeup to Charging Pump Suction Header

The Volume Control Tank valve is listed because it should be closed. An additional path for a source of inventory is available from the boric acid pumps through their common discharge valve (2CV-4916-2) to the charging pump suction header, if neither diesel room is damaged by a fire since the boric acid pumps (2P39-A&B) are powered from a "green" source and are located in the "red" diesel room.

- C. There are several injection paths from the charging pumps to the Reactor Coolant System (RCS). Any one of the valves listed below will provide this path to the RCS if open.
1. 2CV-4840-2 Charging Pump Discharge Header
 2. 2CV-5015-1 HPSI to RCS
 3. 2CV-5035-1 HPSI to RCS
 4. 2CV-5055-1 HPSI to RCS
 5. 2CV-5075-1 HPSI to RCS



- D. The direct RCS leak path valves which are listed below are in paths that could provide a path for excessive inventory leakage. Leakage through valves #6-11 can be kept up with by the charging pumps, but use of the charging pumps (and thus the diesel generators) would be required very soon after one of these paths is open. This also applies to valves #1-4 and with these valves, either 2CV-4730-1 or 2CV-4731-2 and 2CV-4741-1 or 2CV-4740-2 must be closed to isolate their respective leakage path.

The last three valves are in the Reactor Coolant System Letdown leakage path. Any one of the three must be closed to isolate this leakage path.

1. 2CV-4731-2 Pressurizer LTOP Relief Isolation
2. 2CV-4741-1 Pressurizer LTOP Relief Isolation
3. 2CV-4730-1 Pressurizer LTOP Relief Isolation
4. 2CV-4740-2 Pressurizer LTOP Relief Isolation
5. 2CV-4698-1 ECCS Vent Valve
6. 2SV-4669-1 RCS Vent Header to Quench Tank
7. 2SV-4670-2 RCS Vent Header to Containment Atmos.
8. 2SV-4636-1 Hi Point Vent
9. 2SV-4636-2 Hi Point Vent
10. 2SV-4668-1 RV Head Vent
11. 2SV-4668-2 RV Head Vent
12. 2CV-4823-2 RCS Letdown Containment Isolation Valve
13. 2CV-4820-2 RCS Letdown to Regenerative Heat Exchanger
14. 2CV-4821-1 RCS Letdown Containment Isolation Valve.

5.8.2 Reactor Decay Heat Removal

- A. A method to remove decay heat from the reactor after a trip must be provided. For a hot shutdown condition, this is done by removing heat through the steam generator. Either Emergency Feedwater Pump listed below can provide adequate cooling flow to the steam generators.



1. 2P7A - Emergency Feedwater Pump (Turbine)

2. 2P7B - Emergency Feedwater Pump (Motor)

B. A source of coolant can be provided either from the Service Water System or the Condensate Storage Tank (CST) although the later has a limited inventory. The preferred source is the CST since the introduction of service water to the steam generators will likely cause long term significant chemistry problems with this equipment. The valves which provide the flow path from either of these sources to the suction of the EFW pumps are listed below. Either of the first two valves will provide an adequate source of coolant for their respective trains from the service water supply. 2CV-0707 must be open for either of the other two condensate valves to provide an adequate source of coolant.

1. 2CV-0711-2 - Service Water to 2P7A

2. 2CV-0716-1 - Service Water to 2P7B

3. 2CV-0789-1 - Condensate to 2P7B

4. 2CV-0795-2 - Condensate to 2P7A

5. 2CV-0707 - Condensate Storage Tank to EFW

C. There are two (2) valves in each path to each steam generator from each "prime mover" (EFW Pump). These valves are listed below. There is also a test loop path for each EFW pump that can divert the needed coolant flow from the steam generators unless the test needed if the test loop valves are closed. Any path from either pump to either Steam Generator will provide adequate cooling water. Each of these paths requires that two valves be open.

1. 2CV-1026-2 - 2P7A to SGA

2. 2CV-1037-1 - 2P7A to SGA

3. 2CV-1076-2 - 2P7A to SGB

4. 2CV-1039-1 - 2P7A to SGB

5. 2CV-1038-2 - 2P7B to SGA

6. 2CV-1025-1 - 2P7B to SGA

7. 2CV-1036-2 - 2P7B to SGB



8. 2CV-1075-1 - 2P7B to SGB
9. 2CV-0798-1 - EFW Test Loop to Demineralizer
10. 2CV-0714-1 - EFW Test Loop to Demineralizer

D. The steam generated by the process of removing the RCS decay heat must be removed in a controlled manner to prevent too much or too little heat removal. The Main Steam Isolation Valves (MSIVs) isolate potential paths for the excess steam flow which could remove too much heat and the atmospheric dump valves (or if necessary, mechanical safety valves) provide a controlled release path for this heat. These valves are listed below.

1. 2CV-1051 - Atmospheric Dump Valve
2. 2CV-1001 - Atmospheric Dump Valve
3. 2CV-1010-1 - MSIV
4. 2CV-1060-2 - MSIV

E. The turbine driven "prime mover" (2P7A) must have a steam supply to drive the turbine. This function is provided through 2CV-0340-2 in series with either of the valves coming from the individual steam generators.

1. 2CV-0340-2 - Steam Inlet Header
2. 2CV-1050-2 - Steam from SGB
3. 2CV-1000-1 - Steam from SGA

5/8/3 Service Water:

A. Service water provides a source of cooling to several heat exchangers providing vital cooling service. Any one of the "prime movers" (the service water pumps) can provide adequate cooling flow for all these cooling services. These pumps are listed below.

1. 2P4A - Service Water Pump "A"
2. 2P4B - Service Water Pump "B"
3. 2P4C - Service Water Pump "C"



B. A source of cooling water can be provided from either the emergency cooling pond or Dardanelle Reservoir by any one of the sluice gates but only to the one specific service water pump on the bay served by that gate. These sluice gates are listed below.

1. 2CV-1470-1 - Sluice Gate from Lake to 2P4A
2. 2CV-1471-1 - Sluice Gate from ECP to 2P4A
3. 2CV-1472-5 - Sluice Gate from Lake to 2P4B
4. 2CV-1473-5 - Sluice Gate from ECP to 2P4B
5. 2CV-1474-2 - Sluice Gate from Lake to 2P4C
6. 2CV-1475-2 - Sluice Gate from ECP to 2P4C

C. There are two main service water loops that are cross connected at the service water pump discharge. A and C pumps provide flow directly into their respective loops. However, for B pump to be used, the two valves in the crossover line must be aligned to provide flow to one or the other loop. These valves are listed below.

1. 2CV-1418-1 - Header Crossover Valve (2P4B to Loop 1)
2. 2CV-1419-1 - Header Crossover Valve (2P4B to Loop 1)
3. 2CV-1421-2 - Header Crossover Valve (2P4B to Loop 2)
4. 2CV-1422-2 - header Crossover Valve (2P4B to Loop 2)

D. A subloop is provided to Engineered Safety Features (ESF) equipment and room coolers off each loop. This sub loop is available only if its main inlet valve is open. These valves are listed below.

1. 2CV-1400-1 - to ESF Header #1
2. 2CV-1406-2 - to ESF Header #2

E. The service water system must also have a discharge path. Each main loop empties into a discharge header which can empty into the emergency cooling pond, Dardanelle Reservoir or the cooling tower basin. The essential valves in these discharge flowpaths are listed below. Either valve to the Emergency Cooling Pond is adequate. The header valve to the other discharge destinations must be open for either of their loop discharge valves to provide a discharge path.



1. 2CV-1460 - Dardanelle Reservoir Return Header
2. 2CV-1481-1 - Loop 1 Discharge to Dardanelle Reservoir Return Header
3. 2CV-1480-2 - Loop 2 Discharge to Dardanelle Reservoir Return Header
4. 2CV-1540 - Cooling Tower Basin Header
5. 2CV-1543-1 - Loop 1 Discharge to Cooling Tower Basin Header
6. 2CV-1542-2 - Loop 2 Discharge to Cooling Tower Basin Header
7. 2CV-1541-1 - To Emergency Cooling Pond
8. 2CV-1560-2 - To Emergency Cooling Pond

5.8.4 Electrical Power

- A. With a loss of offsite power, vital power is supplied via the emergency diesel generators. When the diesels are not running vital power for instrumentation and control circuits is supplied via the vital battery banks. For the diesels to operate, they must have fuel supplied by pumps (one per diesel) through solenoid valves. The emergency diesel jacket must be kept cool with service water and the emergency diesel generator rooms themselves must be kept cool enough to permit personnel access for local control of the diesel by using its exhaust fans and inlet air dampers.

The components described above are listed below.

1. 2K4A - Emergency Diesel Generator (Red)
2. 2P16A - Diesel Fuel Transfer Pump (Red)
3. 2SV-2802-1 - Diesel Fuel Inlet to Day Tank (2T30A)
4. 2CV-1503-1 - SW for Jacket Cooler (2E20A)
5. 2VEF24A&B & Dampers - EDG Room 2K4A Exhaust Fans
6. 2K4B - Emergency Diesel Generator (Green)
7. 2P16B - Diesel Fuel Transfer Pump (Green)
8. 2SV-2822-2 - Diesel Fuel Inlet to Day Tank (2T30B)

9. 2CV-1504-2 - SW for Jacket Cooler (2E20A)

10. 2VEF24C&D & Dampers - EDG Room 2K4B Exhaust Fans

B. The electrical distribution network must be viable for the electricity generated by the diesels to be usable. The distribution is via the vital 4160V buses to the 480 volt load centers and ultimately to the 480 volt MCC's. It should be noted that several valves which are components of interest and powered from MCC's 2B51, 52, 53, 54, 61, 62, 63 and 64 are manually operable. MCC's 52 and 62 also power emergency diesel generator room exhaust fans and inlet air dampers. In addition to the above, several components which require 480 vac power to operate are powered from these MCC's. These MCC's and the components powered from them are as follows: MCC2B51 - Battery Charger 2D31; MCC2B52 - Charging Pump 2P36A, Diesel Room Exhaust Fans & Dampers 2VEF24A&B; MCC2B53 - Diesel Fuel Oil Transfer Pump 2P16A, Inverters 2Y11 and 2Y13; MCC2B54 - Inverters 2Y11 and 2Y13, Battery Charger 2D34, Charging Pump 2P36C; MCC2B61 - Inverters 2Y22 and 2Y24; MCC2B62 - Charging Pump 2P36B, Diesel Room Exhaust Fans & Dampers 2VEF24C&D; MCC2B63 - Diesel Fuel Oil Transfer for Pump 2P16B; MCC2B64 - Charging Pump 2P36C, Battery Charger 2D34 and Inverters 2Y22 and 2Y24. The battery chargers are needed to prevent battery drawdown and subsequent loss of DC power. DC power and control is required for operation of the ECCS vent valves 2CV 4698-1 and 2CV 4740-2. DC power is required to assure proper operation of the inverters and to provide the desired remote control of various components of interest.

The inverters and their associated RS panels are required to provide RPS power which in turn provides wide range T^{cold} for certain fire scenarios and power for most other "red" safe shutdown instrumentation. Inverter 2Y26 is required to assure proper AC power to the SPDS computer. The battery buses and banks and DC distribution panels must be available to support various control circuits and back up the inverters (if diesels must be started manually).

The 4160 volt and 480 volt vital bus cross connect breakers have been evaluated since spurious closure could cause out of phase paralleling of the vital powered buses with resulting bus, breaker or cable damage. The DC control breakers associated with the 2H1 and 2H2 6.9 KV buses are required since a spurious start of the RCP's could result from a fire in the Turbine Building where these cables are located if there is no coincident loss of offsite power with the fire. The essential portions of the distribution networks described above are listed below.



1. 6.9KV
 2H1 Bus Feeder Breakers - 6.9 KV Power to RCPs
 2H2 Bus Feeder Breakers - 6.9 KV Power to RCPs

2. 4.16KV
 2A3 Bus & Feeder/Crosstie Breakers - 4160 V Bus (Red)
 2A4 Bus & Feeder/Crosstie Breakers - 4160 V Bus
 (Green)

3. 480 VAC
 2B5 Bus & Feeder/Crosstie Breakers - 480 V Load Center
 (Red)
 MCC 2B51 & Feeds - 480 V MCC (Red)
 MCC 2B52 & Feeds - 480 V MCC (Red)
 MCC 2B53 & Feeds - 480 V MCC (Red)
 MCC 2B54 & Feeds - 480 V MCC (Red)
 2B6 Bus & Feeder/Crosstie Breakers - 480 V Load Center
 (Green)
 MCC 2B61 & Feeds - 480 V MCC (Green)
 MCC 2B62 & Feeds - 480 V MCC (Green)
 MCC 2B63 & Feeds - 480 V MCC (Green)
 MCC 2B64 & Feeds - 480 V MCC (Green)

4. 125VDC (Red)
 2D01 & Feeds - 125VDC Control Center #1
 2D11 & Feeds - 125VDC Vital Battery Bank #1
 2Y11 & Feeds - 125VDC/120VAC Inverter/Transformer to
 2RS1
 2Y13 & Feeds - 125VDC/120VAC Inverter/Transformer to
 2RS3
 2RS1 & Feeds - 120VAC Vital Distribution Panel #1
 2RS3 & Feeds - 120VAC Vital Distribution Panel #3
 2RA-1 & Feeds - 125VDC ESF Distribution Panel
 2D21 & 2D23 & Feeds - 125VDC Distribution Panels
 2D27 & Feeds - 125VDC Motor Control Center

5. 125VDC (Green)
 2D02 & Feeds - 125VDC Control Center #2
 2D12 & Feeds - 125VDC Vital Battery Bank #2
 2Y22 & Feeds - 125VDC/120VAC Inverter/Transformer to
 2RS2
 2Y24 & Feeds - 125VDC/120VAC Inverter/Transformer to
 2RS4
 2RS2 & Feeds - 120VAC Vital Distribution Panel #2
 2RS4 & Feeds - 120VAC Vital Distribution Panel #4
 2RA2 & Feeds - 125VDC ESF Distribution Panel
 2D22 & 2D24 & Feeds - 125VDC Distribution Panels
 2D26 & Feeds - 125VDC Motor Control Center



6. Miscellaneous

- 2D-31 - Battery Charger #1 (Red)
- 2D-32 - Battery Charger #2 (Green)
- 2D-34 - Battery Charger #3 (Swing)
- 2Y-26 - SPDS Computer Inverter

5.8.5 Decay Heat Removal Below 280°F (Cold Shutdown)

A. Although reactor decay heat removal in a hot condition via the steam generators as described in section II above is a safe condition, 10CFR50 Appendix R requires that the ability to go to a cold shutdown condition be provided. This requires the ability to cool and depressurize both the primary and secondary systems and to provide continued cooling to the RCS when cooling via the steam generators is terminated. The only components listed are those not already listed elsewhere because they are also relevant for hot shutdown. Therefore, the only components listed are those related directly to continued cooling of the RCS via the Shutdown Cooling Heat Exchangers. Adequate cooling capacity can be provided by either of two trains of the Shutdown Cooling System. Each train requires a pump to move RCS through the heat exchanger and a valve to open the flow path for cooling water to the heat exchanger. The pumps and their respective cooling water valves are listed below:

1. 2P60A - Shutdown Cooling Pump "A"
2. 2CV-1453-1 - SW to Shutdown Cooling Heat Exchanger
2E35A
3. 2P60B - Shutdown Cooling Pump "B"
4. 2CV-1456-2 - SW to Shutdown Cooling Heat Exchanger
2E35B

B. The two shutdown cooling trains share RCS flow paths to the pumps and from the heat exchangers. All three valves from the RCS to the shutdown cooling pumps must be opened since they are in series. The two temperature control valves control the portion of pump discharge flow that bypasses the heat exchangers and the portion that flows through the heat exchanger. These must be positioned such that enough flow goes through the heat exchangers to remove adequate decay heat from the RCS. These valves are also common to both trains. The pump and heat exchanger discharge header splits into four flow paths back into the RCS. Any one of these paths will provide adequate return flow to the RCS so at least one of the valves in those paths must be open.



The valves that constitute the flow paths both to and from the RCS are listed below.

1) Flow Path from RCS

2CV-5038-1 - RCS to Shutdown Cooling Suction
2CV-5084-1 - RCS to Shutdown Cooling Suction
2CV-5086-2 - RCS to Shutdown Cooling Suction

2) Flow Path to RCS

2CV-5093 - Shutdown Cooling Temperature Control Valve
2CV-5091 - Shutdown Cooling Temperature Control Valve
2CV-5017-1 - Shutdown Cooling Pump - Discharge Header to RCS Coolant Loop "A"
2CV-5037-1 - Shutdown Cooling Pump - Discharge Header to RCS Coolant Loop "B"
2CV-5057-2 - Shutdown Cooling Pump - Discharge Header to RCS Coolant Loop "C"
2CV-5077-2 - Shutdown Cooling Pump - Discharge Header to RCS Coolant Loop "D"

C. Room cooling to the shutdown cooling heat exchanger rooms has been determined by calculation #85-0121-01 to not be required.

5.8.6 Instrumentation

A. Seven (7) vital parameters are required to be monitored by Appendix R - control room fire scenario. They are Reactor Coolant System (RCS) Pressure, RCS T_{Hot}, RCS T_{Cold}, Pressurizer Level, Steam Generator Pressure, Steam Generator Level and Source Range Neutron Flux.

1. Steam Generator instrumentation is needed to monitor the reactor decay heat removal function regarding the performance of the heat sink. One Steam Generator is adequate to accomplish this function. This instrumentation is shown below.

a) Steam Generator Pressure

2PT-1041-1 - Steam Generator Pressure (SGA), Wide Range (Red) to 2PI-1041-1 on 2C02
2PT-1041-2 - Steam Generator Pressure (SGA), Wide Range (Green) to 2PI-1041-2 on 2C02
2PT-1141-1 - Steam Generator Pressure (SGB), Wide Range (Red) to 2PI-1141-1 on 2C02
2PT-1141-2 - Steam Generator Pressure (SGB), Wide Range (Green) to SPDS (Alt. Shutdown Display) or 2PI-1141-2 on 2C02



b) Steam Generator Level

- 2LT-1079-1 - Steam Generator Level (SGA), Wide Range (Red) to 2LI-1079-1 on 2C02
- 2LT-1079-2 - Steam Generator Level (SGA), Wide Range (Green) to 2LI-1079-2 on 2C02
- 2LT-1179-1 - Steam Generator Level (SGB), Wide Range (Red) to 2LI-1179-1 on 2C02
- 2LT-1179-2 - Steam Generator Level (SGB), Wide Range (Green) to 2LI-1179-2 on 2C02 or SPDS (Alt. Shutdown Display)

2. RCS Temperature on both the hot and cold legs is required to monitor the effectiveness of the reactor decay heat removal function. If only one steam generator is performing this function, the RCS instrumentation must be for the loop with that steam generator.

The instrumentation required to monitor both RCS T_{Hot} and T_{Cold} is shown below for each RCS loop.

- a) RCS T_{Cold} (Wide Range)
 - 2TE4716 - RCS Loop D Cold Leg Temperature Element to SPDS (Alternate Shutdown Display)
 - 2TE4611-3B - RCS Loop B Cold Leg Temperature Element to T_{sat} Monitor via 2C336-3
- b) RCS T_{Hot} (Wide Range)
 - 2TE4714-2A - RCS SG "B" Hot Leg Temperature Element to 2TIS4714 - 2A on 2C04 and SPDS (Alternate Shutdown Display)
 - 2TE4614-1 - RCS SG "A" Hot Leg Temperature Element to 2TIS4614 - 1A on 2C04

3. Pressurizer Level & Pressurizer (RCS) Pressure are monitored both on the SPDS and control room panel instrumentation. Since the level measurement is temperature compensated, the appropriate temperature elements are also included below. These parameters are necessary to monitor the RCS inventory maintenance function.

a) Pressurizer Level

- 2LT-4627-1 & Pressurizer Level (Red) to 2LI-4627-1 on 2C01
- 2LT-4627-2 & 2TE4627-2 - Pressurizer Level (Green) to 2LI-4627-2B on 2C04 and to SPDS (Alternate Shutdown Display)



b) Pressurizer (RCS) Pressure (Wide Range)

- 2PT-4624-1 - Pressurizer Pressure (Wide Range)
(Red) to 2PI-4624-1B on 2C04
- 2PT-4624-2 - Pressurizer Pressure (Wide Range)
(Green) to 2PI-4624-2 on 2C04 & to SPDS
(Alternate Shutdown Display)

4. Start-up Neutron Flux - This parameter is required to monitor the shutdown status of the reactor.

The instrumentation available is noted below.

- 2JE-9000-1 - Start-up Neutron Flux (Red) to
2JIS-9000-1 on 2C03
- 2JE-9003-2 - Start-up Neutron Flux (Green) to
2JIS-9000-3 on 2C03 and to SPDS (Alternate Shutdown
Display)

5. Local Instrumentation

Local instrumentation has been installed to monitor the following parameters: Condensate Storage Tank Level, Shutdown Cooling Heat Exchanger Inlet Temperature and the Turbine Driven Emergency Feedwater Pump Discharge Pressure.

Condensate Storage Tank (2T41A&B) Level is necessary because manual actions are required to transfer EFW suction to service water when the condensate supply is exhausted. Several hours of tank inventory are available before the transfer is necessary so local monitoring is a reasonable means.

Shutdown Cooling Heat Exchanger Inlet Temperature is required since RCS flow is now in a path that does not flow past the normally used temperature sensors. Shutdown cooling heat exchanger inlet temperature will provide an accurate indication of RCS temperature under these flow conditions and local indication (at the heat exchanger) is available. The cold shutdown flow path also carries RCS past the wide-range hot leg RTD 2TE-4714-2 before entering the shutdown cooling dropline. Therefore, this sensor and its associated display instrumentation will also provide accurate indication of RCS temperature in the cold shutdown mode.



Finally,

Turbine Driven EFW Pump (2P7A) Discharge Pressure indication is needed locally so the operator can monitor this parameter when he is manually operating the turbine driven pump's trip throttle valve to insure adequate EFW flow to the steam generators.

This local instrumentation is listed below.

- a) 2LIS1937 - CST (2T41A) Level Indication (Local)
- b) 2LIS1977 - CST (2T41B) Level Indication (Local)
- c) 2TI-4617 - Shutdown Cooling Heat Exchanger 2E35A Inlet Temperature (Local)
- d) 2TI-5619 - Shutdown Cooling Heat Exchanger 2E35B Inlet Temperature (Local)
- e) 2PI-0773 - 2P7A Discharge Pressure Indication (Local)



5.9 COMPONENTS OF INTEREST (UNIT 2)

5.9.1 Reactor Coolant Inventory Maintenance

A. Prime Movers

2P36A - Charging Pump "A" 2P36B - Charging Pump "B" 2P36C - Charging Pump "C"

B. Inventory Source

2CV-4873-1 - Volume Control Tank to Charging Pump Suction Header 2CV-4950-2 - Refueling Water Tank to Charging Pump Suction Header 2CV-4920-1 - Boric Acid Makeup to Charging Pump Suction Header 2CV-4921-1 - Boric Acid Makeup to Charging Pump Suction Header

An additional path for a source of inventory is available from the boric acid through their common discharge valve (2CV-4916-2) to the charging pump suction header.

C. Injection Path

2CV-4840-2 - Charging Pump Discharge Header 2CV-5015-1 - HPSI to RCS 2CV-5035-1 - HPSI to RCS 2CV-5055-1 - HPSI to RCS 2CV-5075-1 - HPSI to RCS

D. Direct RCS Leak Paths

2CV-4731-2 - Pressurizer LTOP Relief Isolation 2CV-4741-1 - Pressurizer LTOP Relief Isolation 2CV-4730-1 - Pressurizer LTOP Relief Isolation 2CV-4740-2 - Pressurizer LTOP Relief Isolation 2CV-4698-1 - ECCS Vent Valve 2SV-4669-1 - RCS Vent Header to Quench Tank 2SV-4670-2 - RCS Vent Header to Containment Atmos. 2SV-4636-1 - Hi Point Vent 2SV-4636-2 - Hi Point Vent 2SV-4668-1 - RV Head Vent

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 54 OF 277



2SV-4668-2 - RV Head Vent
2CV-4823-2 - RCS Letdown Containment Isolation Valve
2CV-4820-2 - RCS Letdown to Regenerative Heat Exchanger
2CV-4821-1 - RCS Letdown Containment Isolation Valve
2CV-5084-1 - RCS to Shutdown Cooling Suction
2CV-5086-2 - RCS to Shutdown Cooling Suction

5.9.2 Reactor Decay Heat Removal

A. Prime Mover

2P7A - Emergency Feedwater Pump (Turbine) 2P7B - Emergency Feedwater Pump (Motor)

B. Coolant Source

2CV-0711-2 - Service Water to 2P7A 2CV-0716-1 - Service Water to 2P7B 2CV-0789-1 - Condensate to 2P7B 2CV-0795-2 - Condensate to 2P7A 2CV-0707 - Condensate Storage Tank to EFW

C. Coolant to Steam Generators

2CV-1026-2 - 2P7A to SGA 2CV-1037-1 - 2P7A to SGA
2CV-1076-2 - 2P7A to SGB 2CV-1039-1 - 2P7A to SGB
2CV-1038-2 - 2P7B to SGA 2CV-1025-1 - 2P7B to SGA
2CV-1036-2 - 2P7B to SGB 2CV-1075-1 - 2P7B to SGB
2CV-0798-1 - EFW Test Loop to Demineralizer 2CV-0714-1 - EFW Test Loop to Demineralizer

D. Steam From Steam Generators

2CV-1051 - Atmospheric Dump Valve 2CV-1001 - Atmospheric Dump Valve 2CV-1010-1 - MSIV 2CV-1060-2 - MSIV

E. Steam to Turbine Driver for 2P7A

2CV-0340-2 - Steam Inlet Header 2CV-1050-2 - Steam from SGB
2CV-1000-1 - Steam From SGA



5.9.3 Reactor Decay Heat Removal Below 280°F (Cold Shutdown)

A. Prime Movers

2P60A - Shutdown Cooling Pump "A" 2P60B - Shutdown Cooling Pump "B"

B. Cooling for Heat Exchanger

2CV-1453-1 - SW to Shutdown Cooling Heat Exchanger 2E35A
2CV-1456-2 - SW to Shutdown Cooling Heat Exchanger 2E35B

C. Flow Path from RCS

2CV5038-1 - RCS to Shutdown Cooling Suction 2CV-5084-1 -
RCS to Shutdown Cooling Suction 2CV-5086-2 - RCS to
Shutdown Cooling Suction

D. Flow Path to RCS

2CV-5093 - Shutdown Cooling Temperature Control Valve
2CV-5091 - Shutdown Cooling Temperature Control Valve
2CV-5017-1 - Shutdown Cooling Pump - LPSI Discharge Header
Valve 2CV-5037-1 - Shutdown Cooling Pump - LPSI Discharge
Header Valve 2CV-5057-2 - Shutdown Cooling Pump - LPSI
Discharge Header Valve 2CV-5077-2 - Shutdown Cooling Pump -
LPSI Discharge Header Valve

5.9.4 Service Water

A. Prime Mover

2P4A - Service Water Pump "A" 2P4B - Service Water Pump "B"
2P4C - Service Water Pump "C"

B. Water Source

2CV-1470-1 - Sluice Gate from Lake to 2P4A 2CV-1471-1 -
Sluice Gate from ECP to 2P4A 2CV-1472-5 - Sluice Gate from
Lake to 2P4B 2CV-1473-5 - Sluice Gate from ECP to 2P4B
2CV-1474-2 - Sluice Gate from Lake to 2P4C 2CV-1475-2 -
Sluice Gate from ECP to 2P4C

C. Water to Main Header (using 2P4B to replace another pump)

2CV-1418-1 - Header Crossover Valve (2P4B to Loop 1)
2CV-1419-1 - Header Crossover Valve (2P4B to Loop 1)
2CV-1421-2 - Header Crossover Valve (2P4B to Loop 2)
2CV-1422-2 - Header Crossover Valve (2P4B to Loop 2)



D. Water to ESF Header

2CV-1400-1 - to ESF Header #1 2CV-1406-2 - to ESF Header #2

E. Header Discharge

2CV1460 - Loop 1 Discharge to Dardanelle Reservoir
Return Header 2CV-1481-1 - Loop 1 Discharge to
Dardanelle Reservoir Return Header

2CV-1480-2 - Loop 2 Discharge to Dardanelle Reservoir
Return Header 2CV-1540 - To Cooling Tower
Basin

2CV-1543-1 - To Cooling Tower Basin

2CV-1542-2 - To Cooling Tower Basin

2CV-1541-1 - To Emergency Cooling Pond

2CV-1560-2 - To Emergency Cooling Pond

5.9.5 Electrical Power

A. Power to Vital Busses

2K4A - Emergency Diesel Generator (Red)

2P16A - Diesel Fuel Transfer Pump (Red)

2SV2802-1 - Diesel Fuel Inlet to Day Tank (2T30A)

2CV-1503-1 - SW for Jacket Cooler (2E20A)

2VEF24A&B & Dampers - EDG Room 2K4A Exhaust Fans

2K4B - Emergency Diesel Generator (Green)

2P16B - Diesel Fuel Transfer Pump (Green)

2SV-2822-2 - Diesel Fuel Inlet to Day Tank (2T30B)

2CV-1504-2 - SW for Jacket Cooler (2E20B)

2VEF24C&D & Dampers - EDG Room 2K4B Exhaust Fans

B. Distribution of Vital Power

1. 6.9KV

2H1 Bus Feeder Breakers - 6.9KV to RCP

2H2 Bus Feeder Breakers - 6.9KV to RCP

2. 4.16KV

2A3 Bus & Feeder/Crosstie Breakers - 4160 V Bus
(Red)

2A4 Bus & Feeder/Crosstie Breakers - 4160 V Bus
(Green)



3. 480VAC

2B5 Bus & Feeder/Crosstie Breakers - 480 V Load Center
(Red)

MCC 2B51 & Feeds - 480 V MCC (Red)

MCC 2B52 & Feeds - 480 V MCC (Red)

MCC 2B53 & Feeds - 480 V MCC (Red)

MCC 2B54 & Feeds - 480 V MCC (Red)

2B6 Bus & Feeder/Crosstie Breakers - 480 V Load Center
(Green)

MCC 2B61 & Feeds - 480 V MCC (Green)

MCC 2B62 & Feeds - 480 V MCC (Green)

MCC 2B53 & Feeds - 480 V MCC (Green)

MCC 2B64 & Feeds - 480 V MCC (Green)

4. 125VDC (Red)

2D27 & Feeds - 125VDC Motor Control Center

2D01 & Feeds - 125VDC Control Center #1

2D11 & Feeds - 125VDC Vital Battery Bank #1

2Y11 & Feeds - 125VDC/120VAC Inverter/Transformer to 2RS1

2Y13 & Feeds - 125VDC/120VAC Inverter/Transformer to 2RS3

2RS1 & Feeds - 120VAC Vital Distribution Panel #1

2RS3 & Feeds - 120VAC Vital Distribution Panel #3

*2RA1 & Feeds - 125VDC ESF Distribution Panel

*2D21 & 2D23 & Feeds - 125VDC Distribution Panel

*125VDC Distribution Pannels are required to assure
continued DC Power which is needed to provide the desired
remote control of various Components of Interest

5. 125VDC (Green)

2D26 & Feeds - 125VDC Motor Control Center

2D02 & Feeds - 125VDC Control Center #2

2D12 & Feeds - 125VDC Vital Battery Bank #2

2Y22 & Feeds - 125VDC/120VAC Inverter/Transformer to
2RS2

2Y24 & Feeds - 125VDC/120VAC Inverter/Transformer to
2RS4

2RS2 & Feeds - 120VAC Vital Distribution Panel #2

2RS4 & Feeds - 120VAC Vital Distribution Panel #4

*2RA2 & Feeds - 125VDC ESF Distribution Panels

*2D22 & 2D24 & Feeds - 125 VDC Distribution Panels

6. Misc.

2Y-26 - SPDS Computer Inverter

**2D31 - Battery Charger #1 (Red)

**2D32 - Battery Charger #2 (Green)

**2D34 - Battery Charger #3 (Swing)



5.9.6 Instrumentation

A. RCS Pressure

2PT-4624-1 - Pressurizer Pressure Wide Range (Red) to
2PI-4624-1B on 2C04
2PT-4624-2 - Pressurizer Pressure Wide Range (Green) to
SPDS or 2PI-4624-2 on 2C04

B. RCS T_{Hot}

2TE-4614-1 - RCS Loop A Hot Leg Temp., Wide Range (Red) to
2TIS-4614-1A on 2C04 2TE-4714-2A - RCS Loop B Hot Leg
Temp., Wide Range (Green)
to 2TIS-4714-2A on 2C04 and SPDS

C. RCS T_{Cold}

2TE-4611-3B or 4615 - RCS Loop B Cold Leg Temp., (Yellow)
to
T_{sat} Monitor via 2C-336-3 2TE-4716 - RCS Loop D Cold Leg
Temp., Wide Range (Green) to
SPDS

D. Pressurizer Level

2LT-4627-1 - Pressurizer Level (Red), Wide Range to
2LI-4627-1
on 2C04 2LT-4627-2 - Pressurizer Level (Green), Wide
Range to
2LI-4627-2B on 2C04 or SPDS 2TE-4627-2 - Pressurizer
Water Temperature to SPDS

E. Steam Generator Pressure

2PT-1041-1 - Steam Generator Pressure (SGA), Wide Range
(Red)
to 2PI-1041-1 on 2C02 2PT-1041-2 - Steam Generator
Pressure (SGA), Wide Range (Green)
to 2PI-1041-2 on 2C02 2PT-1141-1 - Steam Generator
Pressure (SGB), Wide Range (Red)
to 2PI-1141-1 on 2C02 2PT-1141-2 - Steam Generator
Pressure (SGB), Wide Range (Green)
to SPDS or 2PI-1141-2 on 2C02



F. Steam Generator Level

2LT-1079-1 - Steam Generator Level (SGA), Wide Range (Red)
to
2LI-1079-1 on 2C-02 2LT-1079-2 - Steam Generator Level
(SGA), Wide Range (Green) to
2LI-1079-2 on 2C-02 2LT-1179-1 - Steam Generator Level
(SGB), Wide Range (Red) to
2LI-1179-1 on 2C-02 2LT-1179-2 - Steam Generator Level
(SGB), Wide Range (Green)
to 2LI-1179-2 on 2C-02 or SPDS

G. Neutron Flux

2JE-9000-1 - S/U Channel 1 (Red) to 2JIS9000-1 on 2C03
2JE-9003-2 - S/U Channel 2 (Green) to 2JIS9003-2 on 2C03 or
SPDS

H. Local

2LIS-1937 - CST (2T41A) Level Indication (Local) 2LIS-1977
- CST (2T41B) Level Indication (Local) 2TI-5617 - Shutdown
Cooling Heat Exchanger (2E35A) Inlet
Temperature (Local) 2TI-5619 - Shutdown Cooling Heat
Exchanger (2E35B) Inlet
Temperature (Local) 2PIS-0773 - 2P7A Discharge Pressure
Indication (Local)

5.9.7 ALTERNATE SHUTDOWN

In the event a fire renders both trains of safe shutdown equipment inoperable from the control room/remote shutdown panel, alternate shutdown is required. Current revisions to procedure No.'s 1203.002 and 2203.014 provide guidelines to comply with 10 CFR 50 Appendix R and to mitigate the consequences of a fire in a safety related area. A basis document is maintained by Operations for each unit's alternate shutdown procedure. Maintenance of these documents is described by departmental administrative procedures.

*125VDC Distribution Panels are required to assure continued DC power which is needed to provide the desired remote control of various Components of Interest

**Battery Chargers are required to assure continued DC power which is required to assure proper operation of the inverters and to provide the desired continued remote control of various Components of Interest.

5.10 METHODS OF ANALYSIS FOR FUTURE MODIFICATIONS

The purpose of an Appendix R Area-Based Safe Shutdown Analysis is to determine the extent of compliance with 10CFR50 Appendix R by analyzing the plant to insure that it can be safely shutdown and maintained in the shutdown condition during and after a fire in any zone of the plant. This analysis also provides a means by which Appendix R criteria are met in areas of the plant after completion of necessary modifications.

An Appendix R safe shutdown analysis is performed prior to future plant modifications to assure that compliance with Appendix R is maintained. This analysis is performed whenever any plant modifications are made and is included as part of the design change package. Design engineering procedures have been developed to assist engineering personnel in evaluating the impact of proposed modifications on the fire protection program and performing safe shutdown capability assessment analysis. The information below is considered to be both additional information to the engineer performing this analysis and clarification of some areas described in the engineering procedures. The following items should be considered in the development of design change packages;

- 5.10.1 Changes made to fire walls, penetrations, cable trays, and cable routed in the vicinity of safety-related equipment should be reviewed to ensure that separation requirements of Appendix R are met.
- 5.10.2 New installations should not provide combustible material in areas where fire could bridge across redundant safety-related equipment.
- 5.10.3 The integrity of fire walls should not be breached by any changes to the plant.
- 5.10.4 The fire detection and suppression systems installed in the plant should not be blocked, deactivated, or rendered less effective in any manner by future plant modifications.
- 5.10.5 Access to areas should not be degraded to the extent that fire fighting efforts could be hindered.
- 5.10.6 Extinguishers and hose reels should not be blocked or hidden from view.

- 5.10.7 Whenever fire barrier designations are altered or fire suppression systems are modified, a re-evaluation of the affected areas flooding potential and the possible impact on safe shutdown equipment is conducted. Calculation 83-E-0063-13 should be updated with any new or revised ponding depths or equipment heights. Mechanical Engineering Section Guideline ME-0005 is available for guidance on the performance of ponding evaluations.
- 5.10.8 Whenever safe shutdown components are modified or added, a reevaluation of their susceptibility to water spray or ponding is conducted. Calculation 83-E-0063-13 can be reviewed to determine if ponding calculations have been performed and where they may be located. 83-E-0063-13 should be updated with any new or revised equipment height information.
- 5.10.9 Minimum clearances maintained, such that signal interferences does not cause problems with the Radiax (two-way radio communications) system.
- 5.10.10 Changes made to combustible loadings in areas where structural steel members are part of the fire area boundary shall be evaluated for the affect of localized heating. This review shall consider the affect of the new loading with respect to the structural steel supporting the fire barrier which is a fire area boundary. Areas that currently fall within this review are:
- Unit One
- Rooms 47, 53, 79, 111, 112 and 152
- Unit Two
- Rooms 2031, 2040C, 2049, 2055, 2081, 2084, 2109, 2111, 2137, and 2198.
- 5.10.11 Changes made that will affect the combustible loading (in situ, cable, etc.) for a fire area is reflected in the fire loading calculations.

6.0 FIRE PROTECTION SYSTEM DESCRIPTIONS

6.1 GENERAL DESCRIPTION

- 6.1.1 The fire protection water supplies and pumps are shared between the two units and draw water from the Arkansas River (Dardanelle Reservoir). Water is supplied at 125 psig to the 12-inch cast iron cement-lined yard main encircling the plant.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 63 OF 277



6.1.2 The major components of the system are: One 2,500 gpm automatic electric motor driven pump (P6A) and one 2,500 gpm automatic diesel engine driven pump (P6B). Each pump is individually capable of providing full flow required for proper fire suppression water system operation. The electric pump starts automatically when fire main pressure drops to 110 psig. The pump will continue to run until stopped locally, or from the control room. The diesel pump will start when fire main pressure drops to 90 psig. The diesel will continue to run until it is shut down from its control panel in the intake structure. The diesel driven pump has a day tank (T29) containing enough diesel oil for eight hours of operation. This can be refilled from the 185,000 gallon diesel oil bulk storage tank. The pumps and day tank are located in the Unit 1 Intake Structure. Based upon the largest flow requirement of any sprinkler or deluge system, either of the fire pumps is capable of meeting water demand of 2,000 gpm and a simultaneous flow of 750 gpm for hose streams.

6.1.3 A jockey pump (P11) is utilized to maintain yard main pressure. The jockey pump is electric driven and is used to maintain the fire main at pressure when there is no water demand. The pump cycles on and off between 110 and 125 psig.

6.1.4 Two-way hydrants with hose houses and associated equipment are located at 250-300 foot intervals along the yard main. The underground yard fire main loop consists of 12" cast iron pipe which is internally lined.

6.2 SUPPRESSION SYSTEMS

6.2.1 WET PIPE SYSTEMS - A system employing fusible head sprinklers (or closed heads) attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers when exposed to excessive heat.

6.2.2 DRY PIPE SYSTEMS - A system employing automatic sprinklers (or closed heads) attached to a piping system containing pressurized air, the release of which (as from the opening of a sprinkler) permits the water pressure to open a valve known as a dry pipe valve. The water then flows into the piping system and out the opened sprinklers.



- 6.2.3 PREACTION SYSTEMS - A system employing fusible head sprinklers (or closed heads) attached to a piping system containing air that may or may not be under pressure, with a supplemental fire detection system installed in the same areas as the sprinklers. Actuation of a fire detection system (as from a fire) opens a valve that permits water to flow into the sprinkler piping system and to be discharged from any sprinklers that may be exposed to excessive heat.
- 6.2.4 DELUGE SYSTEMS - A system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a fire detection system installed in the same areas as the sprinklers. When this valve opens water flows into the piping system and discharges from all sprinklers attached thereto.

NOTE

Preaction and deluge systems are normally without water in the system piping. The water supply is controlled by an automatic valve operated by means of fire detection devices and provided with manual means for operation that are independent of the sprinklers.

- 6.2.5 HALON SYSTEMS - Halon 1301, a halogenated extinguishing agent which is a colorless, odorless electrically nonconductive gas that has excellent extinguishing properties. Halon 1301 extinguishes a fire by inhibiting the chemical reaction of fuel and oxygen. The extinguishing effect due to cooling or dilution of oxygen or fuel vapor concentration is minor.

A Halon system (for the Unit 1 control room) is a Cardox High Flow Halon 1301 system which was supplied by the Chemetron Corporation. The system is divided into three subsystems protecting the Main Control Room ceiling, Auxiliary Control Room ceiling, and the Auxiliary Control Room false floor area. Each of these areas contain two strings of smoke detectors. The halon system will actuate upon simultaneous detector actuation signals from both strings. Each system has a main and reserve halon supply. Manual actuation may be accomplished by either releasing the small CO2 cylinder located at each of the three locations, by releasing the manual actuator on the main pilot cylinder, or by using the manual trip switch located on the associated switch module. A halon system has not been installed in the Unit 2 Control Room.

A total flooding Halon system is also provided in the Unit Two CPC Room. This system is actuated automatically in response to smoke detectors and can be activated manually. The system was designed under the guidance contained in N.F.P.A. Pamphlet No. 12A, 1985.

6.2.6 CARBON DIOXIDE (CO₂) SYSTEMS - Is a colorless, odorless, electrically nonconductive inert gas that is a suitable medium for extinguishing fires. CO₂ gas is heavier than air and extinguishes a fire by reducing the concentration of oxygen. The turbine/generator CO₂ fire protection system, supplied by the Chemetron Corporation, consists of a storage tank/compressor unit, a refrigeration unit and five individual systems which are capable of operating manually or automatically.

The CO₂ is stored in low pressure storage tank T108. For Unit 1, CO₂ is supplied to the exciter housing and the turbine bearings upon actuation of heat detectors. Although the Unit 2 system is also connected to this tank, CO₂ is supplied only to the exciter housing. The system is designed to provide a 35% CO₂ concentration for the duration of the turbine spindown.

6.3 FIRE DETECTION SYSTEMS

6.3.1 The Fire Detection System at ANO utilizes ionization, sampling type, infrared, and both thermal and line type (protectowire) heat detectors which provide alarms that notify plant personnel of the existence of a fire. For the plant operation areas, control room annunciation has been provided for both safety and nonsafety related areas of the plant. Power for the detectors, in the event of a loss of offsite power, is provided by an emergency power source that is supplied by the emergency diesel generators or station batteries.

The ionization detectors alarm at the presence of invisible combustion gases during the initial stage of a fire. Heat detectors react to the attainment of a high fixed temperature or rapid rise in ambient temperature (in excess of 15°F per minute). The protectowire line type heat detectors actuate when the wire reaches 190°F. Infrared flame detectors respond to the infrared energy and flicker rate generated by a flame. These detectors have a time delay to minimize false actuations. The sampling type detector systems draw air samples from a protected area to a highly sensitive smoke detector through a network of perforated sampling tubing. The air is analyzed and provides an alarm condition based on level of obscuration. The selection, placement, and spacing of fire monitoring, detection, and alarm devices is based on the design configuration and employment of the area together with draft condition due to natural or forced ventilation.

6.4 MANUAL SUPPRESSION SYSTEMS AND ENGINEERED SUPPORT SYSTEMS

- 6.4.1 STANDPIPES - Are installed within or adjacent to stair towers and other points in all normally accessible areas in plant buildings. Four-inch standpipes are provided for multiple hose outlets and two and one-half inch standpipes are provided for single hose outlets. The standpipe hose outlets are equipped with two and one-half inch hose valves, reducers, and 100 feet of one and one-half inch woven jacket lined hose.
- 6.4.2 FIRE HOSE STATIONS - Are provided for manual suppression capability in nonsafety and safety related areas of the plant. In accordance with the plant operating license, fire hose stations are required to be operable whenever the equipment in the specific area is required to be operable. If portions of the system are inoperable, backup fire hose equipment is required to be made available until service is restored.
- 6.4.3 FIRE EXTINGUISHERS - Fire extinguishers have been provided throughout normally accessible areas of the plant. The type, size and location of specific extinguishers has been provided in accordance with the general guidelines established in applicable NFPA codes with respect to fire hazards and distances to be traveled.
- 6.4.4 EMERGENCY LIGHTING - Emergency DC lighting is provided in operating areas for the safety of personnel in case of the failure of AC power supplying the normal and essential lighting systems. Emergency lights are incandescent and operate either at 125-volt DC or are powered by individual emergency battery packs. Emergency lighting raceways are run separately from the normal and essential lighting raceways to provide additional reliability. The emergency lighting system is powered from redundant 125-volt DC vital buses, is normally de-energized, and is brought into operation by an automatic transfer switch.
- Individual battery operated emergency lighting units are provided in the control room(s), in areas needed for operation of safe shutdown equipment and in access and egress routes to these areas. These lighting units are self-contained and are wall mounted with a minimum of eight hours of usage supplied constantly by the battery pack.
- 6.4.5 FIRE BARRIERS, SEALS, AND PENETRATIONS - The fire barrier system at ANO has been designed to ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. Such a design minimizes the possibility of a single fire rapidly involving several areas of the plant prior to detection and extinguishment. The system includes walls, doors, dampers, penetrations, wrapping and sealing materials.

In general, redundant components of ESF are installed in locations physically separated from each other in order to prevent fire, should it occur, from spreading from one train to the other. In many cases, redundant ESF components are separated from each other by fire barriers that prevent the spread of fire from one component to its redundant counterpart. Ventilation penetrations of fire barriers are provided with 3-hour rated dampers. Doorway penetrations have 3-hour fire rated doors. Penetrations are protected with fire seals of a design that have passed a 3-hour rating test or has been evaluated with respect to hazards in the area and available fire protection attributes. Piping and conduit penetrations are sealed around the outside.

- A. Fire Barriers - Fire barriers are constructed in accordance with Uniform Building Code, Chapter 43, Table 43-B-1976 (Table 43-C for fire rated floors) of the Standard Building Code published by the Southern Building Code Congress International, Inc. and Underwriters Laboratories, Inc., Fire Resistance Directory.

Three-hour fire rated NRC or Insurer barriers are provided for the following purposes:

1. Isolation of essential equipment needed for safe shutdown systems and circuits from any potential fires in nonsafety related areas that could affect the capability to achieve and maintain safe shutdown.
2. Separation of redundant trains of essential equipment needed for safe shutdown systems and circuits from each other so that both are not subject to damage from a single hazard.
3. Separation of the Unit-I turbine building from the Unit-II turbine building below the operating floor (elevation 386').
4. Separation of Unit-I auxiliary building from the Unit-II auxiliary building below elevation 386'.
5. Separation of elevations where required by 3-hour rated floors.



6. Enclosure of the following spaces containing relatively high concentrations of transient or in-place combustible materials:
 - a. Lube oil storage tanks
 - b. Lube oil reservoir
 - c. Emergency diesel generator rooms
 - d. Emergency diesel fuel storage vaults
7. Enclosure of chemical storage areas, fuel storage and handling areas, computer and CEDM rooms.
8. Separation of outdoor oil-filled transformers spaced less than 50 feet apart and from the turbine building.

As applicable, these barriers are provided with UL-rated fire doors.

Interior fire-rated walls and partitions extend from the top of the fire-rated structure below (except at the basement) to the fire-rated structure above (except at the roof) and are securely attached to the structure. These walls are supported on steel (fire proofed with sprayed on fiber or 3M steel fire wrap) or reinforced concrete construction. Exposed structural steel (outside containment) supporting or forming part of the required fire-rated barriers shall be protected by a fireproof covering of equal rating to that of the barrier, if analysis has indicated that failure will occur under fire loading conditions.

The construction of 3-hour rated firewalls consists of, but are not limited to the three basic types identified as follows; (1) the walls constructed during the initial building phase predominantly consist of solid, reinforced concrete with minimum thickness of $6\frac{1}{2}$ inches; (2) concrete masonry of a minimum face-to-face thickness of 5 inches reinforced with steel and filled solid with mortar provides 3-hour protection; (3) metal lath and plaster on non-combustible studs with a face-to-face minimum thickness of $5\frac{1}{2}$ inches. This wall is only used for non-load bearing applications. These designs are consistent with the Uniform Building Code or other referenced authorities listed in the beginning of this section. Individual zone drawings also reflect the fire rating of walls. These drawings also identify whether or not specific barriers are designated as NRC or Insurer required.



In addition to the 3-hour barriers, 1 & 3-hour fire wraps have been utilized to wrap or enclose cable and/or cable trays to satisfy Appendix R criteria for the separation of redundant safe shutdown equipment. The barrier material has been fire tested and received a 1 & 3-hour rating by successfully passing an ANI acceptance test fire exposure as per ASTM-E-119-80 including the hose stream test. This material (trade name The Hemyc System) is composed of a lightweight metal framework attached to a cable tray, duct or cabinet, and fireproof blanket consisting of a 2300°F ceramic fiber blanket sewn into an envelope of a 3000°F fireproof fabric using 3600°F quartz thread. It has been used to provide a barrier for cabinets, cable trays and conduit/wiring to meet the separation/barrier requirements of Appendix R. 3M cable fire wrapping material is also employed for this application.

- B. Doors - At ANO, openings in barrier walls have been protected with doors, frames and associated hardware with a rating equivalent to that of the barrier. The doors, frames and hardware issued for 3 hour fire protection have been approved by the Underwriters Laboratories in accordance with Standard 10B. These fire doors must maintain a UL 3-hour Label. The doors are either self-closing or are provided with closing mechanisms.

Watertight doors, such as those leading into the diesel fuel storage vaults and the Unit 2 turbine-driven emergency feedwater pump room (Zone 2024-JJ), are generally constructed of less than one-inch thick reinforced steel design.

- C. Fire Dampers - Ventilation ducts penetrating fire barriers in the plant are equipped with UL-listed fire dampers of an equivalent fire rating as the fire barrier. The fire dampers are either curtain or trap door type and are actuated by fusible links that are designed to melt at 165°F. On closure of the fire dampers, fire and smoke will be contained in the areas where the fire occurs and prevent spreading to other areas via the ventilation system. All fire dampers are located in the ducts at the penetrations through the fire barriers.



The ventilation system for the control room(s) is arranged to isolate the control room from the effects of fire or toxic agents such as chlorine originating outside the control room. To prevent a fire, or the effects of a fire originating outside the control room from spreading inside, wall and floor openings are sealed to preclude combustion products entering the control room.

D. Penetrations/Penetration Seals

Fire barrier penetrations for mechanical and electrical configurations are sealed or closed to provide a fire resistance rating at least equivalent to that required for the barrier or have been evaluated for acceptability based on the hazards in the area and available fire protection attributes. Typical penetration and sealing diagram details utilized at ANO are shown in drawing A-2600 (Unit 1 and 2). These diagrams have been tested and approved for a 3-hour fire rating. They are:

Silicone Foam	Fireflex (promoflex)
Flamemastic	Kaowool (mineral fiber)
Fire Caulk (3-M CP-25)	Cellular Concrete
Grout	

E. Fire Seal Tests - Seals of penetrations through NRC required fire barriers have been installed in accordance with an approved design detail or have been qualified by an engineering evaluation, justifying its acceptability. Various mechanical and electrical configurations which simulate field conditions were subjected to a 3-hour fire endurance and hose stream tests. Performance of those configurations were found to meet one of the following recognized test standards:

1. ASTM E119, "Fire Tests of Building Construction and Materials"
2. ASTM E814, "Fire Tests of Through-Penetration Firestops"
3. ANI/MAERP RA, "Standard Method of Fire Tests of Cable and Pipe Penetration Fire Stops"
4. UL 1479, "Fire Test of Through-Penetration Firestops"



5. IEEE 634, "Standard Cable Penetration Firestop Qualification Test"
6. ISO 834, "Fire-resistance Tests - Elements of Building Construction"

F. Fire Retardant Material

In some locations, fire retardant materials have been utilized at ANO to protect cables and cable trays from other cables which provide a fire hazard. This material has included marinite board, which is approximately one-half inch thick, and Kaowool, which has been used as a damming material to retain silicone seals as well as for wrapping of cable. Such materials are not fire resistance rated and therefore are not to be utilized to satisfy the requirements of Appendix R.

7.0 ASSUMPTIONS

- 7.1 A postulated fire does not occur simultaneously with a seismic event.
- 7.2 For combustible loading values, the fire duration (or severity) values are considered the total heat released through complete combustion of materials located within a given fire zone or fire area.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 72 OF 277



TABLE 1

Fire Area	Exemption Requests/Granted
A	• Lack of 8 hour battery powered emergency lighting units on El. 317'.
B	• Lack of 8 hour battery powered emergency lighting units on El. 317'. • Lack of 20 feet separation free of intervening combustible materials between redundant shutdown related system in the diesel generator room exhaust fan outlet areas. (Fire Zones 1-E, 2-E and 2114-I)
C	• Lack of 20 feet of separation free of intervening combustibles, between the borated water storage tank outlet valves in the radwaste processing area. (Fire Zone 20-Y) • Lack of an automatic fire suppression system to protect redundant emergency feedwater pump cables in the auxiliary building on elevation 335 feet. (Fire Zones 20-Y and 34-Y). • Lack of an automatic fire suppression system to protect redundant shutdown-related systems in the pipe area. (Fire Zone 34-Y) • Lack of 20 feet separation free of intervening combustible materials between redundant shutdown-related systems in the emergency feedwater pump room. (Fire Zone 38-Y)
D	NONE
E	NONE
F	NONE
G	• Lack of a fixed fire suppression system in the control room and printer room. (Fire Zone 2199-G)
H	NONE
I	NONE
J	NONE



Fire Area	Exemption Requests/Granted
K	NONE
L	• Lack of 8 hour battery powered emergency lighting units in the diesel fuel storage vaults.
N	• Lack of 8 hour battery powered emergency lighting units in the intake structure.
AA	• Lack of 8 hour battery powered emergency lighting units on El. 317'.
BB	NONE
CC	NONE
DD	NONE
EE	• Lack of an automatic fire suppression system in the upper and lower south piping penetration rooms. (Fire Zone 2055-JJ and 2084-DD)
FF	NONE
GG	NONE
HH	NONE
II	NONE
JJ	NONE
KK	NONE
MM	NONE
NN	NONE
OO	NONE
SS	NONE
TT	NONE



Fire Exemption
Area Requests/Granted

- MISC.
- Lack of 8 hour battery powered emergency lighting units in portions of the access path to the steam pipe areas on El. 404 feet.
 - Lack of a reactor coolant pump oil collection system that is designed to withstand a safe shutdown earthquake and sized to hold the oil from all four reactor coolant pumps.
 - Lack of a complete 3 hour fire-rated barrier between redundant level transmitters for the safety grade condensate storage tank. (Yard Area Unit 1)
 - Lack of a complete 3 hour fire-rated barrier between redundant level transmitters for the safety grade condensate storage tank. (Yard Area Unit 1 and 2).

* For reference information, please see SER letters:

1CNA108806, dated 10/26/88 and
2CNA108802, dated 10/26/88



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA A is approximately 1,246 sq. ft., and is located on El. 317'.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The combustibles consist of lube oil, flame resistant cable insulation and transients. For additional information, see the referenced Combustibles Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

10-EE

East Decay Heat Removal Pump Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 76 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 10-EE (East Decay Heat Removal Pump Room) is approximately 1,246 sq. ft., and is located on E1. 317. This zone contains electric motors, the "B" decay heat removal/low pressure injection pump and heat exchanger (P34B and E35B) and reactor building spray pump (P35B).

The walls surrounding this zone and the ceiling are 3 hour rated. Interior concrete walls and the floor are unrated as is the door into the zone (Door 5), from the general access area. However, door No. 5 is administratively treated as a fire door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-49 (located in adjacent Fire Zone 4-EE) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: 2 emergency lights are installed in this zone for equipment and access lighting. Gaitronics unit G-13 available in general access area 4-EE, near stairwell.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Door 5 has approximately a six inch curbing to prevent oil leakage from the pump coming in direct contact with the door. It is about 1/2" thick.



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA B approximately 265,110 sq. ft., and is located on El. 317', 335', 354', 368', 386', and 404'.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The combustibles consist of lube oil in pumps, flame resistant cable insulation, cleaning solvents and lube oil in storage reservoirs and transients. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

1-E	North Emergency Diesel Generator Exhaust Fans
2-E	South Emergency Diesel Generator Exhaust Fans
4-EE	General Access Room
12-EE	Tendon Gallery Access Room
14-EE	West Decay Heat Removal Pump Room
40-Y	Pipeway Room
46-Y	Lower South Piping Penetration Room
67-U	Lab and Demineralizer Access Room
68-P	Reactor Coolant Tank Room
73-W	Condensate Demineralizer Room
75-AA	Boiler Dearation Room
76-W	Compressor Room
77-V	Upper South Piping Penetration Room
78-BB	Gas Bottle Storage Room
79-U	Upper North Piping Penetration Room
88-Q	Communication Room
89-P	Controlled Access
95-O	North Battery Room
104-S	Electrical Equipment Room
105-T	Lower South Electrical Penetration Room
120-E	Boric Acid Addition Tank and Pump Room
125-E	Respirator Storage Room
128-E	Controlled Access
144-D	Upper South Electrical Penetration Room
149-E	Upper North Electrical Penetration Room, Hot Tool Room, Decon Room
157-B	Chemical Addition Room
159-B	Spent Fuel Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 78 OF 277



160-B	Computer and CRD Equipment Room
161-B	Ventilation Equipment Room
162-A	Stairwell No. 1
163-B	Reactor Building Purge Room
167-B	Computer Transformer Room
168-B	Transformer Room
170-Z	Steam Pipe Room
175-CC	Lube Oil Reservoir Room
187-DD	Dirty and Clean Lube Oil Storage Tank Room
197-X	Turbine Building
2006-LL	General Access
2010-LL	"C" HPSI Pump Room
2011-LL	Tendon Gallery Access
2014-LL	"B" HPSI & LPSI Pump Room
2026-Y	Drumming Station (Unit 1)
2045-XX	Turbine Lube Oil Storage Tank Room
2078-QQ	Heat Exchanger Equipment Room
2091-BB	North Electric Equipment Room
2092-PP	Chiller Equipment Room
2112-BB	Lower North Electrical Penetration Room
2114-I	EDG Air Intake Room
2147-A	Chemical Storage Room
2148-A	Corridor
2149-B	Stairwell No. 2001
2151-A	Fuel Handling Room El. 404'
2152-D	Computer Room
2153-A	Ventilation Equipment Room
2154-E	CEDM Equipment Room
2155-A	Steam Pipe Room
2156-A	Containment Purge Air Equipment Room
2158-F	Stairwell No. 2055
2172-ZZ	Storage Room and Shop Room
2177-YY	Neutralizer Tank Room
2178-AAA	Lube Oil Reservoir
2183-J	Upper North Electrical Penetration Room
2200-MM	Turbine Building
2223-KK	Pipeway, Equipment Access Room
2225-WW	Regenerative Waste Pump and Tank Room
2229-SS	Demineralizer Equipment and Lunch Room
2230-RR	Drum Filling Room
2231-TT	Plant Heating Boiler Room
2242-OO	H&V Mechanical Equipment Room
2243-NN	Chemistry Lab and Officers
2261-UU	Plant Heating Boiler Day Tank

NOTE

Fire Area B is a common fire area. Therefore, fire zones listed within Fire Area B may be from either unit.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 1-E (North Emergency Diesel Generator Exhaust Fans) is approximately 270 sq. ft. and is located on El. 386. This zone contains electric motors, exhaust fans and is open to the atmosphere.
- This zone is cut off from the remaining zones by concrete walls and floor with the south wall and floor being 3-hour rated. The door to this zone is unrated. A 3 hour rated wall separates the redundant exhaust fans. The door in this wall is 3 hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-33 (located in adjacent Fire Zone 120-E) and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: None
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Cables for exhaust fans are routed through upper north electrical penetration room 149-E; one train has been protected with one-hour barrier.

Exemption requested for omission of three-hour barrier as roof of zone.

Exemption requested for less than 20 feet separation between redundant exhaust fans.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 80 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2-E (South Emergency Diesel Generator Exhaust Fans) is approximately 270 sq. ft. and is located on El. 386. This zone contains electric motors, exhaust fans and is open to the atmosphere.

This zone is cut off from the remaining zones by concrete walls and floor with the north wall and floor being 3-hour rated. A 3 hour rated wall separates the redundant exhaust fans. The door in this wall is 3 hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-33 (located Fire Zone 120-E) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: Cables for exhaust fans are routed through upper north electrical penetration room (149-E); one train has been protected with one-hour barrier.

Exemption requested for omission of three-hour barrier as roof of zone.

Exemption requested for less than 20 feet separation between exhaust fans.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 4-EE (General Access Room) is approximately 4,564 sq. ft. and is located on El. 317.

The North wall of this zone and the walls to the east decay heat removal pump room (zone 10-EE) are 3-hour rated. All other perimeter and interior walls are unrated. The ceilings in this zone are 3-hour rated, including rolling fire door 483, however the floors are not.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-49 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flammable liquids locker and clean anti-C clothing in a fire rated cabinet. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lighting and battery pack lighting is provided in the zone and at the stairwell door for evacuation routing and equipment access. Gaitronics communication unit G-13 is also located in the zone near the stairwell.

10.8 ADDITIONAL DISCUSSION/INFORMATION: HR-49 was committed to via SER Item 5.1, August 1978 (Unit 1).

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 82 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 12-EE (Tendon Gallery Access Room) is approximately 242 sq. ft. and located on El. 317.

All walls in this zone are concrete and the east wall is a 3-hour rated fire wall. The ceiling is concrete and also 3-hour rated. There are no fire rated floors or doors in this zone.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-49 (located in adjacent Fire Zone 4-EE) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low with transient material being the only combustibles in the zone. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station G-13 available near stairwell in adjacent general access area 4-EE.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 83 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 14-EE (West Decay Heat Removal Pump Room) is approximately 1,656 sq. ft. and is located on El. 317.

This zone is enclosed by concrete walls, ceiling and floor but only the ceiling in this zone is 3-hour rated. The door to this zone is watertight door number 6, but unrated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-49 (located in adjacent Fire Zone 4-EE) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, cleaning solvent and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered emergency lighting is in zone for equipment and access lighting. Gaitronics unit G-13 available near stairwell in the adjacent general access area, Zone 4-EE.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 84 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 40-Y (Pipeway Room) is approximately 1,170 sq. ft. and is located on El. 341. This zone contains electrical equipment, including SW and sluice gate cables.

All walls, ceiling and floors are concrete. The north wall of the zone is the only barrier that is fire rated. There are no associated doors. Access to the zone is through a hatchway in the turbine building floor which is provided with a metal cover plate.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type smoke detectors that alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-12, 19 and 22 (located in adjacent Turbine Building and Fire Zone 75-AA) and portable CO2 extinguishes are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. Due to the difficulty in accessing this zone and since there is no need to access the zone during plant operation, introduction of transient combustibles and the occurrence of a fire in such transient combustibles is considered highly unlikely. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-106 available on El 354' of turbine building (south of door 34).

10.8 ADDITIONAL DISCUSSION/INFORMATION: A fire brigade equipment locker is located nearby in the southwest corner of the turbine building. An exemption was granted in ØCNAØ38328 to the requirement for an automatic fire suppression system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 85 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 46-Y (Lower South Piping Penetration Room) is approximately 633 sq. ft. and is on El. 335. This zone contains supply and exhaust fans and electrical equipment.
- This zone is cut off from other fire zones by concrete walls. The north and northeast walls are 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in Fire Zone 20-Y) and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered lighting is provided at the door with a remote lamp at the opposite end of the zone providing equipment and access lighting.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: The exemption that was requested in ØCANØ884Ø4 for omission of a normal door latch on 3-hr fire door from zone 38-Y was deleted by ØCAN1Ø86Ø8 since DCP 85-1072 required that this door be latched per the revised ANO-1 HELB analysis. The door latch modification is no longer required.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 86 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 67-U (Lab and Demineralizer Access Room) is approximately 5,140 sq. ft. and is located on El. 354. This zone contains the waste gas compressors (C9A and B) the pressurizer and steam generator sample coolers (E30 and 31), the clean resin mix tank (T23), and the vacuum degasifier (T14).

The floor, ceiling and north and east perimeter walls are 3-hour rated, as are the doors leading to stairway No. 1 and the north turbine building train bay. The west and south walls and all interior walls and doors are unrated. The south wall is 3-hour (NRC) fire rated between elevations 354' and 360'.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

The sample room, count room and rad chem lab are each protected by one smoke detector which provides an alarm in the control room.

A wet pipe sprinkler system provides partial protection to this zone.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-29 and 30 (located in the North Turbine Building Train Bay) and portable CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of paper, lab supplies, oil and transients. This zone is normally occupied. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, manual operation of these safety systems are available. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) DC powered dual light fixture and two (2) battery powered emergency lighting unit (one of which has a dual lamp remote lead installed) to provide equipment and access lighting. Gaitronics call station G-400 located in zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Providing a partial sprinkler system for zone was commitment to NRC in letter of 9/17/76.

Exemptions requested for omission of three-hour rated barrier in the opening over BWST valves into zone 67-U of fire area "B" and less than 20 feet separation between valve CV-1407 and CV-1408.

Ten 4" floor drains are located in this zone which are capable of removing water discharged by the sprinkler system.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 68-P (Reactor Coolant Makeup Tank Room) is approximately 304 sq. ft. and is located on El. 354 and 368. This zone contains the reactor coolant makeup tank and electrical cables.

The floor and north wall of this zone at El. 354' are 3-hour rated and the west and south walls are 3-hour rated walls at El. 368'. South and west walls of this zone that are common with the lower north piping penetration room are considered to be 3-hour fire rated (NRC) between Elevations 354' and 360'. The south and west walls of the demineralizer access area (Room 70) adjacent to the spent fuel pool wall and elevator are considered to be 3-hour fire rated (NRC) between Elevation 354' and 356' 6" and 354' and 358' 8" respectively. The ceiling and all other walls are unrated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-30 and portable CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, manual operation of these safety systems are available. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics call station G-400 available at El. 354' in demineralizer access area (Zone 67-U).
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 88 OF 277

10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 73-W (Condensate Demineralizer Room) is approximately 2,430 sq. ft. and located on El. 354. This zone contains electrical cables and condensate demineralizer vessels (T54A, B, C, D, E, and F) and associated equipment.
- The west wall, ceiling and north floor are 3-hour rated. The south floor over the neutralizer tank (between E and F) is not rated. There are no fire doors in this zone.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.
- This zone is protected by smoke detectors which alarm in the control room.
- This zone is protected by an automatic wet pipe sprinkler system.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-12, 13 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and jacketing. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered lighting unit at the south entrance with a remote dual head, plus a remote head off a unit on Elevation 386', at the north entrance way for access lighting.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Sprinkler system coverage of decay heat conduits required by ϕ CAN ϕ 778 ϕ 4 and SER Item 5.3, Aug. 1978 (Unit 1).



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 75-AA (Boiler Room) is approximately 5,744 sq. ft. and is located on El. 335, 354 and 368. This zone contains plant heating and startup boiler, day tanks, fuel oil pumps, expansion tanks, ammonia tanks and main steam lines.
- At the 354' elevation this zone's interior walls are bound by 3-hour rated walls and doors. However, the outside walls are not rated. At the 368' and 335' elevations the north wall is the only wall that is 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.
- A wet pipe sprinkler system is installed over the fuel oil day tank.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-20, 22 . 36 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 7.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is severe (due to the heat from the fuel oil day tank). The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-106 available at elevation 354' on west wall of turbine building south of door 34 and call station G-109 available in southwest corner of turbine building at elevation 368'.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Four inch floor drains are provided to remove water from an actuation of the sprinkler system and prevent oil buildup on the floor.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 90 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 76-W (Compressor Room) is approximately 768 sq. ft. and is located on El. 354. This zone contains the instrument and service air compressors (C2A, B and C3A, B), their respective air receivers (T39 and T63), electric motors and electrical wiring.

This zone is cut off by 3-hour walls, ceiling and floor. The door is not rated. The north wall of this zone is considered to be a 3-hour (NRC) fire barrier between Elevations 354' and 356'-6".

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-12 (located in adjacent Fire Zone 197-X) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flammable liquids in safety cans, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safety systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics call station G-106 available on west wall of turbine building south of door 34.

10.8 ADDITIONAL DISCUSSION/INFORMATION: A 5" curb is provided at Door 33 to prevent flooding.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 91 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 77-V (Upper South Piping Penetration Room) is approximately 700 sq. ft. and is located on El. 356. This zone contains electric motors and piping.
- The walls surrounding this zone are 3-hour rated. The ceiling and floor are not rated. There is no doorway into this zone, only a circular stairway leading up from the zone below (46Y). No barrier exists on the circular stairway. Access through Door 493 is blocked by a security cage.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in Fire Zone 20-Y) and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safety systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: None
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Fire suppression valve CV-5611 is located in this zone for providing containment sprinkler water.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 92 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 78-BB (Gas Bottle Storage Room) is approximately 650 sq. ft. and is located on El. 357. This zone contains nitrogen and hydrogen storage bottles.

The north and east walls are 3-hour rated and the zone is ventilated. The two exterior walls and roof over this zone are structurally inferior to the division walls to provide explosion relief. The door to the boiler room is a 3-hour rated door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-36 (located in adjacent Fire Zone 75-A) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consists of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 93 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 79-U (Upper North Piping Penetration Room) is approximately 1,605 sq. ft. and is located on El. 360. This zone contains electric motors, electrical cable, makeup valves and charcoal filters.

This zone is cut off by concrete ceiling, floor and walls. The ceiling, floor and containment wall are 3-hour rated. One hour barriers have been provided for redundant valve conduits where separated by less than 20 feet.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

Partial coverage is provided by a preaction sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-29 (located in adjacent Fire Zone 67-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of charcoal filters and transient materials. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered emergency lighting for equipment and access lighting and evacuation routing provided. Gaitronics call station G-400 available in adjacent demineralizer access area, Zone 67-U.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 88-Q (Communication Room) is approximately 240 sq. ft. and is located on El. 374. This zone contains electrical equipment, battery and battery charger.

The north, east and west walls are 3-hour rated as is the floor. The door is not rated.


10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-32 (located in adjacent Fire Zone 89-P) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gastronics call station G-115 available in the north emergency diesel generator room, Zone 86G. 

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 95 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 89-P (Controlled Access) is approximately 776 sq. ft. and is located on El. 374.

All perimeter walls and doors are 3-hour rated except for the walls that border the makeup tank room, Zone 68-P. The floor in the controlled access corridor is 3-hour rated as is the ceiling area below the control room.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-32 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered emergency lamp provided for corridor lighting. Gaitronics call station G-115 available in north emergency diesel generator room, Zone 86-G.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 96 OF 277

10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 95-D (North Battery Room) is approximately 195 sq. ft. and is located on El. 372. This zone consist of electrical wiring and wet cell batteries.
- This zone is enclosed by 3-hour rated walls, ceiling and door. The floor of this zone is not rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-15, 31 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. This room is ventilated to remove the hydrogen produced while charging the batteries before the concentration becomes explosive. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-114 available in uncontrolled access corridor (zone 98-J).
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 97 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 104-S (Electrical Equipment Room) is approximately 800 sq. ft. and is located on El. 368. This zone contains electrical equipment.
- This zone is cut off from other zones by 3-hour rated walls, floor, and door leading into turbine building. The ceiling of this zone is not rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-17, 23 and portable CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Two (2) battery powered lighting units with one dual lamp remote head each are located in the room to provide access and equipment lighting. Gaitronics call station G-110 available in adjacent turbine building area.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Barrier separating cabinets C186, C187 removed since they are no longer required for SLBIC.

Drainage and ponding study indicates that actuation from the suppression system in the adjacent penetration room (105-T) could reach 12.37" with a loss of components at approximately 6".

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 98 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 105-T (Lower South Electrical Penetration Room) is approximately 726 sq. ft. and is located on El. 374. This zone contains electrical wiring, cables and cabinets.

This zone is completely cut off by 3-hour rated walls and door. The ceiling and floor are not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

A preaction sprinkler system provides protection to this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-23 (located in adjacent Fire Zone 104-S) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consists of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery-powered lighting unit with a dual lamp remote head providing equipment and access lighting in the zone. Gaitronics call station G-110 available in turbine building.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 99 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 120-E (Boric Acid Addition Tank and Pump Room) is approximately 930 sq. ft. and is located on El. 386. This zone contains the boric acid addition tank and associated pumps.

The north and east walls are 3-hour rated. The west and south wall are unrated. The floor of the tank room itself is 3-hour rated but the ceiling is not. The doors to stairway no. 1 and the turbine building opening are 3-hour rated doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection but partial suppression is provided in this zone.

This zone is protected by a wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-33 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. Equipment drains are located to remove any waste and prevent accumulation. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery-powered emergency lighting unit at entrance of tank room with a dual lamp remote head in the corridor providing equipment and access lighting. Gaitronics call station available controlled access in the corridor near door 78.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 100 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 125-E (Respirator Storage Room) is approximately 238 sq. ft. and is located on El. 386. This zone contains respirators and storage racks.

This zone is cut off from other zones of the auxiliary building by concrete walls, ceiling and floor. The north and west walls are the only barriers that are 3-hour rated. The door is not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

This zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-33 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of respirator masks, storage racks and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics call station available in controlled access corridor adjacent to door 78.

10.8 ADDITIONAL DISCUSSION/INFORMATION: A 10" floor drain is located to remove and prevent the accumulation of water and waste.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 128-E (Controlled Access) is approximately 2,700 sq. ft. and is located on El. 386.

This zone is cut off from other zones by 3-hour rated walls and floor except for the walls to the decontamination room and spent fuel area which are concrete, but not rated. The ceiling and walls within this zone are not rated. The entry from the turbine building is protected by fire door 68. Door 78 separates this zone from fire zone 149-E.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

UL listed/FM approved line type thermal detectors are utilized in monitoring ventilation units (VFC-2&2A) charcoal filters. The line type thermal detectors are dual setpoint, alarming upon abnormal temperature rises (190°F prealarm, 300°F alarm) before the filters reach their ignition point of 680°F.

A wet pipe sprinkler system is installed in this zone.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-27, 33 and portable ABC/CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 3.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing materials and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, manual operation of these systems are available. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One DC-powered emergency light and one battery-powered lighting unit with a remote dual lamp for access lighting. Two Gaitronics units are located in the zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Control valves for Halon system above Auxiliary Control Room ceiling and below Auxiliary Control Room false floor, CV-5661 and CV-5662 respectively, are located in this zone.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 144-D (Upper South Electrical Penetration Room) is approximately 714 sq. ft. and is located on El. 386. This zone contains electric wire and cable.

The walls and access door surrounding this zone are 3-hour rated. The floor and ceiling are unrated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by a closed head preaction sprinkler system. This system can be manually operated from the control room or at the control valve if necessary.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-24 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: Two equipment drains are provided to remove oil waste and prevent accumulation in the zone.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 103 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 149-E (Upper North Electrical Penetration Room, Hot Tool Room, Decon Room) is approximately 2,732 sq. ft. and is located on El. 386. This zone contains electrical wiring and electrical switchgear (MCC B61, 62 and 63) personnel hatch, and hot instrument shop.

The walls and floor of the upper north electrical penetration room are 3-hour rated. The south wall of the decontamination room and hot instrument shop are 3-hour rated as are the floors. All other walls and doors in this zone are not rated. The portion of the floor on Elevation 386'-0" of the upper north electrical penetration room (Room 150) is directly above the duct chase of Room 112 on Elevation 373'-6" which is located in Fire Area B. Room 150 is also located in Fire Area B. Therefore, the two rooms do not require to be separated by a 3-hour rated barrier and the floor area of Room 150 above the duct chase room does not need to be considered a fire barrier.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

The upper north electrical penetration room is protected by an automatic closed head preaction sprinkler system. The preaction system can be manually operated from the control room or manual pull box at the valve.

The hot tool room and decontamination room are protected by automatic wet pipe sprinkler.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-27, 33 and portable ABC/CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 2.5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, cleaning solvents and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.



REV. DATE
1 07/01/93

91-E-0072-01
PAGE 104 OF 277



10.7 EMERGENCY LIGHTING AND COMMUNICATION: One DC and one battery powered lighting units with two (2) dual lamp remote fixtures are located in the electrical penetration room providing equipment and access/emergency exit lighting in this zone. Gaitronics call station available outside door 78 in the controlled access corridor.

10.8 ADDITIONAL DISCUSSION/INFORMATION: A one hour barrier has been installed between redundant conduits as per ØCANØ678Ø3, and Unit 1 SER Item 5.5.

Automatic sprinkler system in this zone committed to via ØCANØ678Ø3 and Unit 1 SER Item 5.5.

One hour barrier installed on EB 1096 conduit for separation of red and green power circuits for DG exhaust fans which are along west wall of upper north electrical penetration room.

Upper North Electrical Penetration Room manual sprinkler system was converted to automatic per ANO-1 SER, Item 3.8

Drainage and ponding study indicates that ponding could reach 24.24" with a loss of non-redundant components at 7".

Floor loading in Room 111 and the area above (Rm. 149) has been restricted to 100 psf and 120 psf respectively.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 105 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 157-B (Chemical Addition Room) is approximately 959 sq. ft. and is located on El. 404. This zone contains electrical equipment and fiberboard drums.
- The walls, floor, and ceiling are noncombustible with the walls and door to the stairway being the only 3-hour rated barriers in this zone. Door 188, west end leads to roof slab.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-34, 35 (located in adjacent Fire Zone 159-B) and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC-powered exit lighting is provided near the stairwell for emergency evacuation. Gaitronics call station G-407 available outside door 89 in the spent fuel area.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 106 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 159-3 (Spent Fuel Room) is approximately 6,250 sq. ft. and is located on El. 404.

This zone is common with Unit 2 with a clear space separating the zones. The fuel handling area is completely cut off from other zones by metal lath and concrete walls. The walls separating this zone from the computer, and computer transformer rooms are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES HR-25, 34 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. It is estimated that 1000 lbs. of transient and other combustibles could be present during fueling operations. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics call stations G-29, G-407 and G-408 located in zone.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 107 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 160-B (Computer and CRD Equipment Room) is approximately 1,240 sq. ft. and is located on El. 404. This zone contains electrical equipment, transformers and charcoal filters enclosed in metal.

The computer room is cut off by 3-hour rated walls, floor and turbine building door. The adjacent computer transformer room walls are concrete, but not 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection but no suppression is provided in this zone.

Smoke detectors are located under the floor to monitor the cables and provide early warning to the control room. A sampling type smoke detection system monitors computer equipment cabinets.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-16, 34 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Approximately 10.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is severe (due to the heavy load of electrical cables under the floor). The combustibles consist of electrical cable, flame resistant insulation and jacketing material. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Dual lamp battery powered exit lighting provided in this zone; also powers dual remote lamp unit in adjacent zone 167-B. Gaitronics call station G-120 located in zone.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



REV. DATE
1 07/01/93

91-E-0072-01
PAGE 108 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 161-B (Ventilation Equipment Room) is approximately 4,140 sq. ft. and is located on El. 404 and 422. This zone contains electrical equipment and charcoal filters enclosed in heavy metal.

This zone on Elevation 404' is enclosed by incombustible walls on the north, east and south sides that are 3-hour rated. Doors at stairwell and south end are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-25, 58 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of charcoal filters and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: There is one DC-powered lamp for lighting the exit route at the 404' elevation.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Chillers located in this zone contain freon and lubricating oil.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 162-A (Stairwell No. 1) is approximately 1,335 sq. ft. and is located on El. 317 through 404.

This zone is cut off on all levels by 3-hour rated walls and doors. The floor in the stairwell at Elevation 354' is an NRC required 3-hour rated floor.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: Numerous hose reels and ABC/CO2 extinguishers are located in this zone.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery-powered lighting is available to provide egress lighting during evacuation.

10.8 ADDITIONAL DISCUSSION/INFORMATION: The following list specifies hose reels, extinguishers and fire doors for each elevation of stairway No. 1.

<u>Elevation</u>	<u>Hose Reel #</u>	<u>Length</u>	<u>Extinguishers</u>	<u>Door #</u>
404'	35(Zone 157-B)	100'	CO2 (Zone 157-B)	88
386'	33(Zone 120-E)	100'	ABC (Zone 120-E)	82 & 280 U-2
369'	32(Zone 89-P)	100'	CO2 (Zone 89-P)	41
354'	29(Zone 67-U)	100'	CO2 (Zone 162-A)	25 & 26**
335'	28(Zone 20-Y)	100'	ABC (Zone 20-Y)	11*
317'	49(Zone 4-EE)	100'	CO2 (Zone 4-EE)	7, 5** 6**

* Sliding doors

** Watertight doors

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 110 OF 277

10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 163-B (Reactor Building Purge Room) is approximately 2,393 sq. ft. and is located on El. 404. This zone contains charcoal filters and electric motors.

The surrounding walls are of incombustible material, but are not rated as fire walls. The doors are metal but not 3-hour rated doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection but partial suppression is provided in this zone.

This zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-34, 35 (located in adjacent Fire Zone 157-B and 159-B) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 2.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of charcoal filters which are encased in heavy metal enclosures and transients. This zone can be accessed from the fuel handling area or from stairway No. 1. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Two Gaitronics units (G-407 and 408) available in spent fuel area.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 167-B (Computer Transformer Room) is approximately 300 sq. ft. and is located on El. 404. This zone contains electrical equipment and a transformer.

The walls in this zone are constructed of concrete and the north and west walls are 3-hour rated. The floor is also 3-hour rated. The remaining walls are enclosed in the larger computer room, which includes 3-hour rated walls.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-34 (in adjacent Fire Zone 159-B) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 2.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of only transients. The transformer in this zone is insulated by an incombustible liquid. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One remote dual head powered off battery unit in Zone 160-B. Gaitronics call station G-120 available in Zone 160-B, outside door 169.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 112 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 168-B (Transformer Room) is approximately 300 sq. ft. and is located on El. 404. This zone contains electrical equipment and a transformer.

The walls in this zone are constructed of concrete and the west wall bordering stair no. 1 is 3-hour rated. The ceiling and floor are unrated. The door is steel but it is not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-34, 35 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. The transformer in this zone is filled with an incombustible liquid. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in this Zone. Gaitronics call station G-407 available in spent fuel area outside door 89.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 113 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 170-Z (Steam Pipe Room) is approximately 1,650 sq. ft. and is located on El. 404. This zone contains electrical wiring, atmospheric dump valves, block valves and steam lines.
- This zone is enclosed by incombustible walls. None of the walls or doors are rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: Portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Six (6) battery-powered lighting units are located in the zone with eight (8) dual lamp remote fixtures to provide equipment and access lighting for valves. Gaitronics call station G-408 available in fuel handling area.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: The atmospheric dump valves and atmospheric dump block valves are in this zone at approximately, elevation 450'. They are required only for cold shutdown. To achieve cold shutdown, one of each in the same loop may have to be manually opened. These cold shutdown actions can be delayed without limit. Pressure gauges have been added to OTSG steam header to assist operator (DCP-84-1064). The Main Steam Isolation Valves are in the southern part of this zone at approximately elevation 422'.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 175-CC (Lube Oil Reservoir Room) is approximately 900 sq. ft. and is located on El. 354. This zone contains electric pumps and lube oil.
- This zone is enclosed by concrete walls, ceiling and floor, none of which are rated. Both doors to this room are 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.
- Heat detectors are located in this zone which alarm in the control room.
- This zone is protected by an automatic deluge sprinkler system.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-2, 19 and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Approximately 23.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is extremely severe (due to the volume of lube oil stored in the tank). The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-108 is available in the turbine building corridor south of the room. There is no emergency lighting in this room.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Deluge valve for sprinkler system, UAV-5620, is located adjacent to this zone on the outside east wall of the room.
- Equipment drains are installed to prevent buildup of oily, flammable waste on the floor.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 187-DD (Dirty and Clean Lube Oil Storage Tank Room) is approximately 730 sq. ft. and is located on El. 335. This zone contains turbine lube oil storage tank (T26) and pump.

The walls, ceiling and floor are concrete. Access to the zone is through a water tight door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection but suppression is provided in this zone.

This zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-1 (located in adjacent Fire Zone 197-X) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Approximately 83.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is extremely severe (due to the amount of lube oil storage). The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: The sprinkler isolation valve, FS-103, is located at the 354' elevation outside the east wall of the turbine lube oil reservoir room.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 197-X (Turbine Building) is approximately 61,606 sq. ft. and is located in El. 335 through 404. This zone contains pumps, electric motors, electric cable, wiring, steam lines, turbines and a hydrogen cooled generator.

The west wall of the turbine building at each elevation is a 3-hour rated wall.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and suppression are provided in this zone.

The seal oil unit and lube oil reservoir are protected by an automatic deluge sprinkler system.

The west half of the turbine building below the main deck, over oil containing equipment is protected by an automatic wet pipe sprinkler system.

The feedwater pump lube oil reservoirs are protected by an automatic deluge sprinkler system.

The machine shop and breathing air equipment room (EL. 354'), sample analyzer room (EL. 368') and lube oil storage tank room (EL. 335') are protected by an automatic wet pipe sprinklers.

Automatic wet pipe sprinkler protection is also installed in the Key Room and the Radiochemistry Room at elevation 386.

The turbine bearings and the exciter housing are protected by an automatic CO2 fire suppression system that, when activated, sounds an alarm and provides a flashing light on the operating floor and a remote alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: Numerous hose reels and portable ABC/CO2 extinguishers are located in this zone. For additional information, please see Table 197-X-1.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube and seal oil, flame resistant cable insulation and jacketing, charcoal filters, hydrogen in the main generator and exciter, and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

Equipment drains are located in areas where oil may be released to the floor, such as on the 386' elevation in the feedwater heater area.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 117 OF 277



10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION:

EL 404' - Two D.C. powered emergency lights.

EL 386' - Two D.C. powered emergency lights, one with double lamps, at turbine deck. One battery powered lighting unit at stairs outside key room and six (6) battery powered units with seven (7) remote dual head fixtures for equipment and access lighting.

EL 368' - Four D.C. powered emergency lights and four battery powered lighting units, three of which have a remote dual head. An additional remote head, whose battery unit is located in the administration building, is located at the south end of the turbine building. Gaitronics units G-109, 110 and 112 provided at this elevation.

EL 354' - Four D.C. powered emergency lights and two battery powered lighting units, each with a remote dual head. A second remote dual head is powered from a battery unit on EL. 386'. Gaitronics units G-102, 104, 105, 106, 107 and 108 provided at this elevation.

EL 335' - One D.C. powered emergency light. Gaitronics unit G-101 provided at this elevation.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Below is a list of hose reel stations, extinguishers and fire doors on each elevation of zone 197-X.

TABLE 197-X-1

<u>Elevation</u>	<u>Hose Reel #'s</u>	<u>Extinguisher(s)</u>	<u>Fire Door #'s</u>
451'(roof)	37, 38 (both 150')	---	---
404'	---	ABC	91,97
386'	4,5,10,16, 14,17, 21	ABC/CO2	68,198*,66, 65*
363'6" to 382'	3, 9, 15, 20	ABC/CO2	45*,56*,339,48* 49,50,44*,42
354'	2,8,12,13,19,30,	ABC/CO2	30**,34,36,114, 115,33
335'	1,6,11,18	ABC	113**

* sliding door

** water tight door



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2006-LL (General Access) is approximately 3,316 sq. ft. and is located on El. 317. This zone contains electrical equipment, motors and wiring.

The south wall and the wall adjacent to 2007-LL are 3-hr rated. The west wall of the zone is 3 hour rated above elevation 326' where it is a common barrier to zone 2040-JJ. The east wall of the zone is 3-hour (NRC) fire rated above Elevation 327' where it is a common barrier to Zone 2040-JJ. All other walls and barriers in this zone are unrated, however door 206 is administratively treated as a fire door. One 2-hr fire door exists leading to the stairway. The barrier around the stairway is 2-hr rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

This zone contains ionization type smoke detectors that provide alarm in the control room.

An automatic wet pipe sprinkler system provides protection to the pump power cables in this zone.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-41, 42 and portable CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, clean anti-C clothing in a fire rated storage cabinet and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station, DC and battery powered lighting are located in zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: SW sluice gates can be operated manually.

10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2010-LL ("C" HPSI Pump Room) is approximately 486 sq. ft. and is located on El. 317. This zone contains an electric motor driven pump and the HPSI pump.

The walls surrounding this zone are 2' thick concrete, but are not rated. This zone is open to other zones, however, each room is watertight.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-41, 42 (located in adjacent Fire Zone 2006-LL) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, motor insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered lighting unit is installed to provide equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: No non-seismic category 1 piping is located in the room.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 120 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2011-LL (Tendon Gallery Access) is approximately 240 sq. ft. and is located on El. 317.

The walls in this zone are 2' thick concrete, but are unrated. There are no fire doors between this and other zones.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type detectors.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-41, 42 (located in adjacent Fire Zone 2006-LL) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of crly transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station available in access area corridor (zone 2006-LL).

10.8 ADDITIONAL DISCUSSION/INFORMATION: Detectors provided per ØCANØ778Ø4.


REV. DATE
1 07/01/93

91-E-0072-01
PAGE 121 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2014-LL ("A" HPSI & LPSI Pump Room) is approximately 2,610 sq. ft. and is located on El. 317. This zone contains electric motors, electrical wiring; train A pumps for HPSI (2P89A), LPSI (2P60A), containment spray (2P35A), and train A shutdown cooling heat exchanger (2E35A).

The zone is enclosed by 2' concrete walls and containment wall (North), but only the west wall above Elevation 326' is 3-hour (NRC) fire rated. There are no fire doors associated with this zone; however, door 203, which separates the zone from 2006-LL, is watertight. 

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type detectors.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-42 (located in adjacent Fire Zone 2006-LL) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery-powered lighting unit provided for exit. Gaitronics call station available in access area corridor (Zone 2006-LL).

10.8 ADDITIONAL DISCUSSION/INFORMATION: Smoke detectors are provided in accordance with ϕ CAN ϕ 778 ϕ 4.

10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2026-Y (Drumming Station - Unit 1) is approximately 1,152 sq. ft. and is located on El. 335.

The walls enclosing this zone are concrete and the south and west walls are 3-hour rated. The floor and ceiling are not rated. Both double sets of doors to this room are watertight.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-26, 2HR-40 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in Zone. Gaitronics call station G-454 available in west access area of Zone 2040-JJ.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 123 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2045-XX (Turbine Lube Oil Storage Tank Room) is approximately 784 sq. ft. and is located on El. 335. This zone contains the turbine lube oil storage tank and the pump tank.
- The walls are 3-hour rated. The access to the zone is blocked by a 3-hour fire door (366), and watertight door 222.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.
- This zone contains automatic wet pipe sprinklers.
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-16 (located in adjacent Fire Zone 2200-MM), 2HR-17 (El. 354') and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Approximately 77.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is extremely severe (due to the amount of lube oil storage). The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: None
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 124 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2078-QQ (Heat Exchanger Equipment Room) is approximately 2,457 sq. ft. and is located on El. 354. This zone contains component cooling water heat exchangers and pumps.
- 3-hour rated walls cut off this zone from other zones. 3-hour rated doors enclose all accesses to adjacent zones except for the door at the north end which is open to the yard area.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: None, however, 2HR-23 is located approximately 30 ft. south of door 246 in access corridor. Also portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of electrical wiring, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered emergency lighting for exit.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 125 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2091-BB (North Electrical Equipment Room) is approximately 924 sq. ft. and is located on El. 368. This zone contains electrical equipment and conduit electrical wiring in trays.

The zone is cut off by 3-hour rated walls and the entrance is sealed by a 3-hour rated door. All ducts are fitted with fire dampers, barriers have 3-rating. The west wall is 3-hour (NRC) fire rated below Elevation 374' 6".



10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors are provided.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-10, 2HR-20 (located in adjacent Fire Zone 2200-MM) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone since cabling for both diesel generator fuel transfer pumps are in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: G-214 call station in adjacent zone 2200-MM next to 2HR-20; DC units provide exit lighting. Two (2) battery-powered units with dual lamp remote heads are installed to provide equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Exemption granted from providing a fixed extinguishing system per \emptyset CAN \emptyset 38328. Marinite board ($\frac{1}{2}$ ") has been added to cover trays where redundancies are in proximity as per \emptyset CAN \emptyset 678 \emptyset 3.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 126 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2092-PP (Chiller Equipment Room) is approximately 1,674 sq. ft. and is located on El. 368. This zone contains chiller equipment.

This zone is cut off by 3-hr rated walls.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-20, 2HR-37 (located in adjacent Fire Zone 2200-MM and Fire Zone 2242-00 respectively). Also, portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, lube oil and transients. Equipment drains are located in the zone to remove oily waste. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered emergency lighting is provided for exit. Gaitronics unit G-213 located within zone.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Chillers contain freon in large quantities.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 127 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2112-BB (Lower North Electrical Penetration Room) is approximately 768 sq. ft. and is located on El. 374. This zone contains electrical cables.

This zone is completely cut off by 3-hour rated walls. The only entry is through a 3-hour rated door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by an automatic preaction sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-21 (located on El. 386), 2HR-37 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. lamp provided for exit lighting

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2114-I (EDG Air Intake Room) is approximately 1,456 sq. ft. and is located on El. 386. This zone contains the diesel generator room exhaust fans - the zone is open to the atmosphere.

The north, south and east walls are 3-hour rated walls and the zone is open to the atmosphere. Access is through security door 406 and by a ladder from elevation 404' (above).

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors in the exhaust fan area which provide alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-32 (located on El. 404) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SCSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: Detectors provide per §CAN§778§4.

Exemption requested for omission of 20' separation between redundant exhaust fans and for omission of three-hour roof over zone.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2147-A (Chemical Storage Room) is approximately 1,092 sq. ft. and is located on El. 404. This zone contains boric acid mixing and fiber board drums.

The walls are noncombustible and 3-hour rated. The stairway wall is 2-hour rated. The doors, ceiling and floor are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection but suppression is provided in this zone.

This zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-32 (located in adjacent Fire Zone 2148-A) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of fiber board and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2148-A (Corridor) is approximately 302 sq. ft. and is located on El. 404.

The walls and door adjacent and leading to the panel room (2150-C) are 3-hour rated. The door separating the corridor from Stairway 2001 and the floor area is also 3-hour rated. All other walls and doors are not 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-32 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) DC powered emergency light. Gaitronics units G-457 and 459 available in adjacent fuel handling area.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 131 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2149-B (Stairway No. 2001) is approximately 754 sq. ft. and is located on E1 317 through 422.

This zone is cut off on all levels by 3-hour rated walls and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-26, 29, 30, 32 (located throughout the zone) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and Battery powered lighting is provided to all elevations as this zone is considered evacuation lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None


REV. DATE
1 07/01/93

91-E-0072-01
PAGE 132 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2151-A (Fuel Handling Room El. 404') is approximately 6,108 sq. ft. and is located on El. 404. This zone contains electric motors.

This zone is common with Unit 1 with a clear space separating the zones. The fuel handling area is completely cut off from other zones by concrete walls. The walls separating this zone from the computer, CEDM Equipment and Panel Rooms are 3-hour rated. Three hour rated floor and ceilings are in the Fuel Handling Room. The floors of the Fuel Tilt Pit (Rm.-2087), Spent Fuel Pool (Rm.-2086) and Cask Storage Area (Rm.-2088) are considered to be 3-hour (NRC) rated. 

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-31, 2HR-32 (located in adjacent Fire Zone 2148-A), 2HR-22 (located in adjacent Fire Zone 2153-A). Also, portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours


10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, clean anti-C clothing stored in a fire rated cabinet and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call stations are located throughout the zone (G-387, 457, 459).

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 133 OF 277 

10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2152-D (Computer Room) is approximately 812 sq. ft. and is located on El. 404. This zone contains electrical wiring, batteries and computer equipment.

The computer room is completely cut off by 3-hour rated walls, floor and doors. The adjacent communications room walls are concrete, but not 3-hour rated. There is a 3-hour rated door between the computer room and communications room.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors are located under the raised floor and above and below the ceiling. The function of these smoke detectors is to alarm in the control room when smoke is present. A sampling type smoke detector system monitors the ceiling of the room and the plant computer cabinets.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-14 (located on El. 386), 2HR-72 (Door 312 at CEDM Room). Also, portable ABC/CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 10.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is severe (due to the heavy load of electrical cable under the floor). The combustibles consist of electrical cable, ordinary combustibles and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery powered lighting is provided for exit. Gaitronics call station G-387 available on east wall of Fuel Handling Building.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Control room indication of smoke detection in this room and CO2 extinguisher provisions are as per 2CAN057704.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2153-A (Ventilation Equipment Room) is approximately 6,580 sq. ft. and is located on El. 404 and 422. This zone contains electric motors, steam heated unit heaters, chillers, air handling equipment and electrical cables.

This zone is completely enclosed by noncombustible walls with the walls between this zone and the turbine building and CEDM Equipment Room 3-hour rated. The floor on the south end of this zone is 3-hour rated. Doors on the north and south ends are 3-hour rated. The 422' Elevation of the ventilation equipment room includes a 3-hour rated floor.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and no suppression are provided in this zone.

This zone contains ionization detectors that alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-22 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, oil, cleaning solvents, charcoal filters and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lamps are provided for exit lighting. Gaitronics call station G-387 available on east wall of Fuel Handling Building.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2154-E (CEDM Equipment Room) is approximately 928 sq. ft. and is located on El. 404. This zone contains electronic switch gear.

All walls, ceilings, floors and doors are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

The smoke detectors, located in the ceiling, provide an alarm to the control room and activate a light on a local zone indicating unit.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-72 (outside in turbine area) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 3.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is high (due to the amount of cable insulation). The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery powered lamps are provided for access and equipment lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Installed smoke detectors which alarm in control room, CO2 extinguisher provisions and hose reel accessibility are completed per 2CAN057704.

Door 313 has been plated closed from the CEDM Room, therefore no access from zone 2152-D.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 136 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2155-A (Steam Pipe Room) is approximately 1,172 sq. ft. and is located on El. 404. This zone contains electrical wiring, motor operated valves and steam lines.
- This zone is enclosed by noncombustible walls. A fire door isolates this zone from stair no. 2055.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-21 (located in 2183-J, El 386'), 2HR-38 (located in 2243-NN, El 389.5') and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. The atmospheric steam dump valves require manual operation for cold shutdown. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Three (3) battery powered lamps with dual lamp remote fixtures are located at various elevations in this zone to provide equipment and access lighting.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 137 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2156-A (Containment Purge Air Equipment Room) is approximately 1,930 sq. ft. and is located on El. 404. This zone contains electric motors, charcoal filters enclosed in metal containment purge supply fan, and electrical wiring in conduits.

The surrounding walls are of noncombustible material, but are not rated as fire walls, except for the wall adjacent to the auxiliary building elevator. The floor is 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Ionization detectors continuously monitor the air for smoke and provide alarm to the Control Room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-32 (located in adjacent Fire Zone 2148-A) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of charcoal filters and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lamps provide emergency exit lighting. Gaitronics call Station G-457 and 459 available on west wall of Fuel Handling Building.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Detectors provided per ØCANØ778Ø4.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 138 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2158-F (Stair No. 2055) is approximately 1,387 sq. ft. and is located on El. 335 through 404.

This zone is completely enclosed by 3-hour rated walls and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-37, 2HR-38 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lamps provide emergency exit lighting at elevation 335'. Gaitronics call station G-237 is available on elevation 335' outside stair access. Battery powered emergency lighting is installed at elevation 386' to provide access lighting to the steam pipe area (Zone 2155-A).

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 139 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2172-ZZ (Storage Room and Shop Room) is approximately 1,840 sq. ft. and is located on El. 335 and 354. This zone contains electrical wiring.

The perimeter walls and doors on El 354' and 335' are 3-hour rated. There are doors located throughout the zone which are unrated. Portion of the floor has been upgraded to a 3-hour rating.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.

An automatic wet pipe sprinkler system is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-9 and 2HR-11 (located in adjacent Fire Zone 2200-MM). Also, portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 2.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station G-203 is provided in zone.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 140 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2177-YY (Neutralizer Tank Room) is approximately 375 sq. ft. and is located on El. 336. This zone contains flame resistant cable insulation and the neutralizer tank.
- 3-hour rated walls enclose this zone and access is through a 3-hour rated door.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-9 (in adjacent Fire Zone 2200-MM) and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-203 available in adjacent storage area (Zone 2172-ZZ).
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2178-AAA (Lube Oil Reservoir) is approximately 625 sq. ft. and is located on El. 354. This zone contains electric pumps and lube oil.

This zone is enclosed by 3-hour rated fire walls, ceiling, floor and door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.

This zone is protected by an automatic sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-17 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 21.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is extremely severe (due to the amount of lube oil storage). The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: Isolation valve for sprinkler system is located adjacent to this zone on the north, outside Turbine Building wall at El 335'.

Equipment drains are installed to prevent buildup of oily, flammable waste on the floor.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2183-J (Upper North Electrical Penetration Room) is approximately 712 sq. ft. and is located on El. 386. This zone contains electrical wiring.

The walls and doors surrounding this zone are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by an automatic preaction sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-21 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, alternate shutdown panel 2C384 is located in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 143 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2200-MM (Turbine Building) is approximately 88,620 sq. ft. and is located on El. 335 through 404. This zone contains turbine pumps, electric cable, steam lines and motors.

The west wall of the turbine building is a 3-hour rated wall protecting the auxiliary building. Other zones within the turbine building protected by 3-hour rated walls are the storage area and tank room on elevation 335'. On elevation 354', the lube oil reservoir is protected by 3-hour rated walls, ceilings, floor and a door from the turbine building. A portion of the west wall of this zone between Cols. D₂ & G₂ along Col. 5 is considered to be a 3-hour (NRC) rated barrier between Elevations 354' and 356'-3". A portion of the floor of the SPDS Computer Room (Room 2130) is an NRC required fire barrier.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and suppression are provided in this zone.

Seal oil unit and lube oil reservoir for the feedwater pump turbines are protected by automatic deluge sprinklers.

The west half of the Turbine Building below main deck, over oil containing equipment is protected by automatic wet pipe sprinkler system.

The feed pump area, storage tank rooms, EH pit, stator cooling system area and bottled air refill room are protected by an automatic wet pipe system.

The turbine bearings are protected by automatic preaction sprinklers systems with supervisory air.

The Auxiliary Feedwater Pump 2P75 is protected by an automatic wet pipe sprinkler system at Elevation 335'.

The Exciter housing is protected by an automatic CO2 suppression system that when actuated, sounds an alarm and provides a flashing light on the operating floor and a remote alarm in the Control Room.

- 10.3 MANUAL FIRE PROTECTION FEATURES: Numerous hose reels and ABC/CO2 extinguishers are located in this zone. For additional information, please see Table 2200-MM-1.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, flame resistant cable insulation, jacketing material, charcoal filters, hydrogen in the main generator and exciter and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFF SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: E1 404' - Two DC powered emergency lights on turbine building west wall and one battery powered lighting unit at stairway outside elevator machine room.

E1 386' - Five DC powered emergency lights along east and west perimeter of turbine deck. Three (3) battery powered lighting units each with a remote dual head are installed to provide access and equipment lighting. A remote head powered from a battery unit located in Unit 1 is at the stairway north of the elevator. One DC powered light and one battery powered lighting unit is also provided in the west corridor leading to the Chemistry Department Office area. One battery powered emergency light is also located near the elevator doors. Gaitronics units G-220, 224, 225 and 226 (two of which are in the locker rooms) are provided at this elevation. Call stations G-227 and 228 are available outside the new maintenance facility.

E1 368' - Seven DC powered emergency lights, mainly at stairs, and five battery powered lighting units, three of which have a remote dual head. Gaitronics units G-209, 214 and 216 provided at this elevation.

E1 354' - Six DC powered emergency lights, one with dual lamps and two battery powered lighting units, one of which (in the condensate demineralizer corridor) has a remote dual head. Another remote head near southwest stairway is powered from battery unit on elevation 368'. Gaitronics units G-204, 207 and 208 provided at this elevation.

E1 335' - Five DC powered emergency lights and two battery powered lighting unit with remote dual heads are installed for equipment and access lighting. Gaitronics units G-201, 202 and 203 provided at this elevation.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Below is a list of hose reel stations, extinguishers and fire doors on each elevation of the turbine building.



TABLE 2200-MM-1

<u>Elevation</u>	<u>Hose Reel Station</u>	<u>Extinguisher(s)</u>	<u>Doors</u>
451' (roof)	34, 35 (both 150')		
404'		ABC	312, 314, 447, 320
386'	4, 5, 14, 15, 19, 36, 38	ABC/CO2	341*, 342*, 287*, 394, 398
386'	70 & 64 (rack type accessible from Maint. Fac.)	CO2 (accessible from Maint. Fac.)	
368'	3, 8, 13, 10, 18, 20	ABC/CO2	339, 340*, 270*, 257 256, 387
354'	2, 7, 11, 17, 23	ABC/CO2	334, 333, 330, 337, 329, 331, 441, 243*, 228, 246
335'	1, 16, 9	ABC/CO2	326, 328, 336

* sliding door

** water tight door

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 146 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2223-KK (Pipeway, Equipment Access Room) is approximately 2,941 sq. ft. and is located on El. 335. This zone contains electrical wiring, pumps and electric motors.

The walls in this zone are not rated, except for those adjacent to stairway 2055. The door leading to stairway 2055 is also a 3-hour rated door all others are not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

The smoke detectors provide alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-74 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lamps are provided for emergency lighting. Gaitronics (G-237) call station provides emergency communications.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Smoke detectors provided in accordance with \emptyset CAN \emptyset 778 \emptyset 4. Exemption granted by \emptyset CNA \emptyset 38328 for addition of fixed extinguishing system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 147 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2225-WW (Regenerative Waste Pump and Tank Room) is approximately 3,344 sq. ft. and is located on El. 335. This zone contains regenerative waste tanks, pumps and chillers.

The walls are constructed of concrete, but are not rated. The door is not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-74 (located in adjacent Fire Zone 2223-KK) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics (G237) call station is available in adjacent access area near stairwell.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 148 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2229-SS (Storage Room 2232) is approximately 2,480 sq. ft. and is located on El. 354. This zone contains demineralizer tanks, equipment and electrical wiring.

This zone is cut off from all other zones in the auxiliary building by 3-hour rated walls and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.

The storage area portion of this zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HE-33, 37, 73 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: 2 DC powered emergency lights in demineralizer equipment area. Gaitronics unit G-238 located in lunch room.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 149 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2230-RR (Drum Filling Room) is approximately 729 sq. ft. and is located on El. 354. This zone contains electric motors.

This zone is cut off by 3-hour rated walls and door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-17 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC Powered Lamps provide emergency lighting at doorway.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2231-TT (Plant Heating Boiler Room) is approximately 839 sq. ft. and is located on El. 354. This zone contains electrical wiring, auxiliary boiler, pumps and electric motors.
- 3-hour rated walls cut this zone off from the fuel oil day tank and the rest of the auxiliary building.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.
- This zone is protected by a wet pipe sprinkler system.
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-33 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of fuel, lube oil and flame resistant cable insulation. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Three (3) DC powered emergency lights. Gaitronics unit G-236 provided on north wall of room.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: An equipment drain and two floor drains are provided to remove any accumulation of oily waste or water.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 151 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2242-00 (H&V Mechanical Equipment Room) is approximately 5,512 sq. ft. and is located on El. 374 and 386.

The walls for this zone, on El 386', are of concrete construction, but are not 3-hr rated, nor are the doors. On El 374', this zone is cut off from the remainder of the auxiliary and turbine buildings by 3-hr rated walls and doors.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and suppression are provided in this zone.

Smoke detectors provide alarm in the control room.

The chemistry lab, secondary sampling room and the waste filler storage room are protected by an automatic wet pipe sprinkler system.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-37, 38, 75 and portable ABC/CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, oil, cleaning solvents, chemistry supplies and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery powered lamps are provided for emergency exit lighting. Three Gaitronics call stations are located throughout zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Equipment drains are located throughout the zone on both levels to remove oily waste.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 152 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2243-NN (Chemistry Lab and Offices) is approximately 1,730 sq. ft. and is located on El. 389. This zone contains office spaces, kitchen, electric range and a refrigerator.

The walls, floors and ceilings in this zone are constructed of concrete but are not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.

This zone is protected by an automatic wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-38 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 2.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of furniture, lab equipment, lab test gases, chemicals, paper and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lamps are provided for emergency exit lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 153 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2261-UU (Plant Heating Boiler Day Tank) is approximately 64 sq. ft. and is located on El. 354.

This zone is completely separated from the Heating Boiler Room and the rest of the Auxiliary Building by 3-hour rated walls and door. The ceiling above this zone is also 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: No detection and partial suppression are provided in this zone.

This zone is protected by a wet pipe sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-33 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Approximately 48.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is extremely severe (due to amount of fuel oil). The combustibles consist of fuel oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-236 available on north wall of adjacent heating boiler room, Zone 2231-TT.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 154 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA C is approximately 13,923 sq. ft. and is located on El. 335.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The combustibles consist of lube oil, charcoal filters, flame resistant cable insulation and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

20-Y	Radwaste Processing Room
31-Y	Purification Demineralizer Room
34-Y	Pipe Room
38-Y	Emergency Feedwater Pump Room
47-Y	Penetration Ventilation Room
53-Y	Lower North Piping Penetration Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 155 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 20-Y (Radwaste Processing Room) is approximately 9,100 sq. ft. and is located on El. 335. This zone contains radwaste processing components and equipment including makeup/HPI pumps.

The north wall of this zone and east wall adjacent to the neutralizer tank and a section of wall that connects the south wall of the clean waste receiver tank area (16-Y) to piping area (53-Y) are 3-hour rated walls. The floor, west wall and east wall bordering the drumming station have been upgraded to a 3-hour fire resistant rating. The door to stairway no. 1 and walls surrounding elevator M-5 are 3-hour rated. All other walls, partitions and doors in this zone are not rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

The makeup pump rooms contain ionization type smoke detectors.

The treatment makeup monitor tank room, adjacent to the makeup pump rooms, contains ionization type smoke detectors.

A wet pipe sprinkler system provides protection to the treated makeup monitor tank room.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-26, 28 and portable ABC extinguishers are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, flame resistant cable insulation, clean anti-C clothing and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Five (5) DC-powered emergency lights and five (5) battery-powered emergency lights with dual remote heads installed for equipment and access lighting. Gaitronics unit 405 located in zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Exemptions requested for omission of a 3-hr rated barrier in the opening over BWST valves into zone 67-U and separation of valves CV-1407, CV-1408. Exemptions were granted, per $\text{CNA}\#38328$, to requirement for automatic fire suppression system in the make-up pump area, and the requirement for full coverage automatic fire suppression system in the Waste Monitor Tank Room.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 31-Y (Purification Demineralizer Room) is approximately 700 sq. ft. and is located on El. 335. This zone contains purification demineralizer and the spent fuel pool demineralizer.

This zone is separated by concrete walls and an unmarked metal door. The north wall separating this zone from the drumming station is 3-hour rated. The ceilings are also 3-hour rated. There are no rated doors or floors in this zone.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in adjacent Fire Zone 20-Y) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: There is a fenced gate which prevents access to this zone. Exemption requested for suppression in this zone.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 34-Y (Pipe Room) is approximately 1,692 sq. ft. and is located on El. 335. This zone contains small pumps, piping and valves.

The north, south and east walls of this zone as well as the wall surrounding the neutralizer tank are 3-hour rated. The door located at north end of the zone is watertight but is not rated. The portion of the floor at Elevation 341' is 3-hour fire rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type smoke detectors that alarm in the control room.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in adjacent Fire Zone 20-Y) and portable ABC extinguishers are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) battery powered emergency light with one (1) remote unit for equipment and access lighting.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: An exemption was granted; per PCNA 38328, to the requirement for an automatic fire suppression system.


Since the decay heat pump conduit are separated by over twenty feet with no intervening combustibles, a 1-hour barrier is not required.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 158 OF 277

10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 38-Y (Emergency Feedwater Pump Room) is approximately 600 sq. ft. and is located on El. 335. This zone contains electric motors, EFW suction supply valves, and turbine driven emergency feedwaer pumps.

The walls of this zone are concrete with the south and the north half of the east wall being 3-hour rated. The ceiling is also 3-hour rated. The floor is not rated. The southern half of the east wall is 3-hour (NRC) fire rated below Elevation 341'. The remaining access door to this zone, being a security door, is not rated. One-hour barriers have been provided for cabling associated with the electric driven pump to assure one pump will remain free of fire damage. 

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is partially protected by an automatic preaction sprinkler system.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in adjacent Fire Zone 20-Y) and portable ABC extinguishers are provided. Also, this zone's sprinkler system may be manually activated by a pull station located in adjacent Fire Zone 20-Y (by door 187).

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Two (2) battery-powered lighting units with three (3) remote dual heads for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: A cable for CV-1404 (decay heat dropline) passes through this zone. To initiate cold shutdown, this valve may be manually opened. As a result, cold shutdown operations could continue without significant interruption.

Exemptions were requested in ØCANØ884Ø4 and ØCANØ885Ø8, for omission of automatic suppression capability for the EFW pump room, and omission of 20 feet separation between pumps P7A and P7B. However, DCP 87-1051 added an automatic preaction sprinkler system to the EFW Pump Room. Also, an exemption request for the omission of a door latch was withdrawn in ØCNA1Ø86Ø8 since DPC 85-1072 required this door to be latched to meet the revised AND-1 HELB analysis. The door latch exemption is no longer required.

REV. DATE
1 07/01/93

91-E-C072-01
PAGE 160 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 47-Y (Penetration Ventilation Room) is approximately 633 sq. ft. and is located on El. 335. This zone contains charcoal filters and exhaust fans.

The walls, ceiling and floors of this zone are constructed of concrete with the containment wall, south wall and ceiling 3-hour rated. There are no rated doors in this zone.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors provide alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in adjacent Fire Zone 20-Y) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of charcoal filters and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, manual operation of these systems are available. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: UL listed/FM approved line type thermal detectors are utilized in monitoring ventilation units (VFC-5A&B) charcoal filters. The line type thermal detectors are dual setpoint, alarming upon abnormal temperature rises (190°F prealarm, 300°F alarm) before the filters reach their ignition point of 680°F.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 161 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 53-Y (Lower North Piping Penetration Room) is approximately 1,108 sq. ft. and is located on El. 335. This zone contains process filter and electrical equipment.

This zone is completely cut off by concrete walls, ceiling and floor. The ceiling, floor, south half of the west wall and containment wall are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors provide alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-26 (located in adjacent Fire Zone 20-Y) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: An exemption was requested, in $\text{PCAN}\emptyset 884\emptyset 4$, for omission of structural steel coatings supporting the floor of zone 79-U. An exemption was granted in $\text{PCNA}\emptyset 38328$, for requirements for fixed fire suppression system and detection.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 162 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA D is approximately 1,404 sq. ft., and is located on El. 368/372.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The combustibles consist of lube oil, diesel fuel and flame resistant cable insulation. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

86-G North Emergency Diesel Generator Room



REV. DATE
1 07/01/93

91-E-0072-01
PAGE 163 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 86-G (North Emergency Diesel Generator Room) is approximately 1,404 sq. ft. and is located on El. 368. This zone contains the diesel generator, fuel oil day tanks, electrical wire and motors. | △

This zone is cut off by concrete walls, ceiling and floor. The walls, ceiling, floor, and both doors (FD-39 and 40) are 3-hour rated. There is an air inlet port in the west wall; a curb is provided to prevent tornado generated missiles from entering the room and to prevent diesel fuel leakage from draining to an area outside the building. The ceiling has a ventilation opening to allow an air supply to the room and louvers which supply air to the diesel generator.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke and flame detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by a preaction sprinkler system.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-31, HR-32 (located in adjacent Fire Zone 89-P), and portable ABC extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, diesel fuel oil, flame resistant cable insulation and transients. The Diesel Generator Day Tanks are mounted on the Diesel Generator frame. This zone is equipped with metal containment dikes at the doors and is connected to the oily water drain system. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One DC powered light and two battery powered lighting units each with a dual remote head, plus a battery powered hand held unit. All provide equipment and access lighting. Gaitronics unit G-115 located within zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Automatic sprinkler system committed to via #CAN#678#3 and Unit 1 SER Item 5.10 of August 1978.

Drainage and ponding study indicates that a ponding depth of 17.5" is possible and that failure of non-redundant components E2/K4B and E21 could occur at 0" (bottom of cabinets) and 10" at C4B2 and C4B1.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 164 OF 277 | △

9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION FIRE AREA E is approximately 980 sq. ft., and is located on El. 312.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The combustibles consist of electrical equipment and flame resistant cable insulation. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

100-N South Switchgear Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 165 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 100-N (South Switchgear Room) is approximately 980 sq. ft. and is located on El. 372. The zone contains electrical equipment and power cables.
- The walls, ceiling, floor, and doors in this zone are 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- There are four smoke detectors which detect smoke and sound an alarm in the control room.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-15, 17 and portable CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, jacketing and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) DC powered light and one (1) battery powered lighting unit with a dual lamp remote head, plus a battery powered hand held unit on a 50' cord for equipment and access lighting. Gaitronics call station G-111 located in zone.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: For information regarding procurement of modification equipment, refer to letter ØCANØ78217.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 166 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA F is approximately 441 sq. ft., and is located on El. 372.
- 9.2 FIRE DURATION: Less than 1.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The combustibles consist of flame resistant cable insulation and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

110-L South Battery Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 167 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 110-L (South Battery Room) is approximately 441 sq. ft. and is located on El. 372. This zone contains electric wiring, equipment and batteries.

This zone is enclosed in 3-hour rated walls, ceiling, floor and door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Ionization type detectors are provided which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-31 (located in adjacent Fire Zone 98-J) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered lighting is installed in DC equipment room for equipment and access lighting. Gaitronics unit G-114 available in uncontrolled access corridor (Zone 98-J).

10.8 ADDITIONAL DISCUSSION/INFORMATION: The inverter room, room 109, is included with zone 110-L as part of the fire hazard analysis. The room and the Zone 110-L constitute fire area F. Inverters and batteries are included in the room.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 168 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA G is approximately 16,055 sq. ft., and is located on El. 372', 386', and 404'.
- 9.2 FIRE DURATION: Less than 2.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of paper, clothing, flame resistant cable insulation and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: ANO-1 alternate shutdown capability was installed during 1R6 and various barrier upgrades were completed. ANO-2 alternate shutdown capability was installed during 2R3. Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

97-R	Cable Spreading Room
129-F	Control Room
2098-C	New CPC Room (Elev. 372)
2098-L	Cable Spreading Room
2119-H	Printer Room
2136-I	Health Physics Room
2137-I	Upper South Electrical Penetration Room, Hot Instrument Shop, Decontamination Room
2150-C	Old CPC Room (Elev. 404)
2199-G	Control Room

NOTE

Fire Area G is a common fire area. Therefore, fire zones listed within Fire Area G may be from either unit.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 97-R (Cable Spreading Room) is approximately 1,176 sq. ft. and is located on El. 372. This zone contains electrical wiring and cabling.

This zone is completely cut off by 3-hour walls, ceilings, floors and doors (43, 44 and 45).

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

The smoke detectors are provided which alarm in the control room. An automatic deluge suppression system is provided.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-15 (located outside door 45 in TB) and portable CO2 extinguishers are provided. Manual operation of the deluge system is also provided from the control room.

10.4 FIRE DURATION: Less than 4.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is high. The combustibles consist of flame resistant cable insulation, jacket materials and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

The suppression systems have been upgraded to meet NFPA 15-1977.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery-powered emergency lighting unit with a dual remote head for equipment and access lighting is relay room and Gaitrronics (G-113) in relay room. Also, G-112 available outside door 45 in Zone 197-X (turbine building).

10.8 ADDITIONAL DISCUSSION/INFORMATION: Protectowire fire alarm control and power supply panel for this zone is located outside door 44 in turbine building, on south wall of secondary sample room.

Floor drains are located to accommodate the deluge system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 170 OF 277



Manual smoke venting system is provided to facilitate manual fire fighting capability.

Sprinkler system committed to via ØCANØ6783Ø3 and SER Item 5.8, Aug. 1978 (Unit 1).

Protectowire was committed to via 1CANØ37914.

REV.	DATE
1	07/01/93

91-E-0072-01
PAGE 171 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 129-F (Control Room) is approximately 2,344 sq. ft., and is located on El. 386. This zone contains electrical wiring, electrical equipment, control board and cabinets, and motors.

The walls, ceiling, and floor of this zone as well as the doors to the turbine building are 3-hour rated. This zone is common with Unit 2 control room.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detectors are located in the control room ceiling area, inside safety related control cabinets and in support and return air ducts.

Smoke detectors located throughout the control room alarm and inform the operator of a fire.

Thermal detectors are located internal to the redundant control room emergency air filters and provide an alarm prior to reaching the ignition temperature of the charcoal filter media.

An automatic halon suppression system provides protection to the upper ceiling area of the Main Control Room and Auxiliary Control Room and to the raised floor area of the Auxiliary Control Room. The suppression system is activated by the crossed zoned detection system.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-16 (located in adjacent Fire Zone 197-X) and portable CO2/Halon extinguishers are provided.

- 10.4 FIRE DURATION: Less than 2.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material, charcoal filters, ordinary combustibles and transients. A standby air filtering system is available when the alarming filter is isolated. Materials used in control room construction are non-flammable and the furniture in the control room is of metal construction. Combustible supplies such as log books, records, procedures, manuals, etc., are limited to those required for plant operation. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.



- 10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Three (3) DC-powered lights and two (2) battery-powered lighting units, with dual remote heads. Gaitronics call stations G-121 and G-125 located in zone.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Fixed battery-powered emergency lights are provided in the control room which are completely independent of the normal or emergency (120V DC vital bus powered) lighting systems. The batteries are sufficient to provide at least 8 hours continuous light output.

Committed to portable Halon fire extinguisher via ØCANØ47821 and Unit 1 SER Item 5.11, Aug. 1978.

Committed to fixed, battery-powered emergency lights via letter ØCANØ678Ø3.

Automatic Halon system activation by smoke detectors was committed to via ØCANØ678Ø3 and Unit 1 SER Item 5.11, Aug. 1978.

All exposed cables in the false floor space are coated with a flame retardant coating as per ØCANØ678Ø3 and Unit 1 SER Item 5.11, Aug. 1978.

Smoke exhaust is provided in the control room with a venting area of 1 sq.ft. for each 200 sq.ft. of floor area to enable the operator to clear the room of smoke or gases as per 2CANØ577Ø4.

All alarm circuit supervision will activate audio and visual trouble signals in the control room as per 1CANØ37914.

Self-contained air packs are provided in the control room for use by the fire brigade as per 2CANØ577Ø4.

Smoke detectors are provided in each control room cabinet which contain safe shutdown equipment per Unit 1 SER Item 3.10, August, 1978.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2098-C (New CPC Room) is approximately 400 sq. ft. and on El. 372. This zone contains CPC computer cabinets and computer equipment.

This zone is completely cut off by 3-hour rated walls, ceilings, floor, and doors. Door No. 276 is padlocked on 2098-L side.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

A Halon 1301 suppression system with nozzles located in the false floor and in the area near the ceiling serves the New CPC Room No 2098-C. The Halon 1301 system provides a 5% concentration of Halon upon detection of a fire by smoke detectors. The system provides alarm in the control room. The Halon system is automatically activated by two zones of Ionization Smoke Detectors.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 2HR-39 (both located in Fire Zone 2109-U) and portable ABC/CO2 extinguisher are provided.

10.4 FIRE DURATION: Approximately 9.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is severe (due to the amount of electrical cable). The combustibles consist of flame resistant cable insulation, jacketing materials and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. powered lamps provide emergency exit lighting

10.8 ADDITIONAL DISCUSSION/INFORMATION: Flame retardant barriers and cable coating is provided in zones where redundant safe shutdown cabling is in proximity to each other as per \emptyset CAN \emptyset 678 \emptyset 3 and Unit 2 SE Item 5.9 August 1978.

REV. DATE
1 07/01/93

91-~~2~~-0072-01
PAGE 174 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2098-L (Cable Spreading Room) is approximately 2,004 sq. ft. and is located on El. 372. This zone contains heavy loading of electrical cable.

This zone is separated by 3-hour rated walls, ceilings, floor, and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Cable trays are interlaced with Protectowire and smoke detectors are located throughout the zone and provide alarm in the control room. Actuation and alarm circuits are supervised.

Open head sprinklers provide protection to all cable trays.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 2HR-39 (both located in Fire Zone 2109-U) and portable halon extinguishers are provided. Also, manual operation of the spray systems are provided from adjacent hallway (between 2109 Corridor and the Turbine Building) or from the Control Room. Manual smoke venting system is provided to facilitate manual fire suppression capability.

10.4 FIRE DURATION: Less than 3.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is high (due to the amount of electrical cable insulation). The combustibles consist of flame resistant cable insulation, jacketing materials and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

The spray systems have been upgraded to meet NFPA 15-1977.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided. Additional means are being developed to accomplish safe shutdown independent of damage to cables in this zone. All safety systems and Class 1E circuits as well as redundant safety circuits are in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. powered lamps provide emergency exit lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Protectowire alarm control and power supply panel for CS room 2098-L located outside door 340 in turbine building. Flame retardant barriers and cable coating is provided in zones where redundant safe shutdown cabling is in proximity to each other as per \emptyset CAN \emptyset 678 \emptyset 3 and Unit 2 SER Item 5.9 August 1978.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 175 OF 277



Smoke venting system and Directional Deluge Sprinkler System committed to
via 2CANØ577Ø4. Water spray system upgrade to NFPA-15, 1977 as per Unit 2
SER Item 5.9, August 1978.

REV.	DATE
1	07/01/93

91-E-0072-01
PAGE 176 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2119-H (Printer Room) is approximately 176 sq. ft. and is located on El. 386. This zone contains office supplies and electrical cable.

This zone is completely cutoff by 3-hour rated walls, ceiling, floor and door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This room is protected by an ionization detector that alarms in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-14 (located outside control room in turbine building) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 2.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of office supplies, flame resistant cable insulation and transients. This zone is normally occupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station G-229 is provided in the zone.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2136-I (Health Physics Room) is approximately 3,600 sq. ft. and is located on El. 386. This zone contains refrigeration equipment, electrical wiring and electrical switchgear.

All zone boundary walls are 3-hour rated except for east wall of room 2140, decontamination room. Interior partition walls are not rated. Floors are 3-hour rated and boundary doors are 3-hour rated. Auxiliary building elevator walls are 3-hour rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detectors are provided and alarm in the control room.

A wet pipe system provides protection to this zone.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-25 and portable CO2 extinguishers are provided.

Manual actuation of a deluge system is required for corridor 2139.

- 10.4 FIRE DURATION: Less than 2.5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of paper, cloth, furniture, lube oil, cleaning solvent, flame resistant cable insulation and transients. This zone is normally occupied. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. and battery powered emergency lighting units are provided in the corridors for access lighting. Gaitronics Unit G-221 is located on elevator enclosure south wall.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Water suppression system installed as per 2CAN107715 and Unit 2 SER Item 5.16 August 1978. Commitment for adding shields around emergency chillers not necessary.

Self contained air packs are provided in this zone for use by the fire brigade as per 2CAN057704. An exemption was granted per 0CNA038328 to requirement for a fixed suppression system.

An evaluation was conducted to determine the necessity of installing a three-hour rated fire damper in the west wall of the zone, north of elevator shaft. The result of this evaluation deemed it unnecessary.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 176 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2137-I (Upper South Electrical Penetration Room, Hot Instrument Shop, Decontamination Room) is approximately 2,259 sq. ft and is located on E1 386. This zone contains electrical equipment.

This zone is completely cutoff by walls and floors that are 3-hr rated. All doors are not presently rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

An automatic preaction suppression system provides protection to this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-30 (located in Fire Zone 2115), 2HR-25 (located in Fire Zone 2136) and portable CO₂ extinguishers are provided.

10.4 FIRE DURATION: Less than 2.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, lube oil, cleaning solvent, ordinary combustibles and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-457 located in this zone and one battery powered unit is installed on south wall with dual remote light at door for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: This zone contains MCC-2B61; commitment for spray shield protection has been completed per ØCANØ678Ø3.

Drainage and ponding study indicates that a ponding depth of 28" is possible and that a loss of non-redundant component MCC 2B61 could occur at a height of 7".



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2150-C (Old CPC Room) is approximately 425 sq. ft. and is located on El. 404. This zone contains emergency cooling electrical wiring and electrical panels.

This zone is enclosed by 3-hour rated walls, ceiling, floor and door. The ceiling is reinforced concrete with a cover of metal decking.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors are located in this zone and alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-32 (located in Corridor 2148-A) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC Lamps are provided for evacuation lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: An exemption was granted to the requirement for a fixed fire suppression system per ØCNAØ38328.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 180 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2199-G (Control Room) is approximately 3,584 sq. ft. and is located on El. 386. This zone contains electrical wiring, equipment and motors. This zone is common with the Unit 1 Control Room.

The walls, ceiling, floor and doors of this zone are 3-hour rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

Smoke detectors are provided in the Control Room ceiling area, inside the control cabinets (which contain safe shutdown equipment and circuitry) and in the supply and return air ducts.

Thermal detectors are located internal to the redundant control room emergency air filters and provide an alarm prior to reaching the ignition temperature of the charcoal filter media.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-14 (located in Turbine Building near door 342) and portable CO2/halon extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant insulation, jacketing materials, ordinary combustibles and transients. This zone is normally occupied. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

Materials used in control room construction are non-flammable and the furniture in the control room is of metal construction. Combustible supplies such as log books, record, procedures, manuals, etc., are limited to those required for plant operation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Fixed, battery powered emergency lights are provided in the control room, completely independent of the normal or emergency (120-volt DC vital bus powered) lighting systems. These lighting units have individual battery supplies with at least 8 hours continuous light output.

3-DC powered emergency lights and 4-battery powered lights, 2 with remote heads. 4 Gaitronics stations - G-229, G-230, G-231, G-234.



10.8 ADDITIONAL DISCUSSION/INFORMATION: Fixed battery-powered, emergency lights are provided in the Control Room which are completely independent of the normal or emergency (120 V DC vital bus powered) lighting systems. The batteries are sufficient to provide at least 8 hours continuous light output.

Halon fire extinguisher committed to in Letter No. OCAN047821 and Unit 2 SER Item 4.15, August 1978.

Fixed, battery powered emergency lighting committed to in letter No. OCAN067803 and Unit 2 SER Item 4.6, August 1978.

A cabinet containing redundant safe shutdown equipment is equipped with a smoke detector as per OCAN047821.

Smoke exhaust is provided in the control room to enable the operator to clear the room of smoke or gases with a venting area equivalent to 1 sq. ft. for each 200 sq. ft. of floor area as per 2CAN057704.

Self contained air packs are provided in the control room for use by the fire brigade as per 2CAN057704.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 182 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA H is approximately 1,648 sq. ft. and is located on El. 368.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire load in this area is moderate. The area contains combustibles in the form of lube oil, diesel fuel and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

87-H

South Emergency Diesel Generator Room




REV. DATE
1 07/01/93

91-E-0072-01
PAGE 183 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 87-H (South Emergency Diesel Generator Room) is approximately 1,648 sq. ft. and is located on El. 368. This zone contains the "red" emergency diesel generator, electrical wiring in conduit and electrical motors. 

This zone is cut off by 3-hour rated concrete walls, ceiling and floor.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke and flame detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.


An automatic preaction sprinkler system provides protection to this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-32, 37 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, diesel fuel, flame resistant cable insulation and transients. The Diesel Generator Day Tanks are mounted on the Diesel Generator frame. Operations shift tours, maintenance functions and testing operations require frequent personnel occupation of the zone. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.


10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One DC-powered light and two battery-powered emergency lighting units both with dual remote heads, plus a battery powered hand held light unit on a 50' cord installed in the zone. Gaitronics unit G-115 located in North Emergency Diesel Generator Room. 

10.8 ADDITIONAL DISCUSSION/INFORMATION: Automatic sprinkler system committed to via \emptyset CAN \emptyset 678 \emptyset 3 and Unit 1 SER Item 5.10 of August 1978.

Drainage and ponding study indicates that a ponding dept of 17.5" is possible and that non-redundant component bases could occur at 1.5" for C107, 13" for CM4A2, 9" for CM4A1, 10" for PSL 5231, and 2" for E11.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 184 OF 277 

9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA I is approximately 3,428 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than 1.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire load in this area is moderate. The area contains combustibles in the form of flame resistant cable insulation and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

98-J	Corridor
99-M	North Switchgear Room
112-I	Lower North Electrical Penetration Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 185 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 98-J (Corridor) is approximately 1,303 sq. ft. and is located on El. 372. This zone contains electrical equipment.
- The walls, doors, floors and ceilings are 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.
- Ionization type smoke detectors are provided at the ceiling level which alarm in the control room. In addition, line type heat detectors (protectowire) are located in the cable trays which also alarm in the control room.
- An automatic deluge sprinkler system provides partial protection to this zone. The suppression system will activate upon cross zone detection of any smoke detector and heat detector.
- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-15, 31 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of cable tray insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) DC powered emergency light and three battery powered lighting units with dual remote heads are installed for equipment and access lighting. Gaitronics unit G-114 located in zone.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Protectowire alarm control and power supply panel for this zone is located in turbine building, on the south wall of the secondary sample room.

The directional open head spray system actuated by heat and smoke detectors was committed to via ØCANØ678Ø3 and SER Item 5.2 August 1978. An exemption was requested in ØCANØ884Ø4, for omission of 3-hr rated coatings for structural steel supporting the ceiling.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 186 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 99-M (North Switchgear Room) is approximately 980 sq. ft. and is located on El. 372. This zone contains electrical equipment, the "green" switchgear and the alternate shutdown panel.

The walls, ceiling, floor and access doors are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-15, 17 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) DC powered light and two (2) battery powered lighting unit with three (3) remote heads. There is also a battery powered hand held unit on a 50' cord installed in the room. Gaitronics unit G-114 available in corridor outside door 46 (in Zone 98-J) and call station G-111 available in south switchgear room (Zone 100-N).

10.8 ADDITIONAL DISCUSSION/INFORMATION: For information relating to procurement of modification equipment, refer to letter ØCANØ78217.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 187 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 112-I (Lower North Electrical Penetration Room) is approximately 1,650 sq. ft. and is located on El. 372. This zone contains electrical cable.

This zone is cut off by a 3-hour ceiling, floor and walls. The access door to this zone is also 3-hour rated. The floor of the room in the eastern corner of the Electrical Penetration Room (Room 112) is separated from the rest of Room 112 by a three hour fire rated lath and plaster barrier. Original construction was initiated as an alternative to installing dampers in the large ducts present in the room, thus the room is considered to be a duct chase. The duct chase is located in Fire Area B and the room directly below the duct chase is also located in Fire Area B. Therefore, the floor separating the two areas does not need to be considered a fire barrier.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

This zone contains a preaction sprinkler system which provides protection.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-31 (located in adjacent Fire Zone 98-J) and portable CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, the service water sluice gates may require manual operation in the event of a fire. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics call Station G-114 available in uncontrolled access corridor (Zone 98-J).

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Cables for "A" makeup pump lube oil pump and the "B" makeup pump cooler service water inlet valve are in this zone. An exemption was requested ØCANØ884Ø4, for omission of 3-hour rated coatings for structural steel supporting the ceiling.

A floor drain is provided for ponding protection.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 188 OF 277

9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA J is approximately 10,568 sq. ft. and is located on El. 335, 354, 368, 386, 404 and 422.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of flame resistant cable insulation and transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

32-K	North Side of the Containment Building
33-K	South Side of the Containment Building

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 189 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 32-K (North Side of the Containment Building) is approximately 5,284 sq. ft. and is located on El. 335 through 424. This zone contains the reactor, the steam generator, the reactor coolant pumps, electric wiring, steam lines and electric motors.

Nonsafety related cable trays which pass from north to south are provided with fire stops to prevent spread of flames. A concrete missile barrier provides a partial radiant energy field between the redundant instrumentation panel.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detection is provided in various locations of this zone and provide alarm in the control room. Any one of the smoke detectors located in each of the areas (four in the Upper and Lower North Penetration Rooms and three in the Upper and Lower South Penetration Rooms) will open the preaction valve for that particular location. It will then be necessary for the operator to manually open both series isolation valves in the containment fire water supply header to allow water to flow into the piping and be discharged by any sprinklers that have been opened by the heat of the fire.

An automatic preaction sprinkler system provides protection in the electrical penetration areas, the containment buildings cable penetration areas.

- 10.3 MANUAL FIRE PROTECTION FEATURES: HR-39, 41, 44, 46, 48 and portable CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSSA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Emergency lighting and communications equipment are located throughout containment.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Portable CO2 fire extinguishers are located inside containment to extinguish a fire in the vicinity of the RCP's committed to via 2CAN107715.

Manual hose capability committed to via 2CAN067803.



The system provided to control oil leaks from the reactor coolant pump motors consists of a set of oil retention barriers on each motor. The upper barrier is capable of containing oil spillage or leaks from the upper radial and thrust bearings. The lower barrier collects leakage from the lower radial bearing. Both oil retention barriers on each pump motor drain to one of the two 135 gallon oil leakage sump pumps. The RCP oil collection system is committed to via 2CAN107715. An exemption was granted, in 0CNA038328, to the requirement for 20 foot separation.

An exemption was requested from Section III of Appendix R in 0CAN088404 since the current oil collection system will remain functional after seismic events and the system would not cause a fire.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 191 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 33-K (South Side Containment Building) is approximately 5,284 sq. ft. and is located on El. 335 through 424. This zone contains the steam generator, the reactor coolant pumps, wiring steam lines and electric motors.

Nonsafety related cable trays which pass from north to south are provided with fire stops to prevent spread of flames. A concrete missile barrier provides a partial radiant energy field between the redundant instrumentation panel.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke detection is provided in various locations of this zone and provide alarm in the control room. Any one of the smoke detectors located in each of the locations (four in the Upper and Lower North Penetration Rooms and three in the Upper and Lower South Penetration Rooms) will open the preaction valve for that particular location and provide an alarm in the Control Room. It will then be necessary for the operator to manually open both series isolation valves in the containment fire water supply header to allow water to flow into the piping and be discharged by any sprinklers that have been opened by the heat of the fire.

An automatic preaction sprinkler system provides protection in the electrical penetration area and in the four containment building cable penetration areas.

10.3 MANUAL FIRE PROTECTION FEATURES: HR-40, 42, 43, 45, 47 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Emergency lighting and communications equipment are located throughout containment.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Portable CO2 fire extinguishers are located inside containment to extinguish a fire in the vicinity of the RCP's committed to via 2CAN107715.

Manual hose capability committed to via 0CAN067803.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 192 OF 277



The system provided to control oil leaks from the reactor coolant pump motors consists of a set of oil retention barriers on each motor. The upper barrier is capable of containing oil spillage or leaks from the upper radial and thrust bearings. The lower barrier collects leakage from the lower radial bearing. Both oil retention barriers on each pump motor drain to one of the two 135 gallon oil leakage sump pumps. The RCP oil collection system is committed to via 2CAN17715. An exemption was granted, in ØCNAØ38328, to the requirement for 20 foot separation.

An exemption was requested from Section III of Appendix R in ØCANØ884Ø4 since the current oil collection system will remain functional after seismic events and the system would not cause a fire.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 193 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA K is approximately 8,256 sq. ft. and is located on El. 327.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of only transients. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

16-Y Clean Waste Receiver Tank Room

2020-JJ Iron Holdup Tank Vault

NOTE

Fire Area K is a common fire area. Therefore, fire zones listed within Fire Area K may be from either unit.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 194 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 16-Y (Clean Waste Receiver Tank Room) is approximately 4,096 sq. ft. and is located on El. 327. This zone contains the clean waste receiver tanks.

The east perimeter wall bordering the radwaste processing area (20-Y) is 3-hour rated but the remaining outer perimeter walls and the inside walls are not rated. There are no fire doors but each access hatch is covered by a concrete plug. The tanks are located below grade at elevation 327'.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: H-5 (yard hydrant) and portable CO2 extinguishers (located on outside of the PASS Building) are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION. This is a high radiation area.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 195 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2020-JJ (Boron Holdup Tank Vault) is approximately 4,160 sq. ft. and is located on El. 327. This zone contains the Boron Management Holdup Tanks.

The outside walls are 3-hour rated but the inside wall is not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: HR-5 (yard hydrant) and portable CO2 extinguishers (located on west wall of PASS Building) are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 196 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA L is approximately 2,776 sq. ft. and is comprised of diesel vaults located below ground El. 354.
- 9.2 FIRE DURATION: Approximately 350.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is extremely severe (due to the amount of diesel fuel). The area contains combustibles in the form of only diesel fuel. Each vault contains piping necessary to transfer fuel from the storage tank to the diesel fuel day tank located in the emergency diesel generator room. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

250	Diesel Fuel Storage Vault Corridor
251	Diesel Fuel Storage Vault (T-57A)
252	Diesel Fuel Storage Vault (T-57B)
253	Diesel Fuel Storage Vault (2T-57A)
254	Diesel Fuel Storage Vault (2T-57B)

NOTE

Fire Area L is a common fire area. Therefore, zones listed within Fire Area L may be from either unit. Additionally, the fire zone analyses of fire zones 251, 252, 253 and 254 are identical. Therefore, only one fire zone analysis will be provided for these zones.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 250 (Diesel Fuel Storage Vault Corridor) is approximately 688 sq. ft. and is located below ground El. 354. The corridor allows access to the diesel fuel tanks.

The corridor is enclosed by 3-hour rated walls and ceiling.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers (located outside at SE corner of concrete pad) are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in the corridor is low and there are no combustibles. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: A Gaitronics (security) unit is located on outside wall near entrance. Battery powered emergency lighting (explosion proof fixtures) is installed in hallway and in each fuel tank vault.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 198 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 251, 252, 253 & 254 (Diesel Fuel Storage Vaults) are approximately 522 sq. ft. each (2,088 total) and is located below ground El. 354. The vaults contain diesel fuel tanks.

The vaults are enclosed on all sides by 3-hour rated walls, floor and ceiling. An eight foot wide passageway (Fire Zone 250) and two 3-hour rated walls separate Unit 1 tanks from Unit 2 tanks. The vaults for each respective unit are isolated from the others by 3-hour rated walls. The volume of each vault is sufficient to contain the contents of the storage tanks (22,500 gallons) below the level of the door opening. All doors are 3-hour rated. The door leading into the vault building from the yard area is watertight and the vault has been specifically designed to resist the loadings imposed by the design flood. This includes anchoring the vault to rock and providing ventilation openings above flood elevation.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in the vaults.

Smoke detectors in each tank vault provide an alarm in the control room which indicates the location of the fire.

The vaults are protected by an automatic/manual deluge sprinkler system that is actuated by smoke detectors in the area or by manual actuation from the control room.

- 10.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers (located outside at SE corner of concrete pad) are provided.

- 10.4 FIRE DURATION: Approximately 86.0 Hours Each

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in the vaults are severe (due to the large amount of fuel). The combustibles consist of only diesel fuel. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in these zones. However, the ability to utilize the piping cross connect, the installation of a 3-hr fire wrap on power cable P16B, and the subdivision of the zones by 3-hr rated barriers mitigates the effects of a fire. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: A Gaitronics (security) unit is located on outside wall near entrance. Battery powered emergency lighting (explosion proof fixtures) is installed in hallway and in each fuel tank vault.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Smoke detectors committed to via @CAN#478#8



The diesel fuel transfer pumps are located in the vault area also; P16A,B (Unit 1, in lower corridor at bottom of stairs) and 2P16A,B (Unit 2 at floor level as tank compartment). Control switches for the Unit 2 pumps are located on the MCC's near the emergency diesel generator rooms. These are as follows: (1) 2P16A - MCC2B53, switch 2HS2801 1 and (2) 2P16B - MCC2B63, switch 2HS2821-Z; the Unit 1 the switches are located locally, near the pump.



Modifications have been made to allow use of the opposite units Diesel Fuel Transfer pumps in the event a given unit's pumps have been disabled because of a fire.

DCP 87-1011 ensures the availability of at least one diesel fuel transfer pump in the event of a fire in the diesel fuel vault corridor.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 200 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA N (ANO-1 Intake Structure) is approximately 2,260 sq. ft. and located below ground El. 354, on El. 354 and 366.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The area contains combustibles in the form of lube oil, grease, flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

Intake Structure (Unit 1)
Diesel Fire Pump Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 201 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: INTAKE STRUCTURE (Unit 1) is approximately 1,810 sq. ft. and is located below ground El. 354, on El. 354 and 366. This zone contains the diesel fire water pump, the electric fire water pump and the service water pump room.

The Intake Structure is constructed of concrete walls, ceilings and floors. The diesel driven fire pump room including the day tank is enclosed by 3-hour rated walls and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this structure.

This structure contains smoke detectors and a hose reel connection.

10.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant), HR-57 (located on the NE wall just inside door 172) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this structure is low. The combustibles consist of lube oil, grease, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery-powered emergency lights for equipment and evacuation on El. 366' and stairway to El. 354' of this zone. Battery powered lighting is also installed at elevation 354'. Gaitronics units G-53 (outside) and G-54 (inside) of access door 171.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Exemptions were granted, in ØCNAØ38328, to the requirement for 20 foot separation and automatic suppression systems at elevation 354' and 366', and to the requirement for automatic fire suppression system below Elevation 354'. Additionally:

P-4A (Service Water "A") CV-3645 A fire affecting this valve could isolate Loop I; however, P4A, P4B or P4C could be used to supply service water through Loop I. Therefore, safe shutdown capability is preserved.



P-4B (Service Water "B") CV-3640
CV-3642
CV-3643
CV-3644
CV-3646

A fire affecting these valves could cause loss of cross-tie capability between Loops II and I; however, service water could still be supplied from P4A to Loop I or P4C to Loop II. Therefore, safe shutdown capability would be preserved.

P-4C (Service Water "C") CV-3641

A fire affecting this valve could cause isolation of Loop II; however, P4A, P4B, or P4C could still supply service water to Loop II. Therefore, safe shutdown capability would be preserved.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: DIESEL FIRE PUMP ROOM (Upstairs of the Unit 1 Intake Structure) is approximately 450 sq. ft. and is located on El. 366. This zone contains diesel fuel day tank and the diesel fire pump.

Three-hour fire barriers completely separate this zone from the remainder of the Intake Structure.

The concrete containment dike surrounding the tank is capable of holding the day tank's full capacity of 280 gallons.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this room.

This room contains smoke and flame detectors.

10.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant), multiple connection test head on outside NW wall of Intake Structure and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this room is moderate. The combustibles consist of lube oil, diesel fuel-day tank and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: A dual head remote lamp is installed for equipment and access lighting. Gaitronics unit G-54 available on EL 354' of Intake Structure.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 204 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA AA is approximately 2,610 sq. ft. and is located on El. 317.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of lube oil, flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2007-LL

"B" HPSI & LPSI Pump Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 205 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2007-LL ("B" HPSI & LPSI Pump Room) is approximately 2,610 sq. ft. and is located on El. 317. This zone contains "B" HPSI, LPSI pumps and shutdown cooling heat exchanger.

The walls are concrete and are 3-hour rated. All other barriers and partitions in this zone are unrated. There are no fire doors in this zone and no openings exist between zones. Door #206 is watertight, and a metal curb at the base of the door prevents the spread of oil. The door is administratively treated as a fire door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

This zone contains ionization type smoke detectors which provide alarm in the control room.

This zone is protected by a manual sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-41 (located in adjacent Fire Zone 2006-LL) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery powered emergency lighting provided in zone. Gaitronics call station available in access area corridor (zone 2006-LL).

10.8 ADDITIONAL DISCUSSION/INFORMATION: SW sluice gates can be manually operated. Conductance type level detectors, which alarm in control room have been installed to indicate any accumulation of liquid in the room. Smoke detectors provided per §CAN§778§4.

The suppression system along the east wall remains in place, however it requires manual operation.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 206 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA CC is approximately 330 sq. ft. and is located on El. 335.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of lube oil, flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2024-JJ

EFW Pump Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 207 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2024-JJ (EFW Pump Room) is approximately 330 sq. ft. and on El. 335. This zone contains steam lines and the turbine driven emergency feedwater pump.

Boundary walls, floor, and ceiling assemblies are reinforced concrete. Penetrations, except for the door, have been upgraded to 3-hour rating. The door (306) is watertight, approximately 15' high, locked, and is treated as a fire door. The boundary walls are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-24 (located in adjacent Fire Zone 2040-JJ) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered dual emergency lights in room for equipment and access lighting. Gaitronics call station available in hall near doorway. Emergency evacuation beacon also located in corridor.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Backflow prevention valves are installed in drain lines from the room to avoid flooding from the drain system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 208 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA DD is approximately 15,050 sq. ft. and is located on El. 335 and 354.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of lube oil, flame resistant cable insulation, cleaning solvents and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2019-JJ	Boric Acid Condensate Tank Room
2032-JJ	Spent Resin Storage Tank Room
2040-JJ	Corridor
2068-DD	Hot Machine Shop

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 209 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2019-JJ (Boric Acid Condensate Tank Room) is approximately 880 sq. ft. and is located on El. 335. This zone contains the Boric Acid Condensate Tanks.
- The walls are concrete and only the east wall is 3-hour rated. All remaining walls, floor, ceiling and door are unrated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-26, 40 (located in adjacent Fire Zone 2040-JJ) and portable ABC extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: None
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 210 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2032-JJ (Spent Resin Storage Tank Room) is approximately 252 sq. ft. and is located on El. 335. This zone contains the spent resin storage tank.

This zone is completely enclosed by concrete walls. There are no penetration to this zone. Only the south wall is 3-hour rated; all others are not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: None

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 211 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2040-JJ (Corridors) is approximately 13, 022 sq. ft. and is located on El. 335. This zone contains electrical wiring, motors and pumps associated with radwaste and the demineralizer system.

The south wall and the ceiling of this zone as well as part of the floor is concrete and 3-hour rated. All other walls and the floor are concrete, but are not rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection but no suppression is provided in this zone.

This zone contains ionization type smoke detectors which provide alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-24, 26, 40 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibles loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery powered lamps are provided for equipment and access lighting. Gaitronics (G-454, G-455) call stations are located in zone extremities.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Walls, floors and ceiling assemblies are reinforced concrete. Ceiling height is 17'. The pump room cubicles, 2051 and 2052, are separated by partial height concrete walls which are "T" shaped and 8' high. The top of the "T" is 2' in width and composition is heavyweight concrete. The wall separating RM 2052 and RM 2053 is 16' high and 21" in width and is also heavyweight concrete. The wall separating 2053 and 2054 is "L" shaped and 8'0" high, base is 2'6" in width, heavyweight concrete. Access doors to 2051 and 2053 are 3'0" wide and into 2052 it is 2'6" wide. Steel hatch has been provided in the floor and ceiling hatchways in the southeast corner to prevent radiant heat transfer and smoke propagation to zones 2006-LL and 2073-DD, respectively. Pyrocrete or monokote has been applied to the hatches to achieve a three hour rating.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 212 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2068-DD (Hot Machine Shop) is approximately 896 sq. ft. and is located on El. 354. This zone contains electrical wiring and hot machine shop equipment.

The four concrete walls in this zone are 3-hour rated as is the fire door protecting the entrance.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

There are four smoke detectors that alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 (located in adjacent Fire Zone 2073-DD) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, cleaning solvents, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. Lighting is provided for exit route in storage area.

10.8 ADDITIONAL DISCUSSION/INFORMATION: The west end of this zone contains the concrete plug which must be removed for access to the tank room below (2032-JJ).

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 213 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA EE is approximately 3,681 sq. ft. and is located on El. 335 through 372.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2055-JJ	Lower South Piping Penetration Room
2084-DD	Upper South Piping Penetration Room
2111-T	Lower South Electrical Penetration Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 214 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2055-JJ (Lower South Piping Penetration Room) is approximately 1,066 sq. ft. and is located on El. 335. This zone contains electrical equipment, valves and piping.

The floor as well as fire area boundary separating 2055-JJ and 2040-JJ is three-hour rated. Wall contains various penetrations and two doors must be opened for passageway between the two zones. The first door is a hollow metal door with a surface type intrusion alarm. The second door (210) has been installed with a modified latch.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone contains ionization type smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-40 (located in adjacent Fire Zone 2040-JJ) and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered lighting unit with a dual remote head are provided for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Both RWT discharge valves have conduits in this zone. Borated water is available from 2T4 via 2CV-4873 or 2T6A and B via 2CV-4920 or 2CV-4921 for charging. An exemption has been granted, per ØCNAØ38328, to the requirement for a fire barrier with 3-hour rating.

Manual hose capability provided as per ØCANØ67815 and Unit 2 SER Item 5.4, Aug. 1978.

An evaluation was conducted to ensure that no latch on subject door (210) is necessary.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2084-DD (Upper South Piping Penetration Room) is approximately 1,484 sq. ft. and is located on El. 354. This zone contains electrical equipment, valves, piping and motors.

The walls in this zone are concrete. All parameter walls are 3-hour rated as is a portion of the east end of the floor.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection but no suppression is provided in this zone.

This zone contains smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 (located in adjacent Fire Zone 2073-DD) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC units and two (2) battery powered units with dual remote heads for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: A flame retardant coating has been applied to one conduit containing cable associated with a diesel generator as per ØCANØ678Ø3 and Unit 2 SER, Item 5.4, August 1978. An exemption was requested for omission of automatic suppression in ØCANØ884Ø4.

The DG jacket coolers valves and the EFW discharge valves require manual operation.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 216 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2111-T (Lower South Electrical Penetration Room) is approximately 1,131 sq. ft. and is located on el. 372. This zone contains electrical cabling and an ESF motor control center.

This zone is protected by 3-hour rated walls and door.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by an automatic, closed head, preaction sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28 (located in adjacent Fire Zone 2109-U) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered lighting unit with a dual remote head is installed for access and equipment lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Fire retardant marinite barriers have been installed between redundant safety cabling and nonsafety trays in this zone as per 0CAN067803 and Unit 2 SER, Item 5.5, August 1978.

An exemption was requested, in 0CAN088404, for omission of structural steel coating in the ceiling of the zone.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 217 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA FF is approximately 336 sq. ft. and is located on El. 335.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of lube oil, cable and motor insulation, and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2025-JJ

EFW Pump Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 218 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2025-JJ (EFW Pump Room) is approximately 335 sq. ft. and is located on El. 335. This zone contains an electric motor driven pump and electric wiring.

This zone is protected by a 3-hour rated wall. The door enclosing the zone is watertight and is administratively treated as a fire door. Watertight seals on all penetrations into and out of the room are utilized to prevent cross-flooding or flooding from external sources.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

The zone is protected by ionization detectors which alarm in the control room.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-24 (located in adjacent Fire Zone 2040-JJ) and portable ABC extinguishers are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil, cable and motor insulation, and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSSA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics call station located in hall near doorway. Battery powered lighting unit on east wall for equipment and access lighting. Emergency evacuation beacon also located in corridor.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Detectors were provided in accordance with ØCANØ778Ø4. Backflow preventer valves are installed in drain lines from the room to avoid flooding from the drain system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 219 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA GG is approximately 2,303 sq. ft. and is located on El. 335 and 354.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2076-HH
2081-HH

Electrical Equipment Room
Upper North Piping Penetration Room (356')
Lower North Piping Penetration Room (335')

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 220 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2076-HH (Electrical Equipment Room) is approximately 1,088 sq. ft. and is located on El. 354. This zone contains two (2) motor generator sets, electrical switchgear and electrical wiring.
- All walls of this zone are 3-hour rated walls. The one access is blocked by a 3-hour rated door (243). The floor of this zone has been upgraded.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- This zone is protected by smoke detectors which alarm in the Control Room.
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-23 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered lighting unit provided for equipment and access lighting.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 221 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2081-HH (Upper North Piping Penetration Room - 354') (Lower North Piping Penetration Room - 335') is approximately 1,215 sq. ft. and is located on El. 354 and 335. This zone contains electrical equipment and wiring.

Walls on both elevations and the door on El. 354 are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-24 (located in adjacent Fire Zone 2040-JJ) and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. and battery powered lighting units provide access and equipment lighting at each elevation.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Isolation valve for containment sprinkler system is in this zone.

Detectors provided per OCAN077804.

Exemption requested for omission of door latch (223).

Exemption granted for addition of fixed extinguishing system and detection equipment per OCNA038328.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 222 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA HH is approximately 6,547 sq. ft. and is located on El. 354 and 372.
- 9.2 FIRE DURATION: Less than 1.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of flame resistant cable insulation, oil, chemicals (hydrogen and nitrogen) and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2063-DD	Sample Room
2072-R	VCT Tank Room (372') and Tank and Pump Room (354')
2073-DD	Access Room Pump Room Tank Room Waste Gas Equipment Room Corridor Passageway
2096-M	Motor Control Center
2106-R	Degasifier Vacuum Pump Room
2107-N	Corridor Area

REV. DATE
1 07/01/93

91-E-072-01
PAGE 223 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2063-DD (Sample Room) is approximately 768 sq. ft. and is located on El. 354. This zone contains sampling and testing equipment, and five (5) pressurized chained cylinders.

The area is surrounded by concrete walls and only the south wall is 3-hour rated. One 3-hour rated door allows entry from the corridor.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: None

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 (located in adjacent Fire Zone 2073-DD) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of chemicals (nitrogen and hydrogen) oil, and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: D.C. powered lighting provided for evacuation. Gaitronics (G-307) call station located in the sample room.

10.8 ADDITIONAL DISCUSSION/INFORMATION: The hose length of 2HR-27 has been modified to 100'.



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2072-R (VCT Tank Room - 372' and Tank and Pump Room - 354') is approximately 119 sq. ft. and is located on El. 354 and 372. This zone contains two-level tank (2T4) and electric motors.

On El 354', the south wall of this zone is 3-hr rated. On El 372', the north, south and east walls are 3-hr rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 (located in adjacent Fire Zone 2073-DD) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: No emergency lighting in zone. Gaitronics unit G-451 available on El 354' in adjacent corridor (Zone 2073-DD).

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 225 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2073-DD (Access Room, Pump Room, Tank Room, Waste Gas Equipment Room, Corridor and Passageway) is approximately 5,163 sq. ft. and is located on El. 354. This zone contains tanks, pumps, electrical wiring, the diesel generator jacket cooler outlet valves and motors.

The zone is cut off by concrete walls. Walls, surrounding the perimeter of this zone are 3-hour rated. Doors to this zone are 3-hour rated doors and/or watertight as noted.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression is are provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

A suppression system for diesel generator jacket cooler valves is installed. Bay opening connecting to Area DD, Zone 2040-JJ, is also protected by suppression system.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-27 and portable ABC/CO2 extinguishers are provided in this zone.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, oil, cleaning solvent and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC and battery-powered lamps are provided throughout the zone for access and equipment lighting. Gaitronics (G451) call station is located in the zone for communications.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Cable for valves in all four EFW paths to SG's are in the zone, but manual operation is available. For cold shutdown, cables for SW inlet valves to both shutdown cooling heat exchangers are in this zone. Manual operation is also available. Cables for both diesel fuel transfer pumps are in the zone and have less than 20' separation.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 226 OF 277



Cables for "A" and "C" charging pumps are in the zone and have greater than 20' separation and barriers between them. "A" pump cables are for control and the pump can be separated from the MCC.

Exemption requested for omission of a three-hour barrier in bay opening in ceiling along west wall of zone 2040-JJ.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 227 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2096-M (Motor Control Center) is approximately 319 sq. ft. and is located on El. 372. This zone contains electrical equipment, wiring and switchgear.

All walls, ceilings and floor are 3-hr rated. Both access doors are 3-hr rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-29 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered emergency lighting unit is installed for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Analysis indicates that red diesel and several green EFW train valves could be affected by fire in this zone. Green EFW train valves can be manually operated.

Smoke detectors have been provided as per ØCANØ778Ø4.

Drainage and ponding study indicates that ponding to a height of 7.09" could occur due to egress from the suppression system in the cable spreading room (zone 2098-L). Motor control center 2B63 could be lost if the ponding reached 7"

Exemption granted for addition of fixed extinguishing system by ØCNAØ38328.



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2106-R (Degasifier Vacuum Pump Room) is approximately 126 sq. ft. and is located on El. 372. This zone contains diesel generator fuel pumps and the degasifier vacuum pumps.
- This zone is enclosed on 3 sides by 3-hour rated walls and door. The wall to the adjacent tank room (fire zone 2072-R) is not rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- Ionization type detectors provide alarm in the control room.
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-29 and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. An equipment floor drain is provided to prevent oily waste from accumulating in this fire area. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: None
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Alternate shutdown provided where both diesel fuel transfer pumps have conduits in this zone without adequate separation. Therefore, crossties to ANO-1 pumps are provided so they may be utilized. Detectors provided in accordance with ØCAN0778Ø4.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 229 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2107-N (Corridor Area) is approximately 52 sq. ft. and is located on El. 372.

All walls, ceiling and doors are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

The zone is protected by ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-29 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: A battery powered light is installed at the west end of the corridor above door to south DG room for access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: An exemption was granted to the requirement for a fixed fire suppression system in ØCNAØ38328.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 230 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA II is approximately 924 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than 1.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of flame resistant cable insulation, jacketing material and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2101-AA

North Switchgear Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 231 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2101-AA (North Switchgear Room) is approximately 924 sq. ft. and is located on El. 372. The zone contains the "red" electrical switchgear, electrical cable and transformer.
- The walls, ceiling, floor and doors are 3-hour rated.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.
- There are four smoke detectors which alarm in the control room.
- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-10 and portable CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than 1.0 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC lighting is provided for exit, Gaitronics unit G-19 call station is located on the east wall of the zone. One battery powered unit and two (2) dual head remote, units and a battery powered hand-held unit on a 50' cord are installed for equipment and access lighting.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Fire barriers and cable coatings are provided where redundant cables are in proximity as per DCAN 67803 and unit 2, SER item 5.8, August 1978. Disconnect switches have been provided to assure that the "swing" charging pump and service water can be powered with "green" power from fire area SS and JJ.



9.0 FIRE AREA ANALYSIS


- 9.1 AREA DESCRIPTION: FIRE AREA JJ is approximately 3,739 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of lube oil, flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2094-Q
2109-U

North Emergency Diesel Generator Room
Corridor



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2094-Q (North Emergency Diesel Generator Room) is approximately 1,440 sq. ft. and is located on El. 368. This zone contains the emergency diesel generator, wiring, switchgear and diesel fuel tank. 

This zone is enclosed by 3-hr rated walls, floors, ceilings and doors. The door separating DG rooms is watertight. The day tank is surrounded by a barrier which will contain oil spills.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and suppression are provided in this zone.

Smoke and flame detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

This zone is protected by an automatic preaction sprinkler system.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28 (located in adjacent Fire Zone 2109-U), 2HR-29 and portable ABC/CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, flame resistant cable insulation, fuel and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSSA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered emergency lights, three (3) battery powered lights with a dual remote head each are provided. In addition, a battery powered hand-held unit on a 50' cord is installed for equipment lighting. Gaitronics unit G-217 located in Zone 2109 corridor.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 234 OF 277



10.8 ADDITIONAL DISCUSSION/INFORMATION: Diesel fuel oil day tank (50 gallons) is sprinkler protected and is separated from the diesel generator by a barrier which will contain oil spills as per 2CAN057704. In case of fuel oil supply line break, fuel pumps can be remotely controlled by control room. Local/manual breakers were provided on EDG control panels per DCP-84-2053.

Drainage and ponding study has indicated that a ponding depth of 5.5" is possible and that loss of non-redundant components 2G200, 2G201, 2G203 could occur at 3.5" (bottom of panel). The loss of 2E21 would occur at 5" depth.

Equipment drains are provided to remove oily waste.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 235 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2109-U (Corridor) is approximately 2,335 sq. ft. and is located on El. 372. This zone contains electrical switchgear cabinets and cables.

The walls, floors, and ceiling are concrete with a 3-hour rating. All doors penetrating to adjacent zones are also 3-hour rated.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

This zone is protected by ionization type detectors which alarm in the control room.

A deluge sprinkler system provides partial protection to this zone.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 39 and portable CO2 extinguishers are provided.

- 10.4 FIRE DURATION: Less than 1.0 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. Also, alternate shutdown capabilities are provided. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Two D.C. powered emergency lights and two battery powered lighting units, both with remote heads for equipment and access lighting. Gaitronics unit G-217 in zone.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Protectowire alarm control and power supply panel for the corridor is located near turbine building stairway outside door 340. Intervening combustibles between panels include several ceiling level cable trays containing a large amount of cable insulation in open cable trays.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 236 OF 277



Vital AC panels 2RS1, 2RS2, 2RS3, and 2RS4 located in the zone have been enclosed in sealed cabinets to prevent water intrusion during activation of the automatic sprinkler system. MCC 2B51 has also been protected from water spray utilizing a spray shield. These referenced cabinets are instead of the spray shields committed to via OCAN067803 and Unit 2 SER Item 4.3.1.7 of August 1978. Water curtain is in place behind the MCC on 374' level. Exemptions were requested in ØCANØ88404, for the omission of coatings for exposed structural steel supporting the ceiling slab, and for omission of an approved fire test for the one-hour rated barrier enclosing 2RS4 due to the configuration. With the modifications made in DCP-85-2012, however, the exemption for the barrier enclosing 2RS4 is no longer required. Modifications made during 2R4 eliminate the need for the one-hour barriers. Power to one channel of necessary instrumentation in the control room was made independent of fire area "JJ" and "G".

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 237 OF 277



9.0 FIRE AREA ANALYSIS


- 9.1 AREA DESCRIPTION: FIRE AREA KK is approximately 2,415 sq. ft. and is located on El. 368 and 386.
- 9.2 FIRE DURATION: Less than 1.0 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of diesel fuel, lube oil, flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2093-P
2115-I

South Emergency Diesel Generator Room
Boric Acid Makeup Tank Room



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2093-P (South Emergency Diesel Generator Room) is approximately 1,440 sq. ft. and is located on El. 368. This zone contains the emergency diesel generator, motors, wiring and the fuel oil day tank. 

This zone is enclosed by 3-hour rated walls, floors, ceilings (except for ventilation louvers and doors). The door separating the DG rooms is also watertight and intrusion alarms for these doors have been provided.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.

Smoke and flame detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

An automatic preaction sprinkler system provides protection to this zone.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 29 and portable ABC extinguishers are provided.

10.4 FIRE DURATION: Less than 2.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of lube oil, diesel fuel, flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: G-218 call station located near pump room; DC and battery-powered lighting provided throughout zone for local operation. This includes three (3) battery-powered lights with a dual remote head and a battery-powered hand-held unit on a 50' cord.

Equipment drains provide removal of oily waste.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Diesel fuel oil day tank is sprinklered and is separated from the diesel generator by a barrier which will contain oil spills as per ØCANØ57Ø4. In case of fuel oil supply line break, fuel pumps can be remotely controlled from the control room. A 5 inch curb is installed in the doorway from 2107-N to hold back any water which may accumulate from a rupture of the hydrant in the corridor. Also, float type level switches have been provided to detect any gross leakage. Local/manual breakers were provided on the EDG control panels per DCP-84-2053.

Drainage and ponding study has indicated that a ponding depth of 5.4" is possible and that a loss of non-redundant components 2G101, 2G103, 2G100 could occur at 3.5" (bottom of panel) and 5" for 2E11.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 240 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2115-I (Boric Acid Makeup Tank Room) is approximately 975 sq. ft. and is located on El. 386. This zone contains two (2) boric acid tanks and pumps.

All perimeter walls of the zone are 3-hour rated, as is the east portion of the floor area.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-30 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of only transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. However, these safe shutdown systems are not required for hot/cold shutdown. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One (1) battery powered lighting unit with two (2) single unit remote heads is installed for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 241 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA MM is approximately 650 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of hydrogen, flame resistant cable insulation, jacketing material and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2099-W
2103-V

West D.C. Equipment Room
West Battery Room

REV. DATE
1 07/01/93

91-E-9072-01
PAGE 242 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2099-W (West D. C. Equipment Room) is approximately 364 sq. ft. and is located on El. 372. This zone contains electrical wiring and equipment in cabinets.

The walls, ceiling, floor and door are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by ionization type detector which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 39 (located in adjacent Fire Zone 2109-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, jacketing material and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Two (2) battery powered units are installed to provide equipment and access lighting. One unit has a remote dual head. G-217 in 2109-U outside door 265.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 243 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2103-V (West Battery Room) is approximately 286 sq. ft. and is located on El. 372. This zone contains storage batteries and electrical wiring.

The walls, ceiling, and door are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28 (located in adjacent Fire Zone 2109-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, hydrogen and transients. Ventilation fans are provided to remove any possible buildup of combustibles concentrations of hydrogen. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: A remote, battery-powered explosion proof lamp is located above the door on the east wall providing exit lighting. Gaitrionics unit 217 call station is outside the door in the corridor.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 244 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA NN is approximately 10,568 sq. ft. and is located on El. 335 through 426.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of lube oil, flame resistant cable insulation, jacketing material and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2032-K
2033-K

South Side of Containment Building
North Side of Containment Building

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 245 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2032-K (South Side of Containment Building) is approximately 5,862 sq. ft. and located on El. 335 through 426. This zone contains the steam generator, reactor coolant pumps, electric motors and cables.

Nonsafety related cable trays which pass from north to south are provided with fire stops to prevent spread of flames. A concrete missile barrier provides a partial radiant energy field between the redundant instrumentation channels.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and suppression are provided in this zone.

Smoke and heat detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

An automatic preaction sprinkler system provides protection to the electrical penetration areas, and to the upper and lower containment cable spreading areas.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-44, 46, 48, 50, 52, 53 and 55 are provided.

- 10.4 FIRE DURATION: Less than 1.5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation. Due to the limited access to containment while the plant is operating, the introduction of transient combustibles is not considered feasible. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Emergency lighting and Gaitronics stations are located throughout containment.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Smoke collectors committed to via ØCANØ47821 and Unit 2 SER Item 5.19, August 1978.

Manual hose capability committed to via ØCANØ678Ø3 and Unit 2 SER Items 5.4 of August 1978.



The reactor coolant pump oil collection system has been upgraded to provide collection capability at all potential leakage points as per Unit 2 SER Item 5.19, August 1978.

An exemption was requested from Section III of Appendix R in ØCANØ884Ø4 since the current oil collection system will remain functional after seismic events and the system would not cause a fire.

REV.	DATE
1	07/01/93

91-E-0072-01
PAGE 247 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: FIRE ZONE 2033-K (North Side of Containment Building) is approximately 4,706 sq. ft. and is located on El. 335 through 426. This zone contains the steam generators, two (2) reactor coolant pumps, electric motors and cables.

Nonsafety related cable trays which pass from north to south are provided with fire stops to prevent spread of flames. A concrete missile barrier provides a partial radiant energy field between the redundant instrumentation channels.

- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Partial detection and suppression are provided in this zone.

Smoke and heat detectors (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.

An automatic preaction sprinkler system provides protection to the electrical penetration areas, and to the upper and lower containment cable spreading areas.

- 10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-43, 45, 47, 49, 51 and 54 are provided.

- 10.4 FIRE DURATION: Less than .5 Hours

- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation. Due to the limited access to containment while the plant is operating, the introduction of transient combustibles is not considered feasible. This zone is normally unoccupied. For additional combustibile loading information, see the referenced Combustible Loading Assessment Calculation.

- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Emergency lighting and Gaitronics stations are located throughout containment.

- 10.8 ADDITIONAL DISCUSSION/INFORMATION: Smoke collectors committed to via ØCANØ47821 and Unit 2 SER Item 5.19, August 1978.

Manual hose capability committed to via ØCANØ678Ø3 and Unit 2 SER Items 5.4 of August 1978.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 248 OF 277



The reactor coolant pump oil collection system has been upgraded to provide collection capability at all potential leakage points as per Unit 2 SER Item 5.19, August 1978.

An exemption was requested from Section III of Appendix R in ØCANØ884Ø4 since the current oil collection system will remain functional after seismic events and the system would not cause a fire.

REV.	DATE
1	07/01/93

91-E-0072-01
PAGE 249 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA 00 is approximately 2,522 sq. ft. and is located below El. 354, on El. 354 and 366.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of flame resistant cable insulation, lube oil and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

Intake Structure (Unit 2)

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 250 OF 277



10.0 FIRE ZONE ANALYSIS

- 10.1 ZONE DESCRIPTION: INTAKE STRUCTURE (UNIT 2) is approximately 2,522 sq. ft. and is located below El. 354, on El. 354 and 366. This zone contains service water piping, electrical cabling, and service water motors.
- Walls of 3 hr. rated construction separate the intake structure from ANO-1 intake. External walls are concrete.
- 10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection and partial suppression are provided in this zone.
- Ionization type smoke detectors and flame (which actuate the sprinklers water supply valve) are provided in this zone and alarm in the control room.
- A preaction sprinkler system is provided to protect three service water pumps at El. 366. Also, drains and dikes are provided around the service water pump motors to contain the contents of a lube oil spill.
- 10.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant) and portable ABC/CO2 extinguishers are provided.
- 10.4 FIRE DURATION: Less than .5 Hours
- 10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation, lube oil and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.
- 10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.
- 10.7 EMERGENCY LIGHTING AND COMMUNICATION: Battery powered lighting is installed at elevation 354' and 366' to provide equipment and access lighting; a Gaitronics call station (G-55) provides emergency communications.
- 10.8 ADDITIONAL DISCUSSION/INFORMATION: All SW components are in this zone except loop discharge valves. Cross-over valves are in this zone. Pump and cross-over valve circuits on upper level are in embedded conduit. Lakeside sluice gates are outside zone and can be operated manually. "C" pump circuits, on the lower level are separated by 20', while "A" and "B" circuits are routed together. Detectors provided per ØCANØ778Ø4. Exemptions have been granted to requirement for automatic fire suppression systems at all elevations, and to requirement for 20 foot separation at elevation 366' in ØCNAØ38328.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 251 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA SS is approximately 1,240 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than 1.5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is moderate. The area contains combustibles in the form of flame resistant cable insulation, potential hydrogen, and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2097-X	East D. C. Equipment Room
2100-Z	South Switchgear Room
2102-Y	East Battery Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 252 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2097-X (East D. C. Equipment Room) is approximately 144 sq. ft. and is located on El. 372. This zone contains electrical wiring, battery chargers and switchgear.

All walls, ceiling, floor, and door are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-39 (located in adjacent Fire Zone 2109-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: One battery powered lighting unit with a dual remote head is installed above access door for equipment and access lighting. Gaitronics unit G-217 available in adjacent corridor, Zone 2109-U.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 253 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2100-Z (South Switchgear Room) is approximately 976 sq. ft. and is located on El. 372. This zone contains electrical cable, switches and transformers.

This zone is cut off from other areas by 3-hour rated walls, ceilings, floors and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by smoke detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-10, 39 and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: DC powered lighting is installed for exit. Two (2) battery powered units, one with a dual remote head are installed. Also, a battery powered hand-held unit on a 50' cord is provided for equipment lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: Fire barriers and cable coatings are provided where redundant cables are in proximity as per OCAN067803 and Unit 2 SER, Item 5.8, August 1978.

DCP-83-2006 Service Water Disconnect Switches.

REV. DATE
1 07/01/93

71-E-0072-01
PAGE 254 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2102-Y (East Battery Room) is approximately 120 sq. ft. and is located on El. 372. This zone contains electrical wiring and batteries.

The walls, ceiling, floor, and door are 3-hour rated.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-39 (located in adjacent Fire Zone 2109-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than 1.0 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation, potential hydrogen generated by the batteries and transients. Ventilation fans remove potential hydrogen to prevent possible combustible concentration of this gas. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Remote, battery powered explosion-proof lamp is provided for exit. Gaitronics unit is located in the 2109-U corridor.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 255 OF 277



9.0 FIRE AREA ANALYSIS

- 9.1 AREA DESCRIPTION: FIRE AREA TT is approximately 648 sq. ft. and is located on El. 372.
- 9.2 FIRE DURATION: Less than .5 Hours
- 9.3 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this area is low. The area contains combustibles in the form of flame resistant cable insulation and transients.
- 9.4 APPENDIX R COMPLIANCE: Refer to Table 1 for the Fire Area's compliance with Appendix R.
- 9.5 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this area. For additional information, see the referenced SSCA Calculation.
- 9.6 INCLUDED FIRE ZONES:

2108-X

Electrical Equipment Room

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 256 OF 277



10.0 FIRE ZONE ANALYSIS

10.1 ZONE DESCRIPTION: FIRE ZONE 2108-S (Electrical Equipment Room) is approximately 648 sq. ft. and is located on El. 372. This zone contains electrical switchgear and electrical cables.

This zone is protected by 3-hour floor, ceiling and doors.

10.2 AUTOMATIC FIRE PROTECTION FEATURES: Detection but no suppression is provided in this zone.

This zone is protected by ionization type detectors which alarm in the control room.

10.3 MANUAL FIRE PROTECTION FEATURES: 2HR-28, 39 (both located in adjacent Fire 2109-U) and portable CO2 extinguishers are provided.

10.4 FIRE DURATION: Less than .5 Hours

10.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. This zone is normally unoccupied except for inspections, shift tours and maintenance activities. For additional combustible loading information, see the referenced Combustible Loading Assessment Calculation.

10.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

10.7 EMERGENCY LIGHTING AND COMMUNICATION: Two (2) battery powered units, each with a remote head are installed for equipment and access lighting.

10.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 257 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 1MH03 (Yard Manholes) is approximately 25 sq. ft. and is located below ground El. 354.

This zone is enclosed by concrete and surrounded by earth on three of the four sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant)

11.4 FIRE DURATION: Less than 2.0 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-52 located in the transformer yard.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 258 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 1MH04 (Yard Manholes) is approximately 25 sq. ft. and is located below ground El. 354.

This zone is enclosed by concrete and surrounded by earth on most of the sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than 2.0 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-53 located on SW wall of Intake Structure.

11.8 ADDITIONAL DISCUSSION/INFORMATION: Marinite board separating the service water pump power cables has been installed as per 1CAN08015 (Unit 1 SER Item 5.14 of Aug. 1978). Exemptions were granted, per OCNA038328, to requirements for 20 foot separation, 1-hr. fire barrier, detection and automatic fire suppression system.



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 1MH05 (Yard Manholes) is approximately 23 sq. ft. and is located below ground El. 354.

This zone is enclosed by concrete and surrounded by earth on two of the four sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than 2.0 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-53 located on SW wall of Intake Structure.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 260 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

- 11.1 ZONE DESCRIPTION: FIRE ZONE 1MH06 (Yard Manholes) is approximately 25 sq. ft. and is located below ground El. 354.
- This zone is enclosed by concrete and surrounded by earth on most of the sides with the heavy steel access cover 6 inches above ground level.
- 11.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 11.3 MANUAL FIRE PROTECTION FEATURES: H-1 (yard hydrant) and portable ABC extinguishers are provided.
- 11.4 FIRE DURATION: Less than 4.0 Hours
- 11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is moderate. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.
- 11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. However, it does contain safety related equipment. For additional information, see the referenced SSCA Calculation.
- 11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-52 located in the transformer yard.
- 11.8 ADDITIONAL DISCUSSION/INFORMATION: Marinite board separating the service water pump power cables has been installed as per 1CAN08015 (Unit 1 SER Item 5.14 of Aug. 1978). Exemptions were granted, per OCNA038328, to requirements for 20 foot separation, 1-hr. fire barrier, detection and automatic fire suppression system.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 261 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 1MH09 (Yard Manholes) is approximately 16 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-5 (yard hydrant) and portable CO2 extinguishers are provided.

11.4 FIRE DURATION: Less than 1.0 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-62 mounted on the Bechtel warehouse east outside wall.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 262 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

- 11.1 ZONE DESCRIPTION: FIRE ZONE 1MH10 (Yard Manholes) is approximately 16 sq. ft. and is located below ground El. 354.
- This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.
- 11.2 AUTOMATIC FIRE PROTECTION FEATURES: None
- 11.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers are provided.
- 11.4 FIRE DURATION: Less than 1.0 Hours
- 11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.
- 11.6 SAFE SHUTDOWN ANALYSIS: Alternate shutdown capabilities are provided in this zone. For additional information, see the referenced SSCA Calculation.
- 11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-62 mounted on the Bechtel warehouse east outside wall.
- 11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 263 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MH01E (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: Credit is taken for manual operability of SW valves and slide gates whose circuits run through the zone.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 264 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MHOZE (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: Credit is taken for manual operability of SW valves and sluide gates whose circuits run through the zone.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 265 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MH03E (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-2 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: Redundant safe shutdown equipment, components and circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: Credit is taken for manual operability of SW valves and slide gates whose circuits run through the zone.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 266 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MH01W (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 267 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MH02W (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-3 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 268 OF 277



11.0 MISCELLANEOUS FIRE ZONE INFORMATION

11.1 ZONE DESCRIPTION: FIRE ZONE 2MH03W (Yard Manholes) is approximately 49 sq. ft. and is located below ground El. 354.

This zone is completely enclosed by concrete and surrounded by earth on all sides with the heavy steel access cover 6 inches above ground level.

11.2 AUTOMATIC FIRE PROTECTION FEATURES: None

11.3 MANUAL FIRE PROTECTION FEATURES: H-2 (yard hydrant) and portable ABC extinguishers are provided.

11.4 FIRE DURATION: Less than .5 Hours

11.5 COMBUSTIBLE LOADING & GENERAL INFORMATION: The fire duration in this zone is low. The combustibles consist of flame resistant cable insulation and transients. However, the introduction of transients is extremely remote due to the inaccessibility during plant operations. This zone is normally unoccupied. For additional combustible loading information, see the referenced Combustibles Loading Assessment Calculation.

11.6 SAFE SHUTDOWN ANALYSIS: No redundant safe shutdown equipment, components or circuitry are contained in this zone. For additional information, see the referenced SSCA Calculation.

11.7 EMERGENCY LIGHTING AND COMMUNICATION: Gaitronics unit G-57 located on the outside of the SW corner of the AP&L warehouse.

11.8 ADDITIONAL DISCUSSION/INFORMATION: None

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 269 OF 277



12.0 CROSS REFERENCE OF FIRE AREAS/ZONES BY ELEVATIONS

ZONE DESCRIPTION

FIRE
ZONE NO. FIRE AREA

ELEVATION 317'

"B" Decay Heat Removal Pur Room (East)	10-EE	A
General Access Room	4-EE	B
Tendor Gallery Access Room	12-EE	B
"A" Decay Heat Removal Pump Room (West)	14-EE	B
General Access Room	2006-LL	B
Center Pump Room	2010-LL	B
Tendon Gallery Access	2011-LL	B
West Pump Room	2014-LL	B
East Pump Room and Gallery	2007-LL	AA

ELEVATION 335'

Safeguard Pipeway (South Under ICW Coolers) (El. 341')	40-Y	B
Lower South Piping Penetration Room	46-Y	B
Ammonia Tank Room (El. 339') and Main Steam Lines (El. 341')	75-AA	B
Dirty and Clean Lube Oil Storage Tank Room	187-DD	B
Turbine Building	197-X	B
Drumming Station	2026-Y	B
Radwaste Processing Room	20-Y	C
Purification Demineralizer Room	31-Y	C
Safeguard Pipeway (North - Flume Alley)	34-Y	C
Emergency Feedwater Pump Room	38-Y	C
Penetration Ventilation Room	47-Y	C
Lower North Piping Room	53-Y	C
Clean Waste Receiver Tank Room (El. 327')	16-Y	K

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 270 OF 277



ZONE DESCRIPTIONFIRE
ZONE NO. FIRE AREAELEVATION 335' (Continued)

Turbine Oil Storage Tank Room	2045-XX	B
Lower Storage Room	2172-ZZ	B
Neutralizer Tank Room (El. 336')	2177-YY	B
Pipeway, Equipment Access Rooms (Aux. Bldg. Extension)	2223-KK	B
Turbine Building	2200-MM	B
Regenerative Waste Tank (El. 332') and Pump Rooms	2225-WW	B
BMS Holdup Tank Vault (El. 329')	2020-JJ	K
EFW Pump Room (Turbine Driven) (El. 329')	2024-JJ	CC
BA Condensate Tank Room (El. 327')	2019-JJ	DD
Spent Resin Tank Room	2032-JJ	DD
Access Corridor; Charging Pumps; Radwaste and BMS Rooms	2040-JJ	DD
Lower South Piping Penetration Room	2055-JJ	EE
EFW Pump Room (Motor Driven) (El. 329')	2025-JJ	FF
Lower North Piping Penetration Room	2081-HH	GG

ELEVATION 354'

Lab & Demineralizer Access Room	67-U	B
Reactor Coolant Makeup Tank Room	68-P	B
Condensate Demineralizer Room	73-W	B
Boiler Room	75-AA	B
Compressor Room	76-W	B
Upper South Piping Penetration Room (El. 356')	77-V	B
Gas Bottle Storage Room (El. 357'-6")	78-BB	B
Upper North Piping Penetration Room (El. 360')	79-U	B
Lube Oil Reservoir Room	175-CC	B
Turbine Building	197-X	B

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 271 OF 277



ZONE DESCRIPTIONFIRE
ZONE NO. FIRE AREAELEVATION 354' (Continued)

Heat Exchanger Equipment Room	2078-QQ	B
Laundry Storage & Electrical Shop	2172-ZZ	B
Lube Oil Reservoir (El. 348')	2178-AAA	B
Turbine Building	2200-MM	B
Demineralizer Equipment and Storage Room; Lunch Room	2229-SS	B
Drum Filling Room	2230-RR	B
Plant Heating Boiler Room	2231-TT	B
Plant Heating Boiler Day Tank	2261-UU	B
Hot Machine Shop	2068-DD	DD
Upper South Piping Penetration Room and Equipment Room (El. 360')	2084-DD	EE
Electrical Equipment (MG Set) Room	2076-HH	GG
Upper North Piping Penetration Room (El. 356')	2081-HH	GG
Sample Room	2063-DD	HH
Volume Control Tank and Pump Room (El. 354' & 372')	2072-R	HH
Access Corridor, Pump and Tank Room (2B62/Resin Addition Room)	2073-DD	HH

ELEVATION 372'

Boiler Deaeration and Expansion Tanks Room	75-AA	B
Communications Room (El. 374')	88-Q	B
Controlled Access (El. 374') (at stairwell 1)	89-P	B
North Battery Room	95-O	B
Electrical Equip. Room (El. 368)	104-S	B
Lower South Electrical Penetration Room (El. 374'-6")	105-T	B
Turbine Building	197-X	B
North Emergency Diesel Generator Room (El. 368')	86-G	D



REV. DATE
1 07/01/93

91-E-0072-01
PAGE 272 OF 277



ZONE DESCRIPTIONFIRE
ZONE NO. FIRE AREAELEVATION 354' (Continued)

South Switchgear Room (A-3 Bus)	100-N	E
South Battery Room, Room 109 (98-J)	110-L	F
Cable Spreading room and Relay Room	97-R	G
South Emergency Diesel Generator Room (El. 368')	87-H	H
Uncontrolled Access (Corridor 98)	98-J	I
North Switchgear Room (A-4 Bus)	99-M	I
Lower North Electrical Penetration Room (El. 373'-6")	112-I	I
North Electrical Equipment Room (El. 368')	2091-BB	B
Chiller Equipment Room (El. 368')	2091-PP	B
Turbine Building	2200-MM	B
Lower North Electrical Penetration Room (El. 374'-6")	2112-BB	F
AO Shack & H&V Mechanical Equipment (El. 374'-6" & 389'-6")	2242-OO	B
CPC Room	2098-C	G
Cable Spreading Room	2098-L	G
Lower South Electrical Penetration Room (El. 374'-6"0	2111-T	EE
Motor Control Center (2B63) Room	2096-M	HH
Vacuum Degasifier Tank & Pump Room	2106-R	HH
Access Corridor (El. 372') (at stairwell 2001)	2107-N	HH
Electrical Equipment (2B9/2B10) Room	2108-S	HH
North Switchgear Room	2101-AA	II
North Emergency Diesel Generator Room (El. 369')	2094-Q	JJ
East DC Equipment Room	2097-X	JJ
Motor Control Center and Access Corridor	2109-U	JJ
South Switchgear Room	2100-Z	JJ
East Battery Room	2102-Y	JJ
South Emergency Diesel Generator Room (El. 369')	2093-P	KK
West DC Equipment (2Y11/2Y13) Room	2099-W	MM
West Battery Room	2103-V	MM

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 273 OF 277

ZONE DESCRIPTIONFIRE
ZONE NO. FIRE AREAELEVATION 386'

North Emergency Diesel Gen. Exhaust Fans	1-E	B
South Emergency Diesel Gen. Exhaust Fans	2-E	B
Boric Acid Addition Tank and Pump Room	120-E	B
Respirator Storage Room	125-E	B
Controlled Access and Health Physics Room	128-E	B
Upper South Elect. Penetration Room	144-D	B
Upper North Elect. Penetration Room, Hot Tool Room, Decontamination Room	149-E	B
Control Room	129-F	G
Turbine Building	197-X	B
EDG Air Intake Room	2114-I	B
Upper North Electrical Penetration Room	2183-J	B
Turbine Building	2200-MM	B
Chemistry Lab and Offices (El. 389'-6")	2243-NN	B
Records Storage Room (Printer Room)	2119-H	G
Controlled Access Room, Health Physics & Locker Room	2136-I	G
Upper South Elect. Penetration Room, Hot Instrument Shop and Decontamination Room	2137-I	G
Control Room	2199-G	G
Boric Acid Makeup Tank Room	2115-I	KK

ELEVATION 404'

Chemical Addition Room (Boric Acid Mix Tank)	157-B	B
Spent Fuel Room	159-B	B
Ventilation Equipment Room	161-B	B
Reactor Building Purge Room	163-B	B
Computer Transformer Room	167-B	B
Transformer Room (X-8)	168-B	B
Computer Room	169-B	B
Steam Pipe area (Penthouse)	170-Z	B
Turbine Building	197-X	B

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 274 OF 277



ZONE DESCRIPTIONFIRE
ZONE NO. FIRE AREAELEVATION 404' (Continued)

Boric Acid Mixing Room	2147-A	B
Access Corridor (El. 404') (at stairwell 2001)	2148-A	B
Fuel Handling Room	2151-A	B
Computer Room	2152-D	B
Ventilation Equipment Room (El. 404' & 422')	2153-A	B
CEDM Equipment Room	2154-E	B
Steam Pipe Room	2155-A	B
Containment Purge Air Equipment Room	2156-A	F
Core Protection Calculator Room	2150-C	G
Turbine Building	2200-MM	B

ADDITIONAL ZONES

Stairway 1 (El. 404' to 317')	162-A	B
Containment Building	32-K, 33-K	J
Diesel Fuel Storage Vaults (Unit 1 and 2)	Diesel Fuel Vault	L
Intake Structure	Int. Strut.	N
Manholes	1MH03/05	Misc.
	1MH04/06	Misc.
	1MH09/10	Misc.
Stairway 2001 (El. 422' to 317')	2149-B	B
Stairway 2055 (El. 404' to 335')	2158-F	B
Containment Building	2032-K	
	2033-K	NN

REV.	DATE
1	07/01/93

91-E-0072-01
PAGE 275 OF 277

ZONE DESCRIPTION

FIRE
ZONE NO. FIRE AREA

ADDITIONAL ZONES (Continued)

Intake Structure	Intake	
Manholes (East)	Structure	00
	2MH01E	
	2MH02E	
Manholes (West)	2MH03E	Misc.
	2MH01W	
	2MH02W	
	2MH03W	Misc.

REV. DATE
1 07/01/93

91-E-0072-01
PAGE 276 OF 277



LIST OF FIGURES

<u>FIGURE NO.</u>	<u>TITLE</u>
FP-101	Fire Zones for Fuel Handling Floor Plan El. 404'-0" & 422'-0"
FP-102	Fire Zone for Operating Floor Plan El. 386'-0"
FP-103	Fire Zones for Intermediate Floor Plan El. 368'-0" & 372'-0"
FP-104	Fire Zones for Ground Floor Plan El. 354'-0"
FP-105	Fire Zone for Plan Below Grade El. 335'-0"
FP-106	Fire Zone for Plan at El. 317'-0" & Section B-B
FP-107	Fire Zone for Section A-A
FP-108	Fire Zone for Section C-C
FP-109	Fire Zones for Emergency Diesel Fuel Vault
FP-110	Fire Zones for Intake Structure
FP-2101	Fire Zones for Fuel Handling Floor Plan El. 404'-0" & 422'-0"
FP-2102	Fire Zone for Operating Floor Plan El. 386'-0"
FP-2103	Fire Zones for Intermediate Floor Plan El. 386'-0" & 372'-0"
FP-2104	Fire Zone for Ground Floor Plan El. 354'-0"
FP-2105	Fire Zone for Plan Below Grade El. 335'-0"
FP-2106	Fire Zone for Plan at El. 317'-0"
FP-2107-1	Fire Zone for Section A-A
FP-2107-2	Fire Zone for Section F-F
FP-2108	Fire Zone for Section B-B
FP-2109	Fire Zone for Section D-D
FP-2110	Fire Zone for Intake Pump House
FP-2111	Fire Zone for Emergency Diesel Fuel Storage Vault
FP-2112	Fire Zone for Post Accident Sampling Facilities
FP-309	Emergency Lighting and Access Routes El. 317'-0"
FP-310	Emergency Lighting and Access Routes El. 335'-0"
FP-311	Emergency Lighting and Access Routes El. 354'-0"
FP-312	Emergency Lighting and Access Routes El. 368'-0" & 374'-6"
FP-313	Emergency Lighting and Access Routes El. 386'-0"
FP-314	Emergency Lighting and Access Routes El. 404'-0" & 422'-0"
FP-315	Emergency Lighting and Access Routes Admin. Bldg. -1st & 2nd Fl.
FP-2309	Emergency Lighting and Access Routes El. 317'-0"
FP-2310	Emergency Lighting and Access Routes El. 335'-0" Below Grade
FP-2311	Emergency Lighting and Access Routes El. 354'-0"
FP-2312	Emergency Lighting and Access Routes El. 386'-0" & 374'-6"
FP-2313	Emergency Lighting and Access Routes El. 386'-0"
FP-2314	Emergency Lighting and Access Routes El. 404'-0" & 433'-0"
FS-101	Fire Suppression Fuel Handling Floor Plan
FS-102	Fire Suppression Operating Floor Plan
FS-103	Fire Suppression Intermediate Floor Plan
FS-104	Fire Suppression Ground Floor Plan
FS-105	Fire Suppression Plan Below Grade
FS-2101	Fire Suppression Fuel Handling Floor Plan
FS-2102	Fire Suppression Operating Floor Plan
FS-2103	Fire Suppression Intermediate Floor Plan
FS-2104	Fire Suppression Ground Floor Plan
FS-2105	Fire Suppression Plan Below Grade
FS-2106	Fire Suppression at El. 317'-0"
FS-2107	Fire Suppression Fuel Oil Storage and Intake Structure



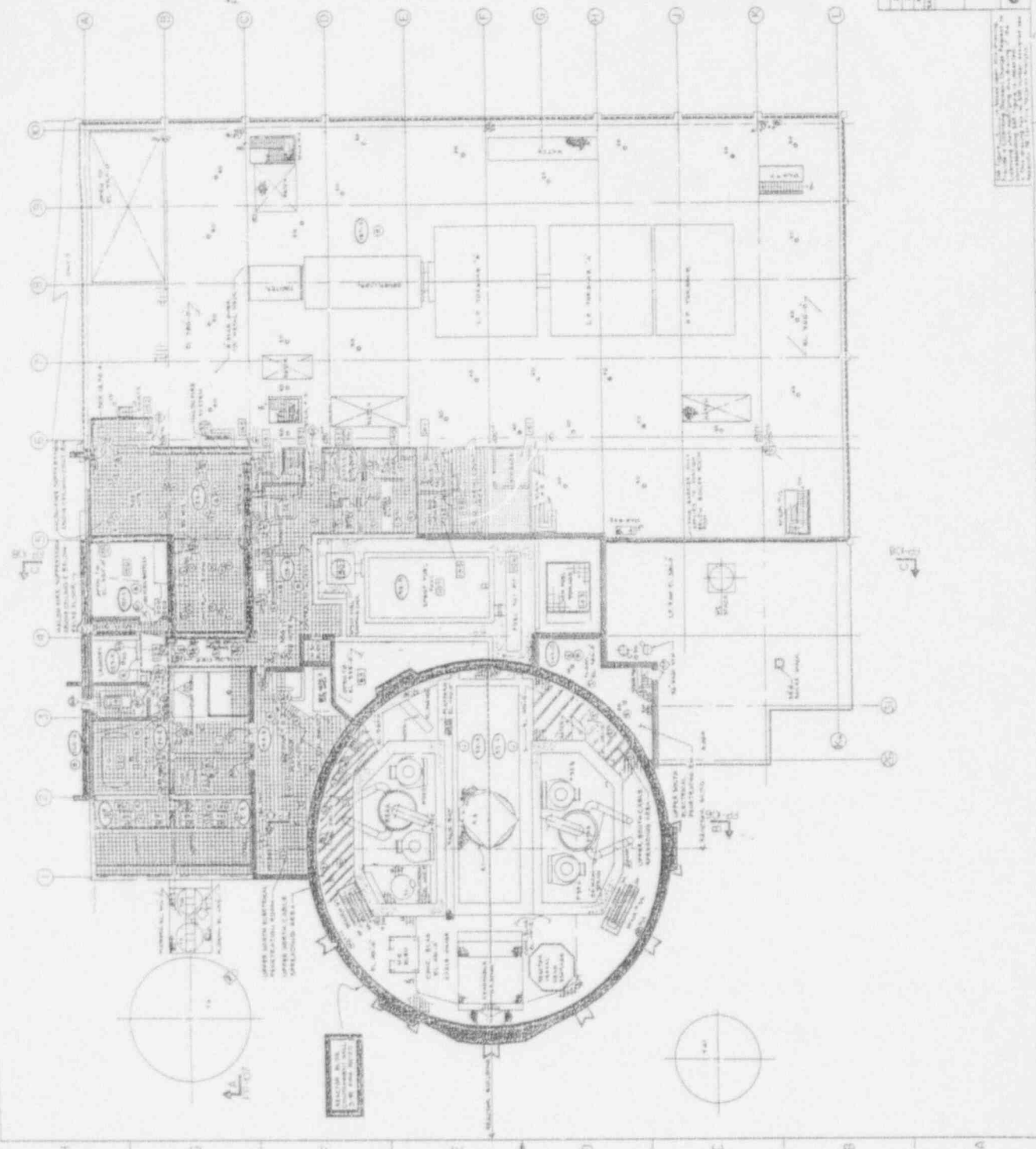


NO.	DESCRIPTION
1	GENERAL CONTRACTOR'S WORK
2	MECHANICAL CONTRACTOR'S WORK
3	ELECTRICAL CONTRACTOR'S WORK
4	PLUMBING CONTRACTOR'S WORK
5	PAINTING CONTRACTOR'S WORK
6	GLASS AND GLAZING CONTRACTOR'S WORK
7	IRONWORK CONTRACTOR'S WORK
8	CONCRETE CONTRACTOR'S WORK
9	FOUNDATION CONTRACTOR'S WORK
10	LANDSCAPE ARCHITECT'S WORK
11	ARCHITECT'S WORK

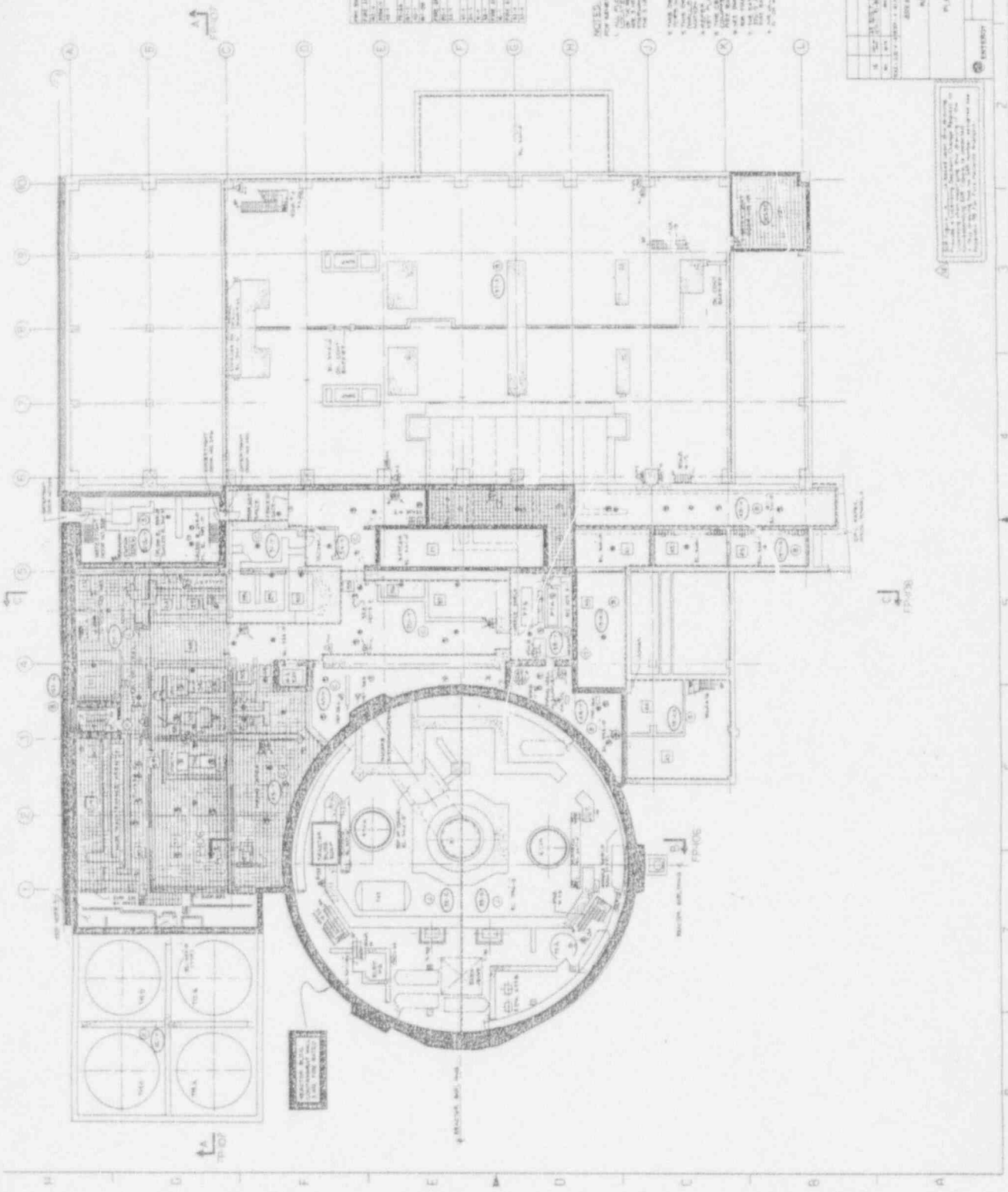
NOTES:
 1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES.
 3. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
 4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 5. ALL UTILITIES SHALL BE PROTECTED AND DEEPER THAN THE EXISTING DEPTHS.
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
 7. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 8. THE CONTRACTOR SHALL MAINTAIN A NEAT AND SAFE WORK SITE AT ALL TIMES.
 9. ALL MATERIALS SHALL BE STORED PROPERLY AND PROTECTED FROM THE ELEMENTS.
 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL WASTE MATERIALS.
 11. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.

NO.	REVISION	DATE	BY
1	ISSUED FOR PERMITTING	10/15/2023	J. SMITH
2	REVISION TO MECHANICAL ROOMS	11/05/2023	M. JONES
3	REVISION TO ELECTRICAL ROOMS	11/15/2023	K. BROWN
4	REVISION TO PLUMBING ROOMS	12/01/2023	L. GREEN
5	REVISION TO PAINTING ROOMS	12/15/2023	P. WHITE
6	REVISION TO GLASS AND GLAZING ROOMS	01/05/2024	R. BLACK
7	REVISION TO IRONWORK ROOMS	01/15/2024	S. GRAY
8	REVISION TO CONCRETE ROOMS	02/01/2024	T. BLUE
9	REVISION TO FOUNDATION ROOMS	02/15/2024	V. RED
10	REVISION TO LANDSCAPE ARCHITECT ROOMS	03/01/2024	W. PURPLE
11	REVISION TO ARCHITECT ROOMS	03/15/2024	X. YELLOW

PROJECT: EXPANDED DECKLEB ONE
 ARCHITECT: J. SMITH & ASSOCIATES
 DATE: 10/15/2023
 SHEET: 1 OF 22



PROJECT: EXPANDED DECKLEB ONE
 ARCHITECT: J. SMITH & ASSOCIATES
 DATE: 10/15/2023
 SHEET: 1 OF 22



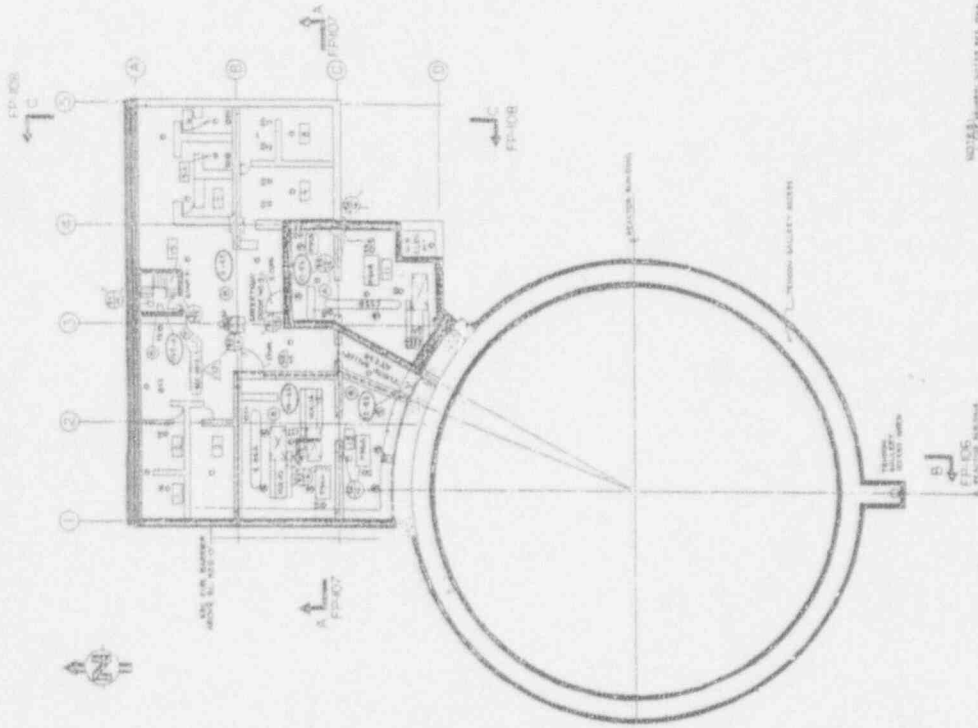
NO.	DESCRIPTION
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...
11	...
12	...
13	...
14	...
15	...
16	...
17	...
18	...
19	...
20	...

NOTES:
 1. THE GENERAL NOTES ON THIS DRAWING APPLY TO ALL SHEETS OF THIS SET.
 2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 3. FINISHES ARE AS SHOWN ON THE FINISH SCHEDULE.
 4. ALL WORK IS TO BE ACCORDING TO THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS.
 6. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 7. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND STRUCTURES.
 8. THE CONTRACTOR SHALL MAINTAIN THE SITE AT ALL TIMES.
 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PUBLIC.
 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE ENVIRONMENT.

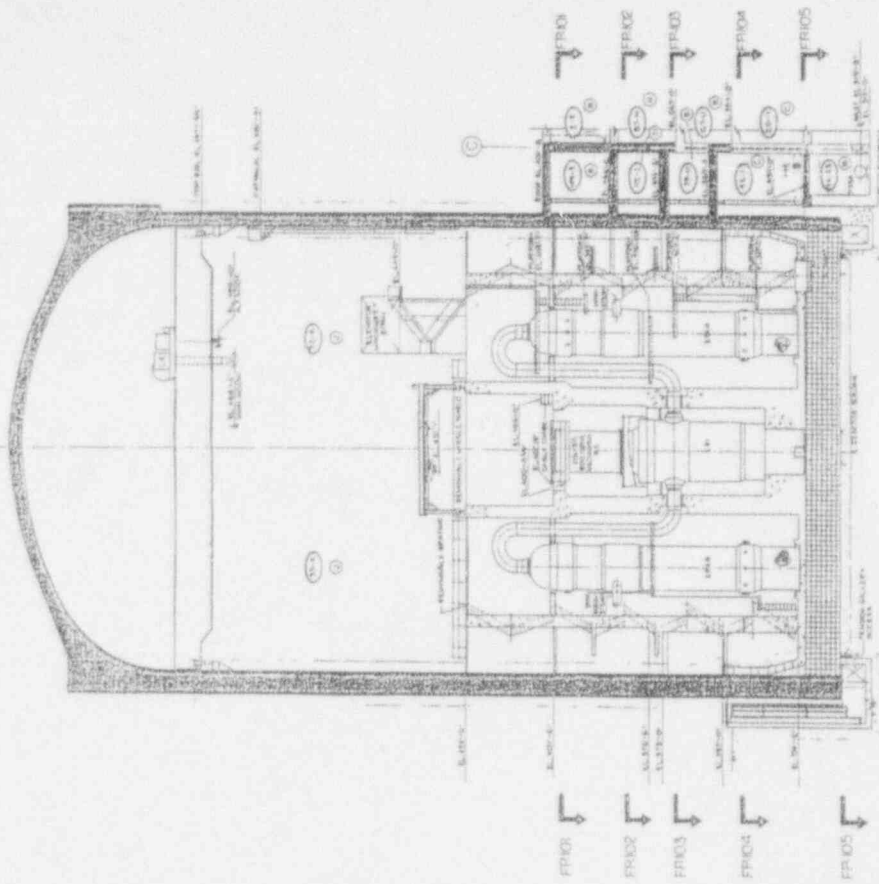
NO.	DESCRIPTION	DATE	BY	REVISION
1
2
3
4
5
6
7
8
9
10

REVISIONS:
 1. ...
 2. ...
 3. ...
 4. ...
 5. ...
 6. ...
 7. ...
 8. ...
 9. ...
 10. ...

ENTRANCE
 1. ...
 2. ...
 3. ...
 4. ...
 5. ...
 6. ...
 7. ...
 8. ...
 9. ...
 10. ...



PLAN AT ELEV. 317'-0"



SECTION B-B

- NOTES:
1. ALL WORK TO BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS FOR THE PROJECT.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AND STATE AUTHORITIES.
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
 4. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL RECORDS AND DRAWINGS.

NO.	DATE	DESCRIPTION	BY	CHECKED
1	10/15/50	ISSUED FOR PERMITS	J. H. [unclear]	[unclear]
2	10/20/50	REVISED PER COMMENTS	J. H. [unclear]	[unclear]
3	11/05/50	ISSUED FOR CONSTRUCTION	J. H. [unclear]	[unclear]

APPROVED FOR CONSTRUCTION

DATE: 11/05/50

BY: J. H. [unclear]

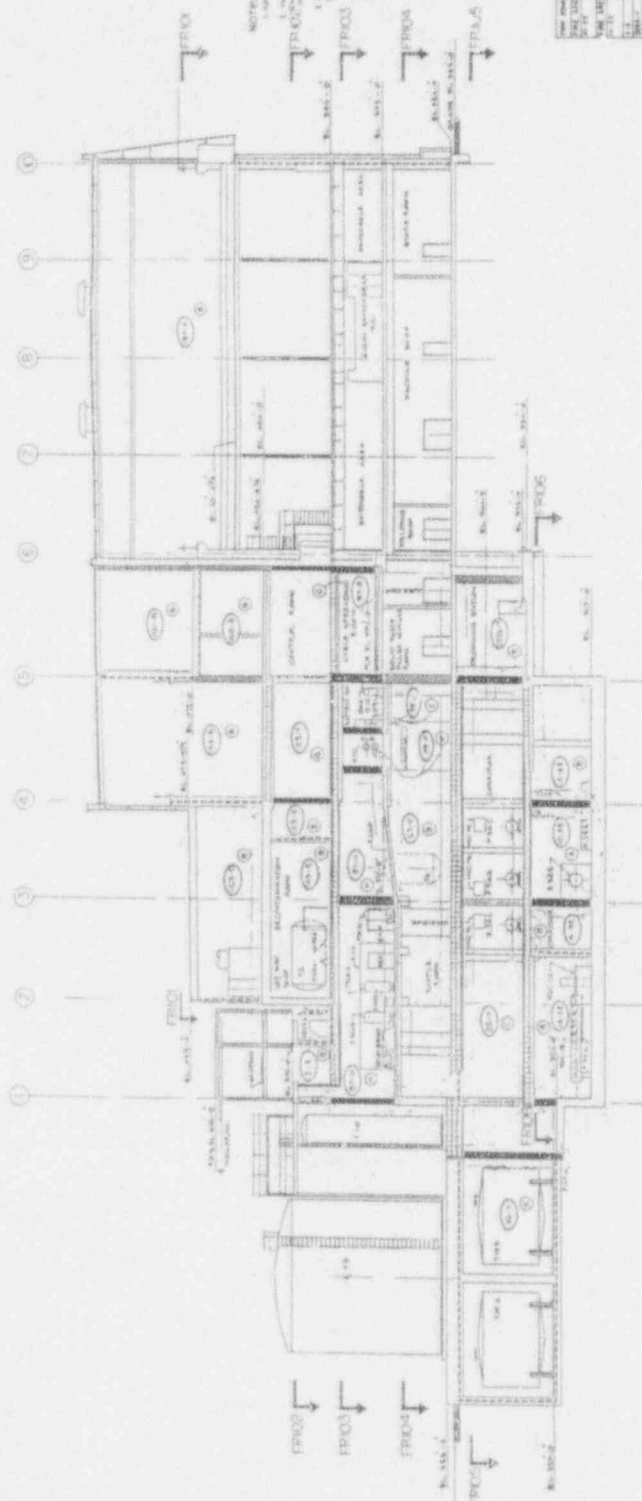
PROJECT: [unclear]

SCALE: 1" = 12'

FOR THE ARCHITECT: [unclear]

FOR THE ENGINEER: [unclear]

FOR THE CONTRACTOR: [unclear]



NOTE:
 1. ALL DIMENSIONS, UNLESS OTHERWISE SPECIFIED, ARE IN METERS.
 2. ALL WALLS AND PARTITIONS ARE 200 MM THICK UNLESS OTHERWISE SPECIFIED.
 3. ALL FLOORS AND CEILING ARE 120 MM THICK UNLESS OTHERWISE SPECIFIED.
 4. ALL ROOFING IS AS SHOWN UNLESS OTHERWISE SPECIFIED.
 5. ALL ELECTRICAL AND MECHANICAL EQUIPMENT IS TO BE INSTALLED AS SHOWN UNLESS OTHERWISE SPECIFIED.

NO.	DESCRIPTION	QTY	UNIT	REMARKS
1
2
3
4
5
6
7
8
9
10

PROJECT: ...

DATE: ...

SCALE: ...

DESIGNED BY: ...

CHECKED BY: ...

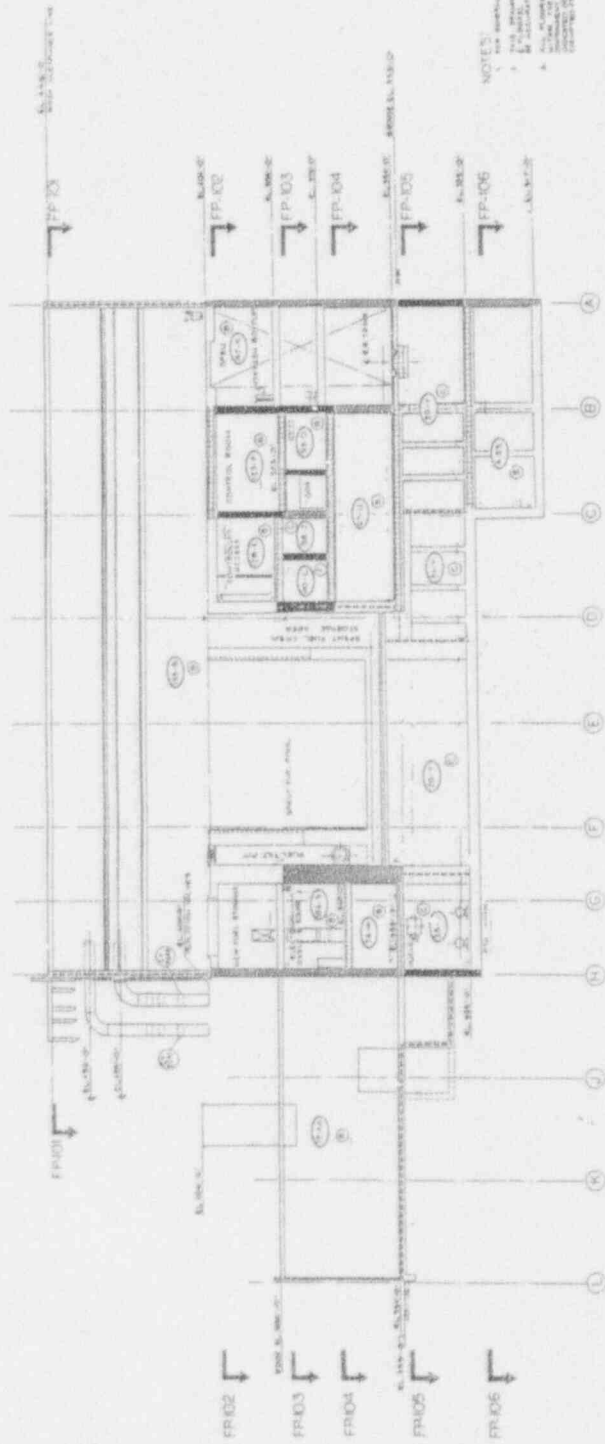
APPROVED BY: ...

UNIT: 1

FIRE ZONE SECTION A-A

FP-107

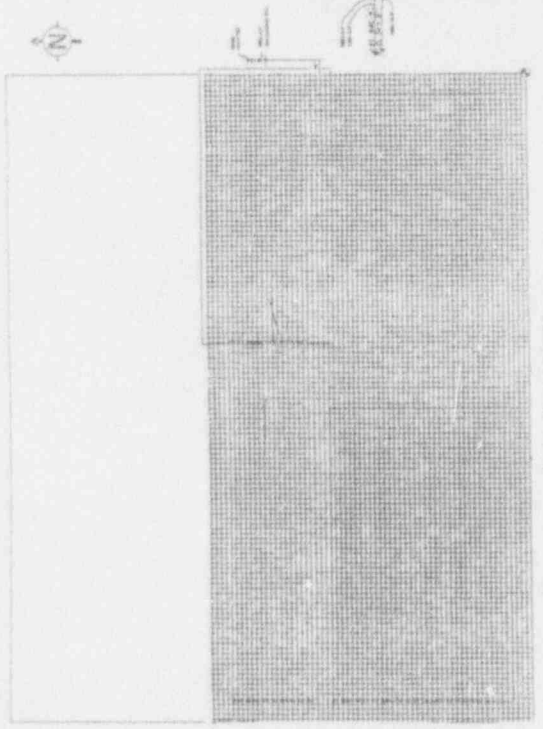
5



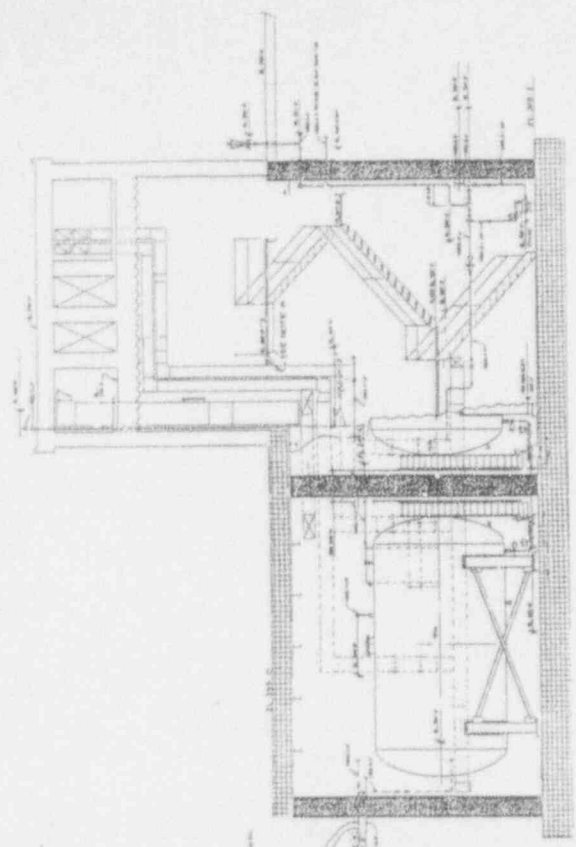
NOTES:
 1. SEE DRAWING, SHEET 100 FOR DIMENSIONS TO-TO.
 2. SEE DRAWING, SHEET 101 FOR DIMENSIONS TO-TO.
 3. SEE DRAWING, SHEET 102 FOR DIMENSIONS TO-TO.
 4. SEE DRAWING, SHEET 103 FOR DIMENSIONS TO-TO.
 5. SEE DRAWING, SHEET 104 FOR DIMENSIONS TO-TO.
 6. SEE DRAWING, SHEET 105 FOR DIMENSIONS TO-TO.
 7. SEE DRAWING, SHEET 106 FOR DIMENSIONS TO-TO.

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	10/15/58
2	ISSUED FOR PERMIT	10/15/58
3	ISSUED FOR PERMIT	10/15/58
4	ISSUED FOR PERMIT	10/15/58
5	ISSUED FOR PERMIT	10/15/58
6	ISSUED FOR PERMIT	10/15/58
7	ISSUED FOR PERMIT	10/15/58
8	ISSUED FOR PERMIT	10/15/58
9	ISSUED FOR PERMIT	10/15/58
10	ISSUED FOR PERMIT	10/15/58

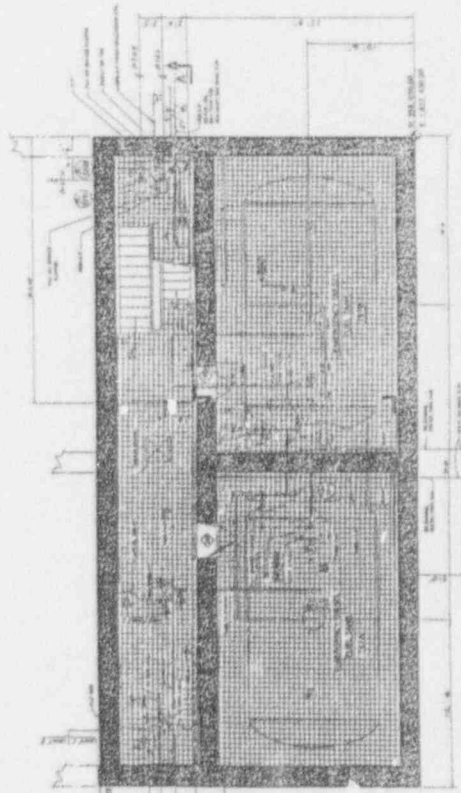
FIRE ZONE SECTION C-C FP-106	
UNIT 1 FIRE ZONE SECTION C-C FP-106	5



PLAN ENGINE COMPARTMENT



SECTION



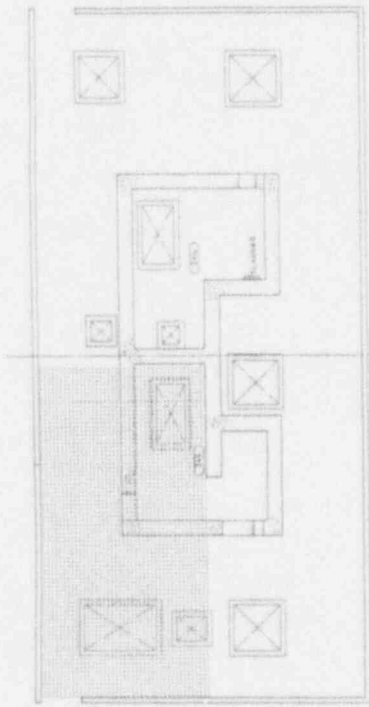
PLAN ENGINE COMPARTMENT

NOTES
 1. SEE GENERAL NOTES SET NO. 100
 2. SEE SET NO. 100 FOR DIMENSIONS
 3. SEE SET NO. 100 FOR MATERIALS
 4. SEE SET NO. 100 FOR FINISHES
 5. SEE SET NO. 100 FOR ELEVATIONS
 6. SEE SET NO. 100 FOR SCHEDULES
 7. SEE SET NO. 100 FOR SPECIFICATIONS
 8. SEE SET NO. 100 FOR CONTRACT DOCUMENTS

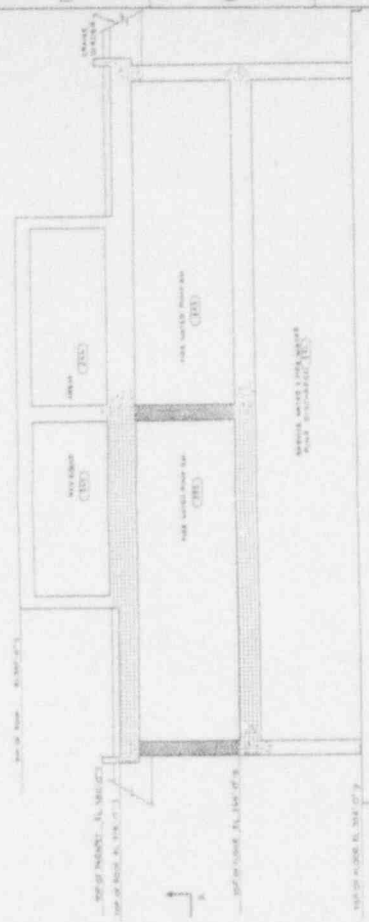
REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

PROJECT NO.	100
DATE	10/1/50
DESIGNED BY	J. H. HARRIS
CHECKED BY	J. H. HARRIS
APPROVED BY	J. H. HARRIS
TITLE	ENGINE COMPARTMENT
SCALE	AS SHOWN
PROJECT	100
SHEET NO.	1
TOTAL SHEETS	1



PLAN EL. 318'-0"



PLAN EL. 364'-0"

SECTION A

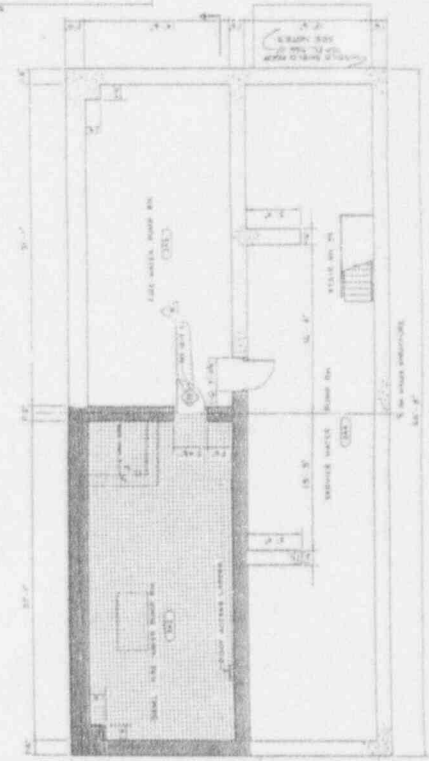


NO.	DESCRIPTION	DATE	BY	CHKD.
1	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
2	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
3	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
4	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
5	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
6	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
7	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
8	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
9	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
10	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]

APPROVED: [unclear] DATE: 11/15/50

NOTES:
 1. SEE GENERAL NOTES AND SPECIFICATIONS FOR THIS PROJECT.
 2. THIS DRAWING IS THE PROPERTY OF THE ARCHITECT AND IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT HIS WRITTEN PERMISSION.
 3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 4. THE ARCHITECT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE WORK.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF THE WORK.

FIRE ZONE
 10101-10102
 10103-10104
 10105-10106
 10107-10108
 10109-10110
 10111-10112
 10113-10114
 10115-10116
 10117-10118
 10119-10120



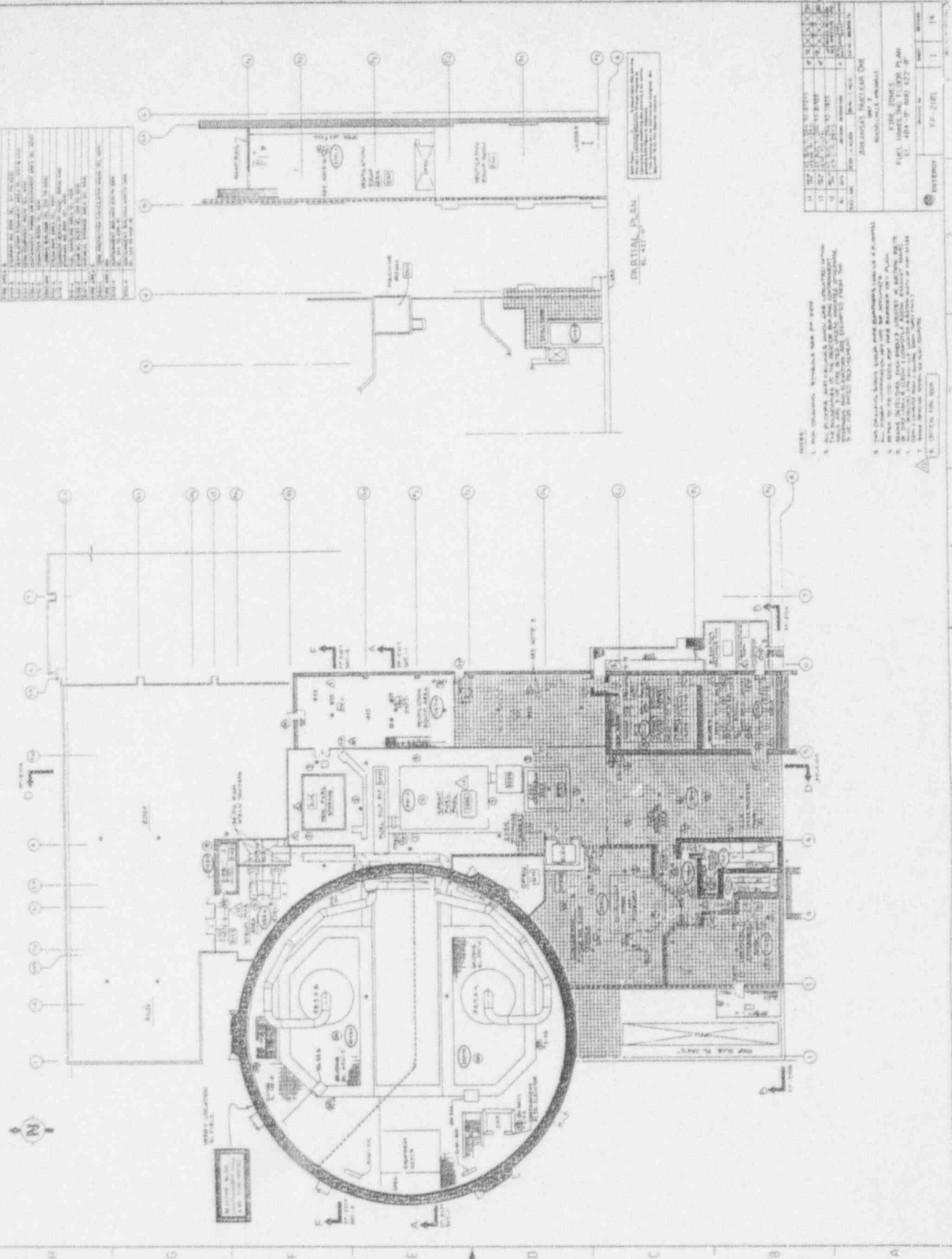
PLAN EL. 366'-0"

REVISIONS

NO.	DESCRIPTION	DATE	BY	CHKD.
1	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
2	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
3	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
4	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
5	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
6	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
7	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
8	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
9	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]
10	REVISED DRAWING	11/15/50	J. H. [unclear]	[unclear]

APPROVED: [unclear] DATE: 11/15/50

FIRE ZONE
 10101-10102
 10103-10104
 10105-10106
 10107-10108
 10109-10110
 10111-10112
 10113-10114
 10115-10116
 10117-10118
 10119-10120



NO.	DESCRIPTION
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...
11	...
12	...
13	...
14	...

DETAIL PLAN
NO. 117

NOTES:
1. THIS DRAWING IS TO BE USED FOR THE DESIGN OF THE BUILDING.
2. THE ARCHITECT IS NOT RESPONSIBLE FOR THE ACCURACY OF THE DATA.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.

NO.	DESCRIPTION	DATE	BY	CHKD.
1
2
3
4
5
6
7
8
9
10
11
12
13
14

DATE: 11/15/50
BY: [Signature]
CHKD: [Signature]

**FIRE PROTECTION
HYDRANT CONNECTION
ELECTRIC SERVICE**

10/10/58 - 10/10/58 (REV)

STAKE (MARK)

WELL LEVEL

10/10/58 (REV)

10/10/58 (REV)

PER YOUR INQUIRY

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

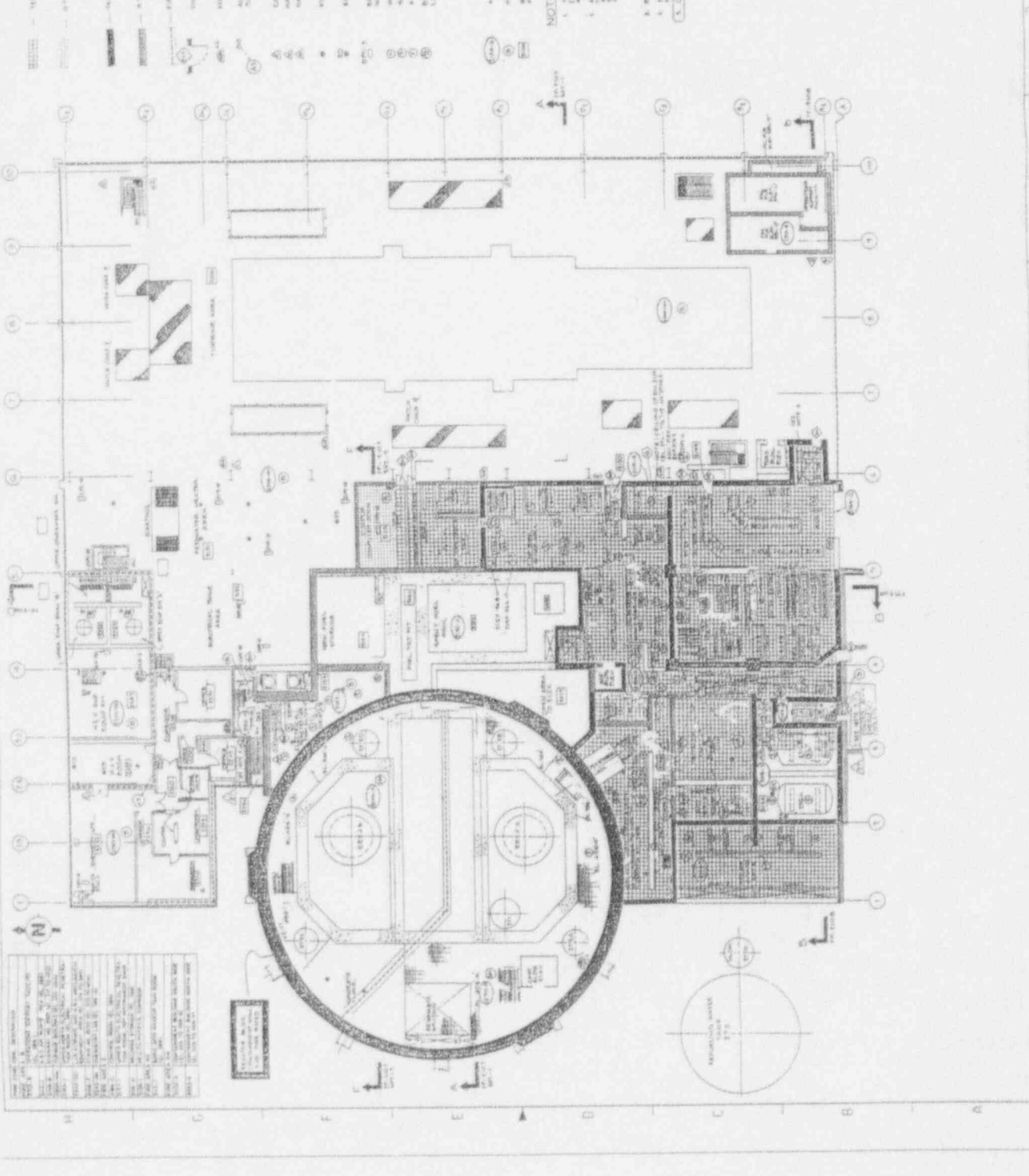
10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)



NOTES:

1. REFER TO PROJECT FOR FIRE PROTECTION PLAN.
2. THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY PERMITS AND APPROVALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY MATERIALS AND LABOR.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY UTILITY CONNECTIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY ELECTRICAL CONNECTIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY FIRE PROTECTION CONNECTIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY HYDRANT CONNECTIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY ELECTRICAL SERVICE CONNECTIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY ELECTRICAL SERVICE CONNECTIONS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL NECESSARY ELECTRICAL SERVICE CONNECTIONS.

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

10/10/58 (REV)

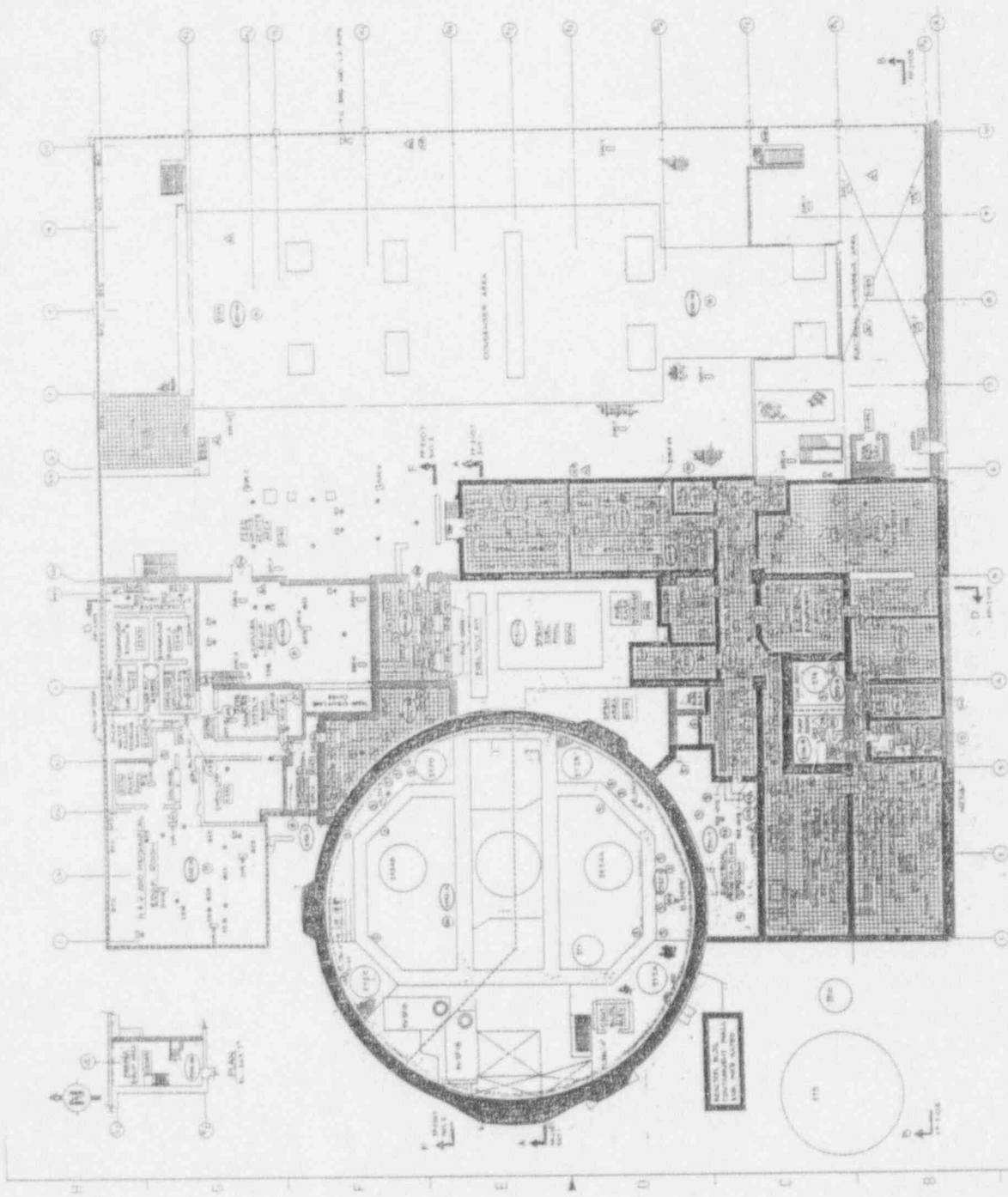
10/10/58 (REV)

NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR PERMITTING	10/10/58	J.M.
2	ISSUED FOR PERMITTING	10/10/58	J.M.
3	ISSUED FOR PERMITTING	10/10/58	J.M.
4	ISSUED FOR PERMITTING	10/10/58	J.M.
5	ISSUED FOR PERMITTING	10/10/58	J.M.
6	ISSUED FOR PERMITTING	10/10/58	J.M.
7	ISSUED FOR PERMITTING	10/10/58	J.M.
8	ISSUED FOR PERMITTING	10/10/58	J.M.
9	ISSUED FOR PERMITTING	10/10/58	J.M.
10	ISSUED FOR PERMITTING	10/10/58	J.M.
11	ISSUED FOR PERMITTING	10/10/58	J.M.
12	ISSUED FOR PERMITTING	10/10/58	J.M.

1	GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
2	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
3	THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
4	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
5	PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
6	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
7	THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
8	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
9	PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
10	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
11	THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
12	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
13	PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
14	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
15	THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
16	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
17	PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
18	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
19	THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
20	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.

- NOTES:**
1. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
 2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
 5. PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
 6. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 7. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 8. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
 9. PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
 10. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 11. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 12. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
 13. PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
 14. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 15. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 16. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
 17. PROTECT ALL EXISTING UTILITIES AND STRUCTURES TO REMAIN.
 18. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
 19. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 20. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.

NO.	DATE	DESCRIPTION
1	10/15/20	ISSUED FOR PERMIT
2	10/20/20	REVISED PER COMMENTS
3	11/05/20	REVISED PER COMMENTS
4	11/15/20	REVISED PER COMMENTS
5	12/01/20	REVISED PER COMMENTS
6	12/15/20	REVISED PER COMMENTS
7	01/05/21	REVISED PER COMMENTS
8	01/15/21	REVISED PER COMMENTS
9	02/01/21	REVISED PER COMMENTS
10	02/15/21	REVISED PER COMMENTS
11	03/01/21	REVISED PER COMMENTS
12	03/15/21	REVISED PER COMMENTS
13	04/01/21	REVISED PER COMMENTS
14	04/15/21	REVISED PER COMMENTS
15	05/01/21	REVISED PER COMMENTS
16	05/15/21	REVISED PER COMMENTS
17	06/01/21	REVISED PER COMMENTS
18	06/15/21	REVISED PER COMMENTS
19	07/01/21	REVISED PER COMMENTS
20	07/15/21	REVISED PER COMMENTS



DATE: 10/15/20
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 PROJECT: [Name]
 SHEET NO.: [Number]
 TOTAL SHEETS: [Number]

ARCHITECT: [Name]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]

ENGINEER: [Name]
 LICENSE NO.: [Number]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]

DATE: 10/15/20
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 PROJECT: [Name]
 SHEET NO.: [Number]
 TOTAL SHEETS: [Number]

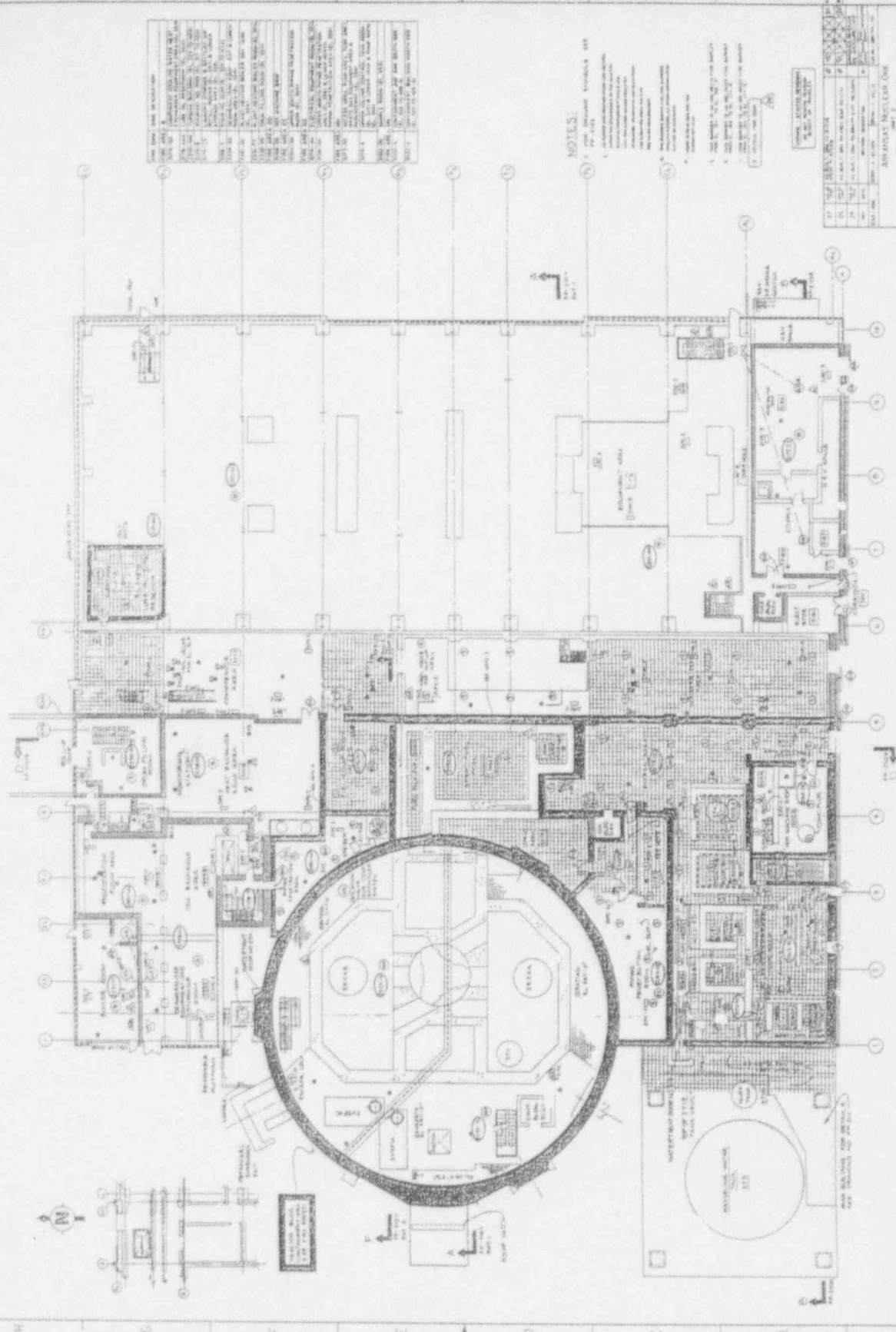
ARCHITECT: [Name]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]

ENGINEER: [Name]
 LICENSE NO.: [Number]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]

DATE: 10/15/20
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 PROJECT: [Name]
 SHEET NO.: [Number]
 TOTAL SHEETS: [Number]

ARCHITECT: [Name]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]

ENGINEER: [Name]
 LICENSE NO.: [Number]
 ADDRESS: [Address]
 PHONE: [Phone Number]
 FAX: [Fax Number]



NO.	DESCRIPTION
1	GENERAL NOTES
2	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
3	ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
4	ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE SPECIFIED.
5	ALL FINISHES ARE AS SHOWN ON THE FINISH SCHEDULE.
6	ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
7	ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
8	ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE PLUMBING CODE.
9	ALL PAINTS AND COATINGS SHALL BE AS SPECIFIED ON THE FINISH SCHEDULE.
10	ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
11	ALL CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS.
12	ALL UTILITIES SHALL BE PROTECTED AND MAINTAINED THROUGHOUT THE PROJECT.

NOTES:

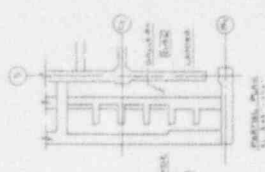
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ARCHITECT.
3. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE SPECIFIED.
4. ALL FINISHES ARE AS SHOWN ON THE FINISH SCHEDULE.
5. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
6. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
7. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE PLUMBING CODE.
8. ALL PAINTS AND COATINGS SHALL BE AS SPECIFIED ON THE FINISH SCHEDULE.
9. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
10. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS.
11. ALL UTILITIES SHALL BE PROTECTED AND MAINTAINED THROUGHOUT THE PROJECT.

NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR PERMITTING	10/15/2023	J. SMITH
2	ISSUED FOR CONSTRUCTION	11/01/2023	J. SMITH
3	ISSUED FOR OCCUPANCY	12/15/2023	J. SMITH

PROJECT NO. 2023-001
 SHEET NO. 1 OF 27
 DATE: 10/15/2023
 ARCHITECT: J. SMITH
 ENGINEER: M. JONES
 CONTRACTOR: ABC CONSTRUCTION CO.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE SPECIFIED.
 ALL FINISHES ARE AS SHOWN ON THE FINISH SCHEDULE.
 ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
 ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE PLUMBING CODE.
 ALL PAINTS AND COATINGS SHALL BE AS SPECIFIED ON THE FINISH SCHEDULE.
 ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 ALL CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS.
 ALL UTILITIES SHALL BE PROTECTED AND MAINTAINED THROUGHOUT THE PROJECT.

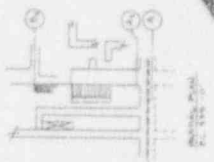
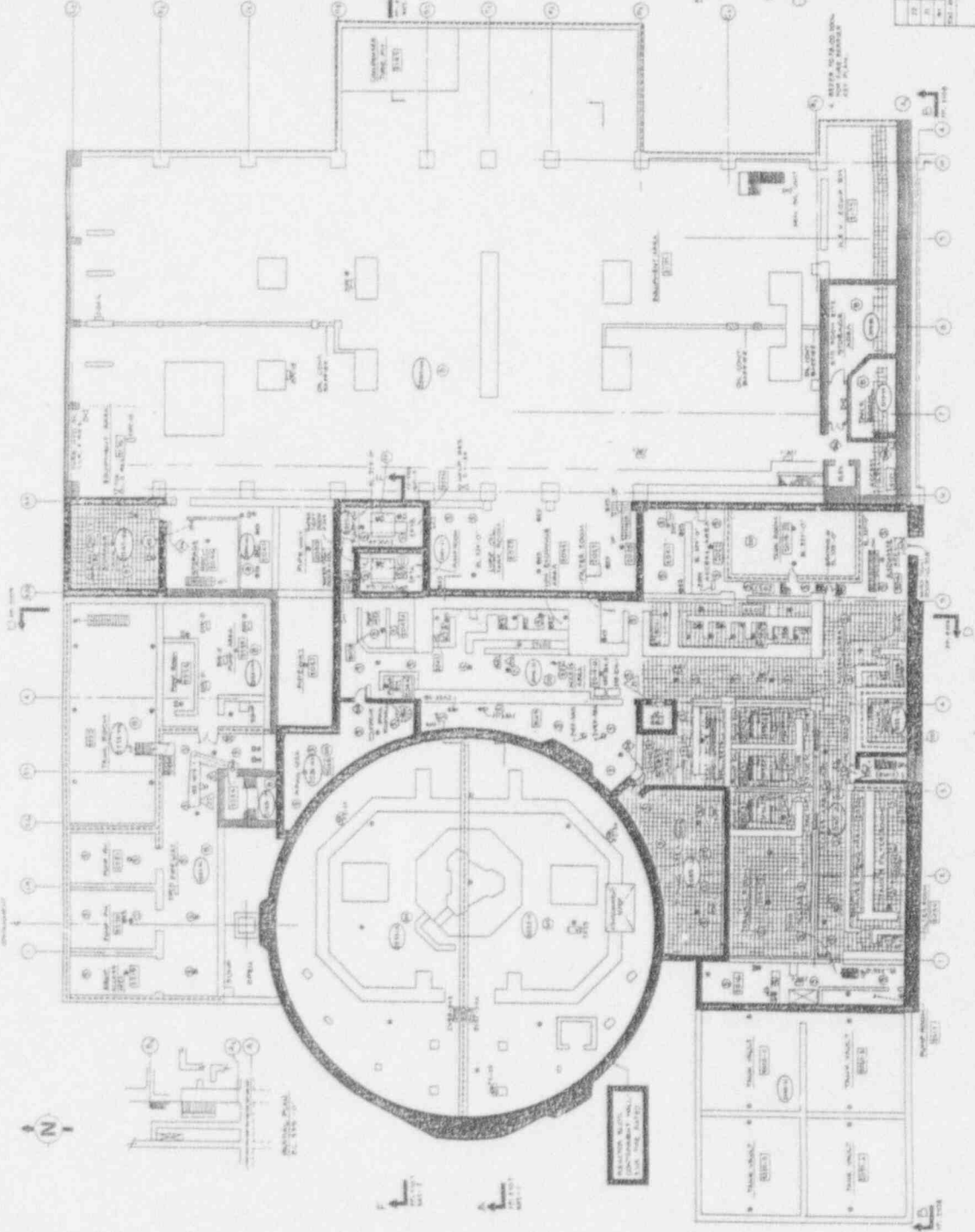
NO.	DESCRIPTION
1	SEE SHEET 77
2	SEE SHEET 77
3	SEE SHEET 77
4	SEE SHEET 77
5	SEE SHEET 77
6	SEE SHEET 77
7	SEE SHEET 77
8	SEE SHEET 77
9	SEE SHEET 77
10	SEE SHEET 77
11	SEE SHEET 77
12	SEE SHEET 77
13	SEE SHEET 77
14	SEE SHEET 77
15	SEE SHEET 77
16	SEE SHEET 77
17	SEE SHEET 77
18	SEE SHEET 77
19	SEE SHEET 77
20	SEE SHEET 77
21	SEE SHEET 77
22	SEE SHEET 77
23	SEE SHEET 77
24	SEE SHEET 77
25	SEE SHEET 77
26	SEE SHEET 77
27	SEE SHEET 77
28	SEE SHEET 77
29	SEE SHEET 77
30	SEE SHEET 77
31	SEE SHEET 77
32	SEE SHEET 77
33	SEE SHEET 77
34	SEE SHEET 77
35	SEE SHEET 77
36	SEE SHEET 77
37	SEE SHEET 77
38	SEE SHEET 77
39	SEE SHEET 77
40	SEE SHEET 77
41	SEE SHEET 77
42	SEE SHEET 77
43	SEE SHEET 77
44	SEE SHEET 77
45	SEE SHEET 77
46	SEE SHEET 77
47	SEE SHEET 77
48	SEE SHEET 77
49	SEE SHEET 77
50	SEE SHEET 77
51	SEE SHEET 77
52	SEE SHEET 77
53	SEE SHEET 77
54	SEE SHEET 77
55	SEE SHEET 77
56	SEE SHEET 77
57	SEE SHEET 77
58	SEE SHEET 77
59	SEE SHEET 77
60	SEE SHEET 77
61	SEE SHEET 77
62	SEE SHEET 77
63	SEE SHEET 77
64	SEE SHEET 77
65	SEE SHEET 77
66	SEE SHEET 77
67	SEE SHEET 77
68	SEE SHEET 77
69	SEE SHEET 77
70	SEE SHEET 77
71	SEE SHEET 77
72	SEE SHEET 77
73	SEE SHEET 77
74	SEE SHEET 77
75	SEE SHEET 77
76	SEE SHEET 77
77	SEE SHEET 77
78	SEE SHEET 77
79	SEE SHEET 77
80	SEE SHEET 77
81	SEE SHEET 77
82	SEE SHEET 77
83	SEE SHEET 77
84	SEE SHEET 77
85	SEE SHEET 77
86	SEE SHEET 77
87	SEE SHEET 77
88	SEE SHEET 77
89	SEE SHEET 77
90	SEE SHEET 77
91	SEE SHEET 77
92	SEE SHEET 77
93	SEE SHEET 77
94	SEE SHEET 77
95	SEE SHEET 77
96	SEE SHEET 77
97	SEE SHEET 77
98	SEE SHEET 77
99	SEE SHEET 77
100	SEE SHEET 77



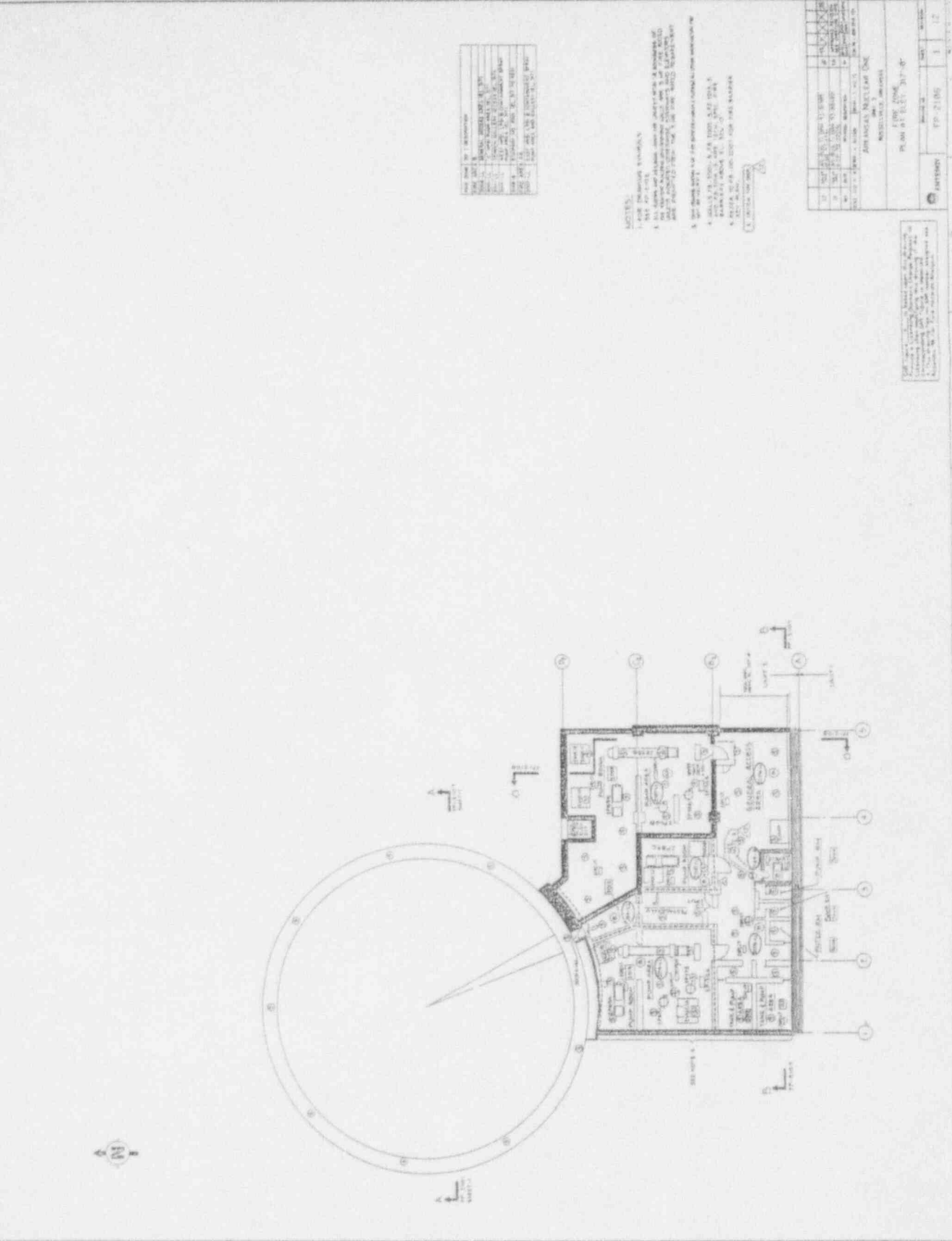
NOTES
 1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES.
 2. ALL DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED.
 3. ALL DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED.

REVISIONS
 NO. 1
 DATE 10/15/50
 BY J. H. BROWN
 CHECKED BY J. H. BROWN
 APPROVED BY J. H. BROWN

PROJECT: ARABIAN NUCLEAR ONE
 DRAWING NO. 1000000000
 SHEET NO. 1 OF 1
 DATE: 10/15/50



ARABIAN NUCLEAR ONE
 DRAWING NO. 1000000000
 SHEET NO. 1 OF 1
 DATE: 10/15/50



NO.	REVISION	DATE
1	ISSUED FOR PERMIT	10/15/58
2	REVISED TO SHOW CHANGES	11/10/58
3	REVISED TO SHOW CHANGES	12/15/58
4	REVISED TO SHOW CHANGES	1/15/59
5	REVISED TO SHOW CHANGES	2/15/59
6	REVISED TO SHOW CHANGES	3/15/59
7	REVISED TO SHOW CHANGES	4/15/59
8	REVISED TO SHOW CHANGES	5/15/59
9	REVISED TO SHOW CHANGES	6/15/59
10	REVISED TO SHOW CHANGES	7/15/59
11	REVISED TO SHOW CHANGES	8/15/59
12	REVISED TO SHOW CHANGES	9/15/59

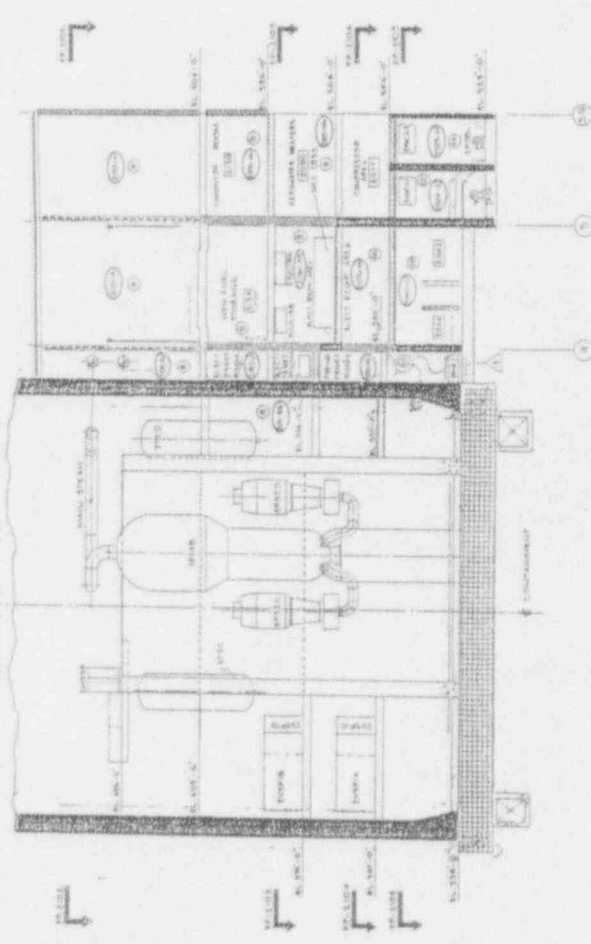
NOTES:

1. ALL WORK TO BE ACCORDING TO THE SPECIFICATIONS AND CONDITIONS OF CONTRACT.
2. ALL MATERIALS TO BE APPROVED BY THE ARCHITECT BEFORE INSTALLATION.
3. ALL WORK TO BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
4. ALL UTILITIES TO BE LOCATED AND DEEPLY MARKED BEFORE EXCAVATION.
5. ALL FOUNDATIONS TO BE CONCRETE ON COMPACTED FILL.
6. ALL ROOFING TO BE AS SPECIFIED IN THE DETAILS.
7. ALL INTERIORS TO BE FINISHED TO THE STANDARD OF A HIGH QUALITY OFFICE BUILDING.
8. ALL ELECTRICAL AND MECHANICAL SYSTEMS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST CODES AND STANDARDS.
9. ALL WORK TO BE PROTECTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
10. ALL MATERIALS TO BE STORED PROPERLY AND PROTECTED FROM THE ELEMENTS.
11. ALL WORK TO BE KEPT CLEAN AND UNCLUTTERED AT ALL TIMES.
12. ALL WORK TO BE COMPLETED AND READY FOR OCCUPANCY BY THE SPECIFIED DATE.

NO.	REVISION	DATE
1	ISSUED FOR PERMIT	10/15/58
2	REVISED TO SHOW CHANGES	11/10/58
3	REVISED TO SHOW CHANGES	12/15/58
4	REVISED TO SHOW CHANGES	1/15/59
5	REVISED TO SHOW CHANGES	2/15/59
6	REVISED TO SHOW CHANGES	3/15/59
7	REVISED TO SHOW CHANGES	4/15/59
8	REVISED TO SHOW CHANGES	5/15/59
9	REVISED TO SHOW CHANGES	6/15/59
10	REVISED TO SHOW CHANGES	7/15/59
11	REVISED TO SHOW CHANGES	8/15/59
12	REVISED TO SHOW CHANGES	9/15/59

THIS PLAN IS THE PROPERTY OF THE ARCHITECT AND IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT. ANY UNAUTHORIZED REPRODUCTION OR COPIING IS STRICTLY PROHIBITED AND WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

DATE	10/15/58
SCALE	1/8" = 1'-0"
PROJECT	OFFICE BUILDING
NO.	1
TOTAL	12



SECTION FF

NOTES:

1. SEE WALLING SPECIFICATIONS FOR WALLS.
2. ALL DIMENSIONS AND FINISHES SHOWN ARE UNLESS OTHERWISE NOTED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
4. THIS DRAWING SHOWS THE GENERAL LAYOUT OF THE WORK AND SHALL BE SUPPLEMENTED BY THE CONTRACT DOCUMENTS.

FOR FURTHER INFORMATION, CONTACT THE ARCHITECT AT THE ADDRESS LISTED BELOW. THE ARCHITECT'S OFFICE IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION CONTAINED HEREIN.

NO.	DATE	DESCRIPTION
1	10/15/2010	ISSUED FOR PERMIT
2	10/20/2010	ISSUED FOR CONSTRUCTION
3	11/01/2010	ISSUED FOR RECORD

PROJECT: [REDACTED]
 ARCHITECT: [REDACTED]
 ENGINEER: [REDACTED]

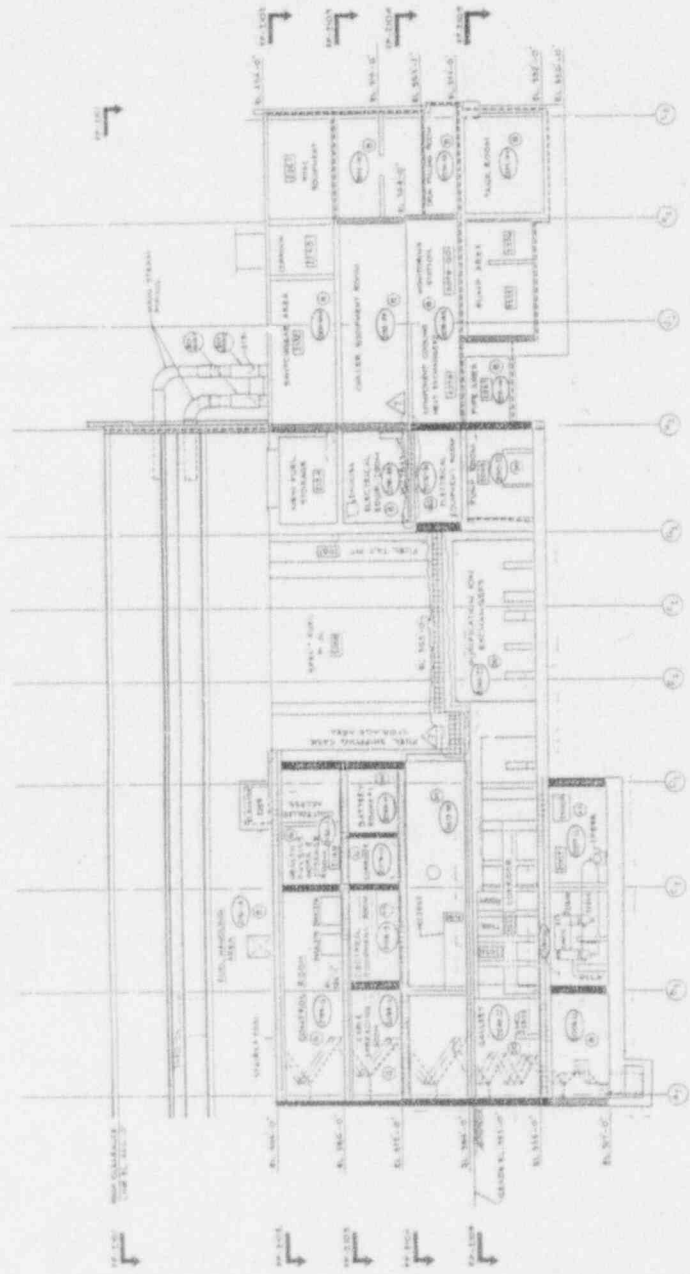
NO.	DESCRIPTION
1	GENERAL CONTRACTOR
2	MECHANICAL CONTRACTOR
3	ELECTRICAL CONTRACTOR
4	PLUMBING CONTRACTOR
5	PAINT CONTRACTOR
6	GLASS CONTRACTOR
7	IRON WORK CONTRACTOR
8	ROOFING CONTRACTOR
9	CONCRETE CONTRACTOR
10	FOUNDATION CONTRACTOR
11	LANDSCAPE CONTRACTOR
12	ARCHITECT
13	ENGINEER
14	INSURANCE AGENT
15	LEGAL COUNSEL
16	FINANCIAL ADVISOR
17	PROPERTY MANAGER
18	CONSTRUCTION MANAGER
19	GENERAL SUPERVISOR
20	PROJECT MANAGER

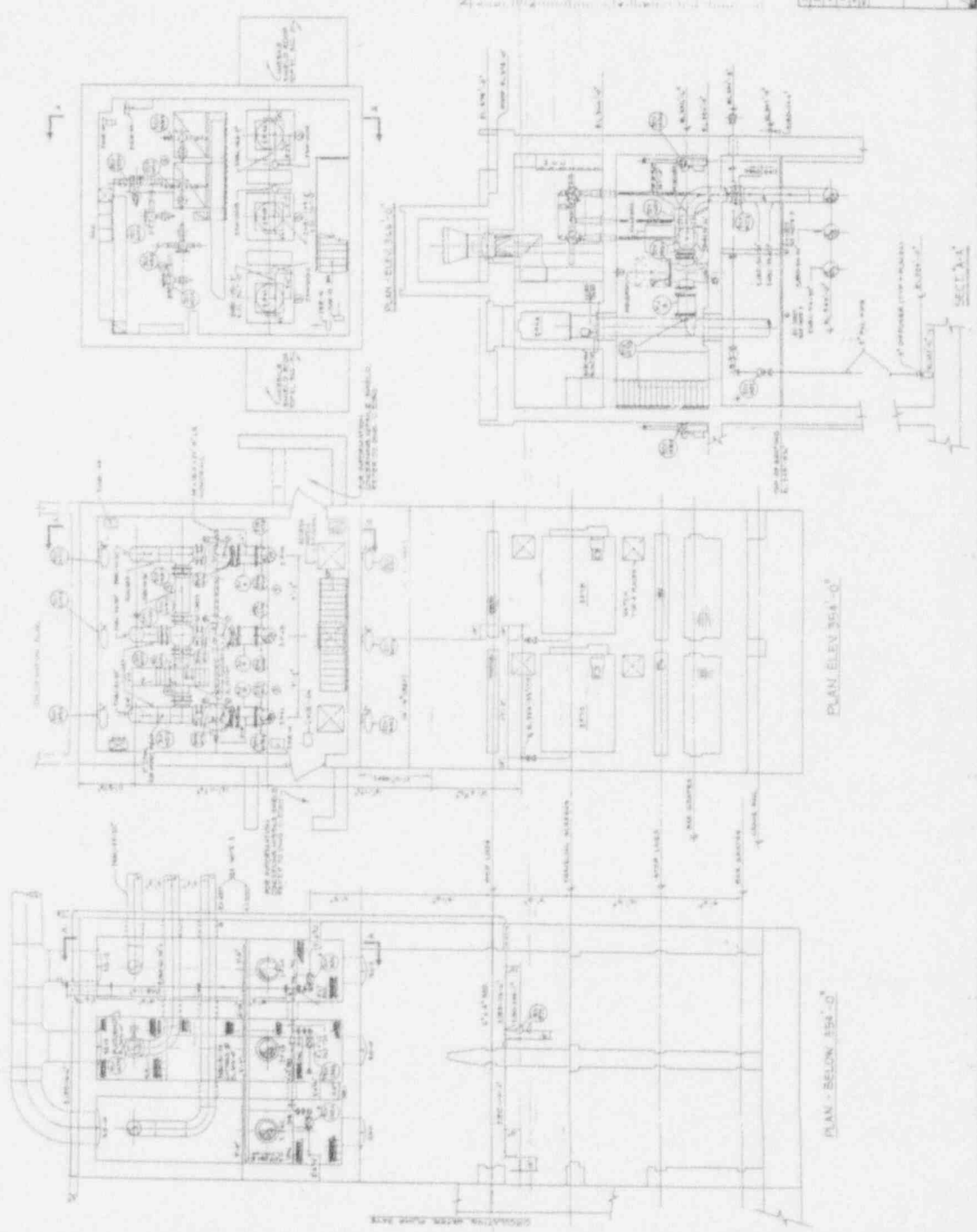
NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE BUILDING CODES AND SPECIFICATIONS.
2. ALL MATERIALS AND METHODS SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER.
3. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS.
5. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
6. ALL UTILITIES SHALL BE PROTECTED AND MARKED PRIOR TO ANY EXCAVATION WORK.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ALL EXISTING UTILITIES AND STRUCTURES.
8. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SCHEDULE AND BUDGET.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL WORKERS AND THE PUBLIC.
10. ALL MATERIALS AND METHODS SHALL BE DOCUMENTED AND SUBMITTED FOR REVIEW.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ALL EXISTING UTILITIES AND STRUCTURES.
12. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SCHEDULE AND BUDGET.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL WORKERS AND THE PUBLIC.
14. ALL MATERIALS AND METHODS SHALL BE DOCUMENTED AND SUBMITTED FOR REVIEW.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ALL EXISTING UTILITIES AND STRUCTURES.
16. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SCHEDULE AND BUDGET.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL WORKERS AND THE PUBLIC.
18. ALL MATERIALS AND METHODS SHALL BE DOCUMENTED AND SUBMITTED FOR REVIEW.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ALL EXISTING UTILITIES AND STRUCTURES.
20. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE SCHEDULE AND BUDGET.

NO.	DESCRIPTION
1	GENERAL CONTRACTOR
2	MECHANICAL CONTRACTOR
3	ELECTRICAL CONTRACTOR
4	PLUMBING CONTRACTOR
5	PAINT CONTRACTOR
6	GLASS CONTRACTOR
7	IRON WORK CONTRACTOR
8	ROOFING CONTRACTOR
9	CONCRETE CONTRACTOR
10	FOUNDATION CONTRACTOR
11	LANDSCAPE CONTRACTOR
12	ARCHITECT
13	ENGINEER
14	INSURANCE AGENT
15	LEGAL COUNSEL
16	FINANCIAL ADVISOR
17	PROPERTY MANAGER
18	CONSTRUCTION MANAGER
19	GENERAL SUPERVISOR
20	PROJECT MANAGER

410
 FIRE ZONE
 SECTION D-D
 FP-2109
 9



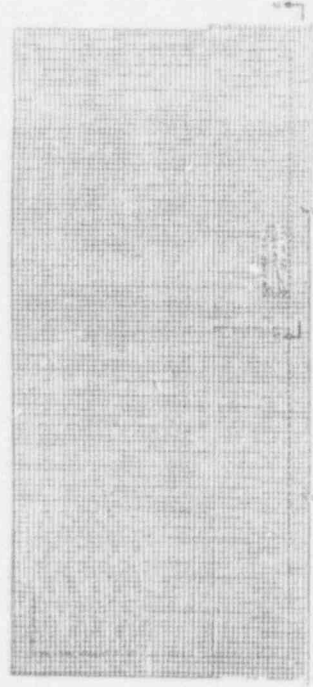
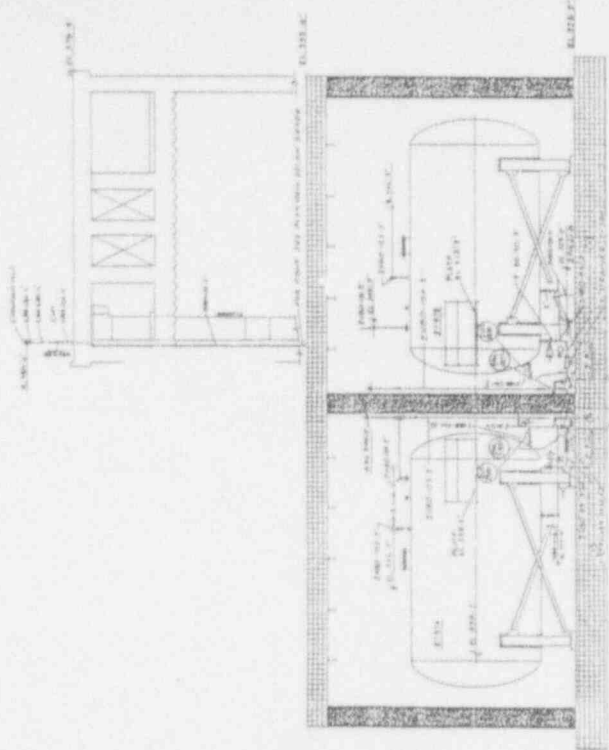


NOTES

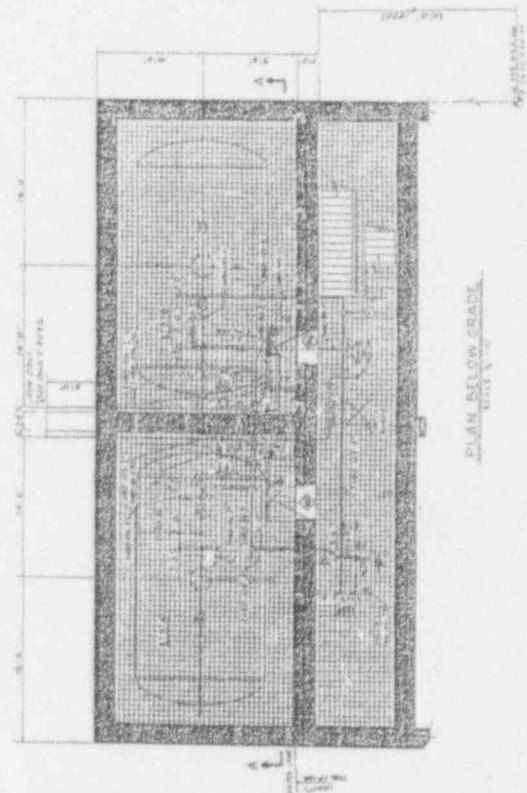
1. SEE GENERAL NOTES TO THE DRAWING.
2. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
3. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
4. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
5. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
6. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
7. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
8. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
9. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.
10. THE STRUCTURE IS TO BE BUILT IN CONJUNCTION WITH THE ELEVATOR.

NO.	DATE	BY	CHKD.	APP.
1	10/1/54	J. J. [unclear]	[unclear]	[unclear]
2	10/1/54	[unclear]	[unclear]	[unclear]
3	10/1/54	[unclear]	[unclear]	[unclear]
4	10/1/54	[unclear]	[unclear]	[unclear]
5	10/1/54	[unclear]	[unclear]	[unclear]
6	10/1/54	[unclear]	[unclear]	[unclear]
7	10/1/54	[unclear]	[unclear]	[unclear]
8	10/1/54	[unclear]	[unclear]	[unclear]
9	10/1/54	[unclear]	[unclear]	[unclear]
10	10/1/54	[unclear]	[unclear]	[unclear]

FIRE ZONE
 INTAKE PUMP HOUSE
 PROJECT NO. FP-210
 SHEET NO. 4

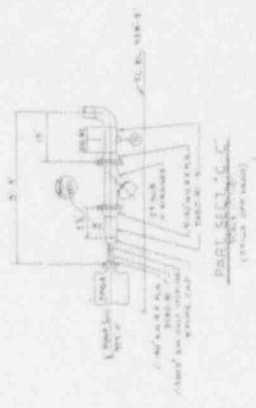


PLAN ABOVE GRADE
SCALE 1/8" = 1'-0"

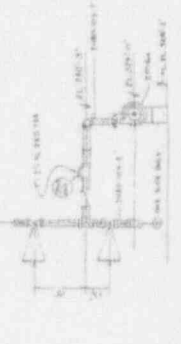


PLAN BELOW GRADE
SCALE 1/8" = 1'-0"

SECTION A-A
SCALE 3/4" = 1'-0"



SECTION B-B
SCALE 3/4" = 1'-0"

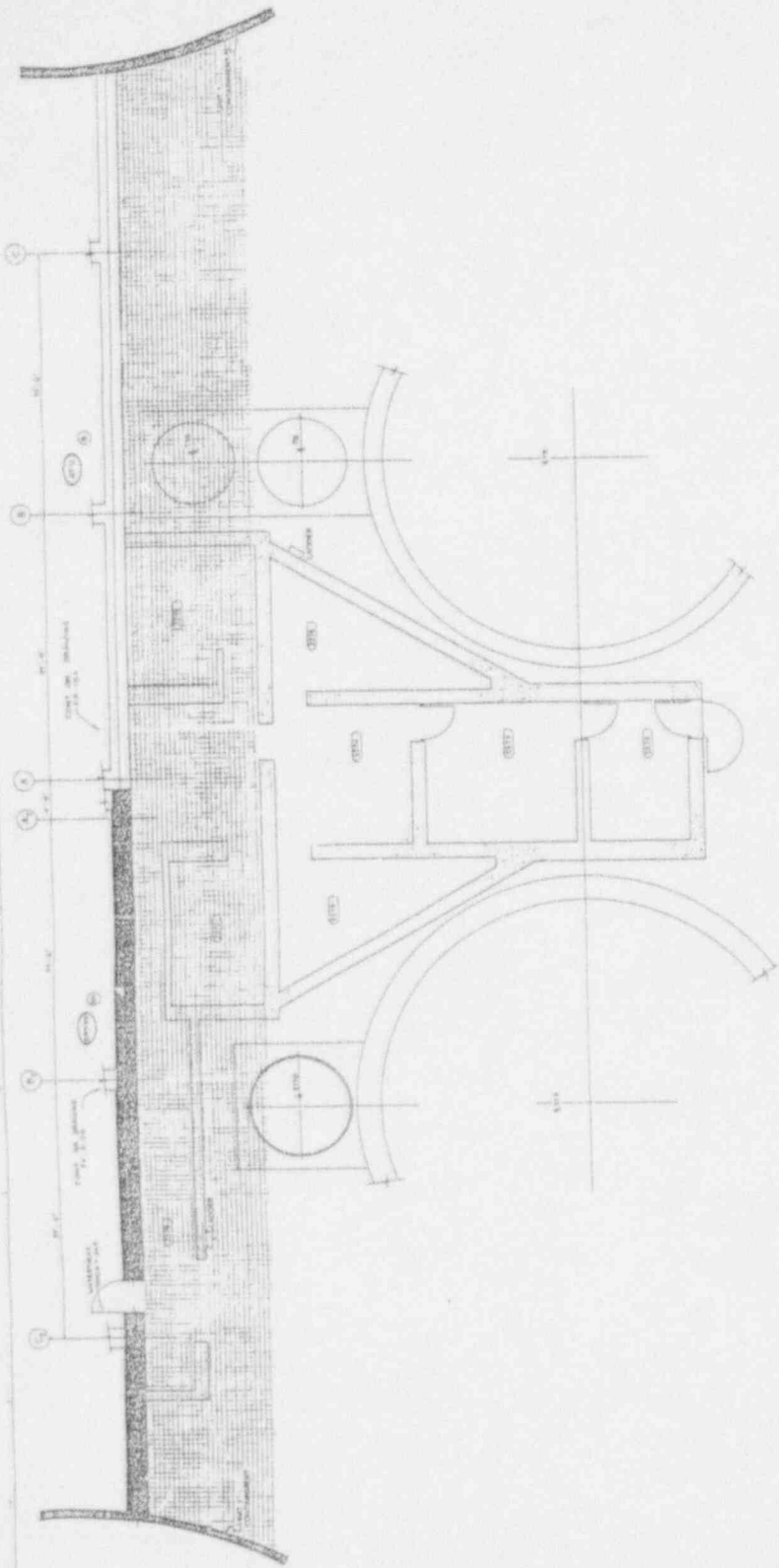


SECTION B-B
SCALE 3/4" = 1'-0"

- NOTES
1. FOR DIMENSIONS, REFER TO SHEET 133-1
 2. THIS DRAWING, UNLESS OTHERWISE SPECIFIED, SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF AREA 133-1
 3. THIS AREA IS DESIGNATED FOR AREA 133-1

DESIGN		APPROVED	
DATE: 10/1/50		DATE: 10/1/50	
BY: [Signature]		BY: [Signature]	
CHECKED BY: [Signature]		CHECKED BY: [Signature]	

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	10/1/50
2	REVISIONS	
3		
4		
5		
6		
7		
8		
9		
10		



NOTES:
 1. THE ARCHITECT HAS BEEN ADVISED THAT THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

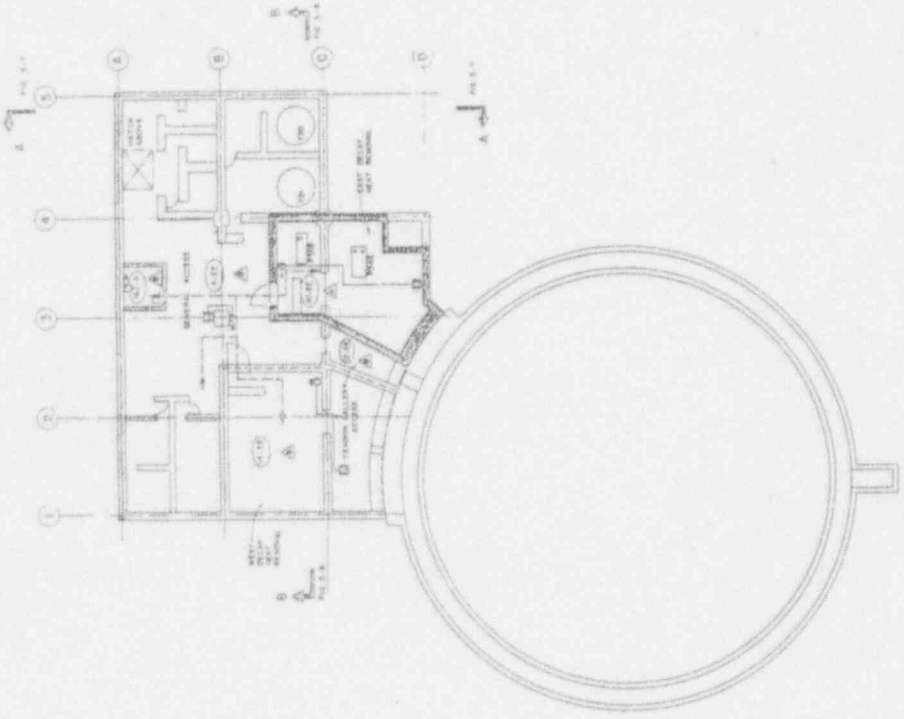
NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
2	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
3	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
4	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.

ARCHITECT: J.M. JONES
 PROJECT: RESEARCH SUPPLYING FACILITIES
 CLIENT: ARMOYNS NUCLEAR ONE
 ADDRESS: WILLS LAKE PLAZA
 DALLAS, TEXAS 75201

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
2	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
3	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.
4	10/1/67	ISSUED FOR PERMIT	J.M.	J.M.

ARCHITECT: J.M. JONES
 PROJECT: RESEARCH SUPPLYING FACILITIES
 CLIENT: ARMOYNS NUCLEAR ONE
 ADDRESS: WILLS LAKE PLAZA
 DALLAS, TEXAS 75201

FOR THE ARCHITECT:
 J.M. JONES
 ARCHITECT
 1000 WILLS LAKE PLAZA
 DALLAS, TEXAS 75201
 TEL: 754-4400



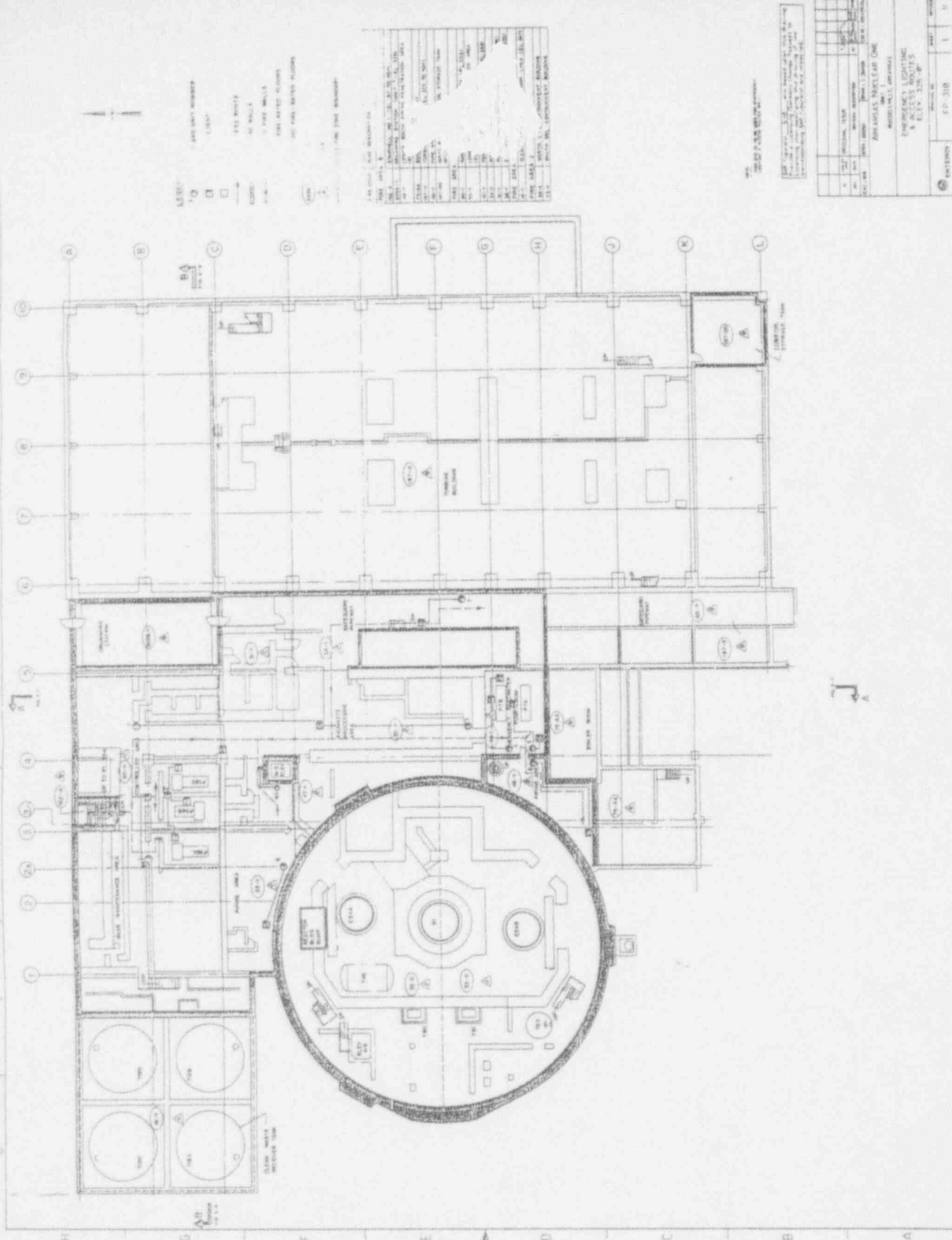
- LEGEND**
- ① - 1/2" LIGHT AND SMOKE DIMMER
 - ② - 1/2" DIMMER
 - ③ - 1/2" LIGHT
 - ④ - 1/2" LIGHT
 - ⑤ - 1/2" LIGHT
 - ⑥ - 1/2" LIGHT
 - ⑦ - 1/2" LIGHT
 - ⑧ - 1/2" LIGHT
 - ⑨ - 1/2" LIGHT
 - ⑩ - 1/2" LIGHT
 - ⑪ - 1/2" LIGHT
 - ⑫ - 1/2" LIGHT
 - ⑬ - 1/2" LIGHT
 - ⑭ - 1/2" LIGHT
 - ⑮ - 1/2" LIGHT
 - ⑯ - 1/2" LIGHT
 - ⑰ - 1/2" LIGHT
 - ⑱ - 1/2" LIGHT
 - ⑲ - 1/2" LIGHT
 - ⑳ - 1/2" LIGHT
 - ㉑ - 1/2" LIGHT
 - ㉒ - 1/2" LIGHT
 - ㉓ - 1/2" LIGHT
 - ㉔ - 1/2" LIGHT
 - ㉕ - 1/2" LIGHT
 - ㉖ - 1/2" LIGHT
 - ㉗ - 1/2" LIGHT
 - ㉘ - 1/2" LIGHT
 - ㉙ - 1/2" LIGHT
 - ㉚ - 1/2" LIGHT
 - ㉛ - 1/2" LIGHT
 - ㉜ - 1/2" LIGHT
 - ㉝ - 1/2" LIGHT
 - ㉞ - 1/2" LIGHT
 - ㉟ - 1/2" LIGHT
 - ㊱ - 1/2" LIGHT
 - ㊲ - 1/2" LIGHT
 - ㊳ - 1/2" LIGHT
 - ㊴ - 1/2" LIGHT
 - ㊵ - 1/2" LIGHT
 - ㊶ - 1/2" LIGHT
 - ㊷ - 1/2" LIGHT
 - ㊸ - 1/2" LIGHT
 - ㊹ - 1/2" LIGHT
 - ㊺ - 1/2" LIGHT
 - ㊻ - 1/2" LIGHT
 - ㊼ - 1/2" LIGHT
 - ㊽ - 1/2" LIGHT
 - ㊾ - 1/2" LIGHT
 - ㊿ - 1/2" LIGHT

LINE NO.	DESCRIPTION
1	1/2" LIGHT
2	1/2" LIGHT
3	1/2" LIGHT
4	1/2" LIGHT
5	1/2" LIGHT
6	1/2" LIGHT
7	1/2" LIGHT
8	1/2" LIGHT
9	1/2" LIGHT
10	1/2" LIGHT
11	1/2" LIGHT
12	1/2" LIGHT
13	1/2" LIGHT
14	1/2" LIGHT
15	1/2" LIGHT
16	1/2" LIGHT
17	1/2" LIGHT
18	1/2" LIGHT
19	1/2" LIGHT
20	1/2" LIGHT
21	1/2" LIGHT
22	1/2" LIGHT
23	1/2" LIGHT
24	1/2" LIGHT
25	1/2" LIGHT
26	1/2" LIGHT
27	1/2" LIGHT
28	1/2" LIGHT
29	1/2" LIGHT
30	1/2" LIGHT
31	1/2" LIGHT
32	1/2" LIGHT
33	1/2" LIGHT
34	1/2" LIGHT
35	1/2" LIGHT
36	1/2" LIGHT
37	1/2" LIGHT
38	1/2" LIGHT
39	1/2" LIGHT
40	1/2" LIGHT
41	1/2" LIGHT
42	1/2" LIGHT
43	1/2" LIGHT
44	1/2" LIGHT
45	1/2" LIGHT
46	1/2" LIGHT
47	1/2" LIGHT
48	1/2" LIGHT
49	1/2" LIGHT
50	1/2" LIGHT

DATE: 1/15/64
 DRAWN BY: J. H. BROWN
 CHECKED BY: J. H. BROWN

NO.	DESCRIPTION	DATE	BY
1	1/2" LIGHT	1/15/64	J. H. BROWN
2	1/2" LIGHT	1/15/64	J. H. BROWN
3	1/2" LIGHT	1/15/64	J. H. BROWN
4	1/2" LIGHT	1/15/64	J. H. BROWN
5	1/2" LIGHT	1/15/64	J. H. BROWN
6	1/2" LIGHT	1/15/64	J. H. BROWN
7	1/2" LIGHT	1/15/64	J. H. BROWN
8	1/2" LIGHT	1/15/64	J. H. BROWN
9	1/2" LIGHT	1/15/64	J. H. BROWN
10	1/2" LIGHT	1/15/64	J. H. BROWN
11	1/2" LIGHT	1/15/64	J. H. BROWN
12	1/2" LIGHT	1/15/64	J. H. BROWN
13	1/2" LIGHT	1/15/64	J. H. BROWN
14	1/2" LIGHT	1/15/64	J. H. BROWN
15	1/2" LIGHT	1/15/64	J. H. BROWN
16	1/2" LIGHT	1/15/64	J. H. BROWN
17	1/2" LIGHT	1/15/64	J. H. BROWN
18	1/2" LIGHT	1/15/64	J. H. BROWN
19	1/2" LIGHT	1/15/64	J. H. BROWN
20	1/2" LIGHT	1/15/64	J. H. BROWN
21	1/2" LIGHT	1/15/64	J. H. BROWN
22	1/2" LIGHT	1/15/64	J. H. BROWN
23	1/2" LIGHT	1/15/64	J. H. BROWN
24	1/2" LIGHT	1/15/64	J. H. BROWN
25	1/2" LIGHT	1/15/64	J. H. BROWN
26	1/2" LIGHT	1/15/64	J. H. BROWN
27	1/2" LIGHT	1/15/64	J. H. BROWN
28	1/2" LIGHT	1/15/64	J. H. BROWN
29	1/2" LIGHT	1/15/64	J. H. BROWN
30	1/2" LIGHT	1/15/64	J. H. BROWN
31	1/2" LIGHT	1/15/64	J. H. BROWN
32	1/2" LIGHT	1/15/64	J. H. BROWN
33	1/2" LIGHT	1/15/64	J. H. BROWN
34	1/2" LIGHT	1/15/64	J. H. BROWN
35	1/2" LIGHT	1/15/64	J. H. BROWN
36	1/2" LIGHT	1/15/64	J. H. BROWN
37	1/2" LIGHT	1/15/64	J. H. BROWN
38	1/2" LIGHT	1/15/64	J. H. BROWN
39	1/2" LIGHT	1/15/64	J. H. BROWN
40	1/2" LIGHT	1/15/64	J. H. BROWN
41	1/2" LIGHT	1/15/64	J. H. BROWN
42	1/2" LIGHT	1/15/64	J. H. BROWN
43	1/2" LIGHT	1/15/64	J. H. BROWN
44	1/2" LIGHT	1/15/64	J. H. BROWN
45	1/2" LIGHT	1/15/64	J. H. BROWN
46	1/2" LIGHT	1/15/64	J. H. BROWN
47	1/2" LIGHT	1/15/64	J. H. BROWN
48	1/2" LIGHT	1/15/64	J. H. BROWN
49	1/2" LIGHT	1/15/64	J. H. BROWN
50	1/2" LIGHT	1/15/64	J. H. BROWN

PROJECT: 1/15/64
 DRAWN BY: J. H. BROWN
 CHECKED BY: J. H. BROWN
 DATE: 1/15/64
 SCALE: 1/8" = 1'-0"



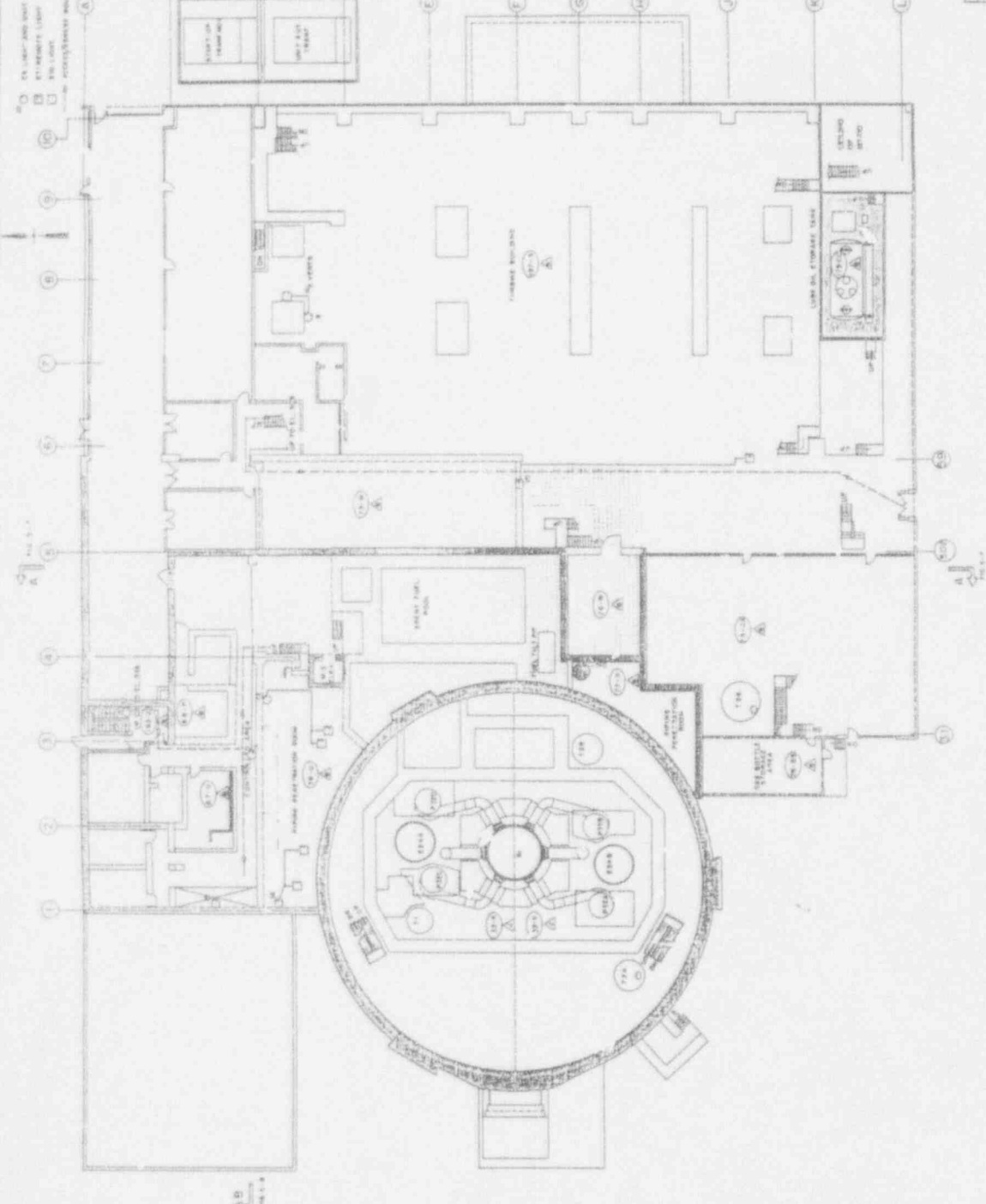
ALL DIMENSIONS IN METERS
 UNLESS OTHERWISE SPECIFIED
 ALL WALLS 100mm THICK
 ALL FLOORS 100mm THICK
 ALL CEILING 100mm THICK
 ALL ROOF 100mm THICK
 ALL DOORS 1000mm WIDE
 ALL WINDOWS 1000mm WIDE
 ALL STAIRS 1000mm WIDE
 ALL ELEVATORS 1000mm WIDE
 ALL CORRIDORS 1000mm WIDE
 ALL HALLWAYS 1000mm WIDE
 ALL ENTRANCES 1000mm WIDE
 ALL EXITS 1000mm WIDE
 ALL ESCAPE ROUTES 1000mm WIDE
 ALL FIRE EXITS 1000mm WIDE
 ALL FIRE ALARMS 1000mm WIDE
 ALL FIRE EXTINGUISHERS 1000mm WIDE
 ALL FIRE ESCAPES 1000mm WIDE
 ALL FIRE STAIRS 1000mm WIDE
 ALL FIRE LIFTS 1000mm WIDE
 ALL FIRE ALARMS 1000mm WIDE
 ALL FIRE EXTINGUISHERS 1000mm WIDE
 ALL FIRE ESCAPES 1000mm WIDE
 ALL FIRE STAIRS 1000mm WIDE
 ALL FIRE LIFTS 1000mm WIDE

NO.	DESCRIPTION	QTY.	UNIT	REMARKS
1	LABORATORY	1	SQ. M.	
2	OFFICE	1	SQ. M.	
3	STORAGE	1	SQ. M.	
4	CORRIDOR	1	SQ. M.	
5	HALLWAY	1	SQ. M.	
6	ENTRANCE	1	SQ. M.	
7	EXIT	1	SQ. M.	
8	ESCAPE ROUTE	1	SQ. M.	
9	FIRE EXIT	1	SQ. M.	
10	FIRE ALARM	1	SQ. M.	
11	FIRE EXTINGUISHER	1	SQ. M.	
12	FIRE ESCAPE	1	SQ. M.	
13	FIRE STAIR	1	SQ. M.	
14	FIRE LIFT	1	SQ. M.	

NO.	DESCRIPTION	QTY.	UNIT	REMARKS
1	LABORATORY	1	SQ. M.	
2	OFFICE	1	SQ. M.	
3	STORAGE	1	SQ. M.	
4	CORRIDOR	1	SQ. M.	
5	HALLWAY	1	SQ. M.	
6	ENTRANCE	1	SQ. M.	
7	EXIT	1	SQ. M.	
8	ESCAPE ROUTE	1	SQ. M.	
9	FIRE EXIT	1	SQ. M.	
10	FIRE ALARM	1	SQ. M.	
11	FIRE EXTINGUISHER	1	SQ. M.	
12	FIRE ESCAPE	1	SQ. M.	
13	FIRE STAIR	1	SQ. M.	
14	FIRE LIFT	1	SQ. M.	

LEGEND

- 1. 04 1000-0000-0000-0000
- 2. 05 1000-0000-0000-0000
- 3. 06 1000-0000-0000-0000
- 4. 07 1000-0000-0000-0000
- 5. 08 1000-0000-0000-0000
- 6. 09 1000-0000-0000-0000
- 7. 10 1000-0000-0000-0000
- 8. 11 1000-0000-0000-0000
- 9. 12 1000-0000-0000-0000
- 10. 13 1000-0000-0000-0000
- 11. 14 1000-0000-0000-0000
- 12. 15 1000-0000-0000-0000
- 13. 16 1000-0000-0000-0000
- 14. 17 1000-0000-0000-0000
- 15. 18 1000-0000-0000-0000
- 16. 19 1000-0000-0000-0000
- 17. 20 1000-0000-0000-0000
- 18. 21 1000-0000-0000-0000
- 19. 22 1000-0000-0000-0000
- 20. 23 1000-0000-0000-0000
- 21. 24 1000-0000-0000-0000
- 22. 25 1000-0000-0000-0000
- 23. 26 1000-0000-0000-0000
- 24. 27 1000-0000-0000-0000
- 25. 28 1000-0000-0000-0000
- 26. 29 1000-0000-0000-0000
- 27. 30 1000-0000-0000-0000
- 28. 31 1000-0000-0000-0000
- 29. 32 1000-0000-0000-0000
- 30. 33 1000-0000-0000-0000
- 31. 34 1000-0000-0000-0000
- 32. 35 1000-0000-0000-0000
- 33. 36 1000-0000-0000-0000
- 34. 37 1000-0000-0000-0000
- 35. 38 1000-0000-0000-0000
- 36. 39 1000-0000-0000-0000
- 37. 40 1000-0000-0000-0000
- 38. 41 1000-0000-0000-0000
- 39. 42 1000-0000-0000-0000
- 40. 43 1000-0000-0000-0000
- 41. 44 1000-0000-0000-0000
- 42. 45 1000-0000-0000-0000
- 43. 46 1000-0000-0000-0000
- 44. 47 1000-0000-0000-0000
- 45. 48 1000-0000-0000-0000
- 46. 49 1000-0000-0000-0000
- 47. 50 1000-0000-0000-0000
- 48. 51 1000-0000-0000-0000
- 49. 52 1000-0000-0000-0000
- 50. 53 1000-0000-0000-0000
- 51. 54 1000-0000-0000-0000
- 52. 55 1000-0000-0000-0000
- 53. 56 1000-0000-0000-0000
- 54. 57 1000-0000-0000-0000
- 55. 58 1000-0000-0000-0000
- 56. 59 1000-0000-0000-0000
- 57. 60 1000-0000-0000-0000
- 58. 61 1000-0000-0000-0000
- 59. 62 1000-0000-0000-0000
- 60. 63 1000-0000-0000-0000
- 61. 64 1000-0000-0000-0000
- 62. 65 1000-0000-0000-0000
- 63. 66 1000-0000-0000-0000
- 64. 67 1000-0000-0000-0000
- 65. 68 1000-0000-0000-0000
- 66. 69 1000-0000-0000-0000
- 67. 70 1000-0000-0000-0000
- 68. 71 1000-0000-0000-0000
- 69. 72 1000-0000-0000-0000
- 70. 73 1000-0000-0000-0000
- 71. 74 1000-0000-0000-0000
- 72. 75 1000-0000-0000-0000
- 73. 76 1000-0000-0000-0000
- 74. 77 1000-0000-0000-0000
- 75. 78 1000-0000-0000-0000
- 76. 79 1000-0000-0000-0000
- 77. 80 1000-0000-0000-0000
- 78. 81 1000-0000-0000-0000
- 79. 82 1000-0000-0000-0000
- 80. 83 1000-0000-0000-0000
- 81. 84 1000-0000-0000-0000
- 82. 85 1000-0000-0000-0000
- 83. 86 1000-0000-0000-0000
- 84. 87 1000-0000-0000-0000
- 85. 88 1000-0000-0000-0000
- 86. 89 1000-0000-0000-0000
- 87. 90 1000-0000-0000-0000
- 88. 91 1000-0000-0000-0000
- 89. 92 1000-0000-0000-0000
- 90. 93 1000-0000-0000-0000
- 91. 94 1000-0000-0000-0000
- 92. 95 1000-0000-0000-0000
- 93. 96 1000-0000-0000-0000
- 94. 97 1000-0000-0000-0000
- 95. 98 1000-0000-0000-0000
- 96. 99 1000-0000-0000-0000
- 97. 100 1000-0000-0000-0000



PROJECT INFORMATION

PROJECT NO. 1000-0000-0000-0000

DATE: 10/10/2000

PROJECT NAME: PROJECT NAME

PROJECT LOCATION: PROJECT LOCATION

PROJECT OWNER: PROJECT OWNER

PROJECT ARCHITECT: PROJECT ARCHITECT

PROJECT ENGINEER: PROJECT ENGINEER

PROJECT CONTRACTOR: PROJECT CONTRACTOR

PROJECT SUBMITTER: PROJECT SUBMITTER

PROJECT REVIEWER: PROJECT REVIEWER

PROJECT APPROVER: PROJECT APPROVER

PROJECT DATE: PROJECT DATE

PROJECT SCALE: PROJECT SCALE

PROJECT SHEET NO. 1000-0000-0000-0000

PROJECT SHEET TOTAL: PROJECT SHEET TOTAL

LEGEND

- 1-10 EX LIGHT AND DIM NUMBER
- 11-15 EX LIGHT FIXTURE
- 16-18 EX LIGHT FIXTURE
- 19-20 EX LIGHT FIXTURE
- 21-22 EX LIGHT FIXTURE
- 23-24 EX LIGHT FIXTURE
- 25-26 EX LIGHT FIXTURE
- 27-28 EX LIGHT FIXTURE
- 29-30 EX LIGHT FIXTURE
- 31-32 EX LIGHT FIXTURE
- 33-34 EX LIGHT FIXTURE
- 35-36 EX LIGHT FIXTURE
- 37-38 EX LIGHT FIXTURE
- 39-40 EX LIGHT FIXTURE
- 41-42 EX LIGHT FIXTURE
- 43-44 EX LIGHT FIXTURE
- 45-46 EX LIGHT FIXTURE
- 47-48 EX LIGHT FIXTURE
- 49-50 EX LIGHT FIXTURE
- 51-52 EX LIGHT FIXTURE
- 53-54 EX LIGHT FIXTURE
- 55-56 EX LIGHT FIXTURE
- 57-58 EX LIGHT FIXTURE
- 59-60 EX LIGHT FIXTURE
- 61-62 EX LIGHT FIXTURE
- 63-64 EX LIGHT FIXTURE
- 65-66 EX LIGHT FIXTURE
- 67-68 EX LIGHT FIXTURE
- 69-70 EX LIGHT FIXTURE
- 71-72 EX LIGHT FIXTURE
- 73-74 EX LIGHT FIXTURE
- 75-76 EX LIGHT FIXTURE
- 77-78 EX LIGHT FIXTURE
- 79-80 EX LIGHT FIXTURE
- 81-82 EX LIGHT FIXTURE
- 83-84 EX LIGHT FIXTURE
- 85-86 EX LIGHT FIXTURE
- 87-88 EX LIGHT FIXTURE
- 89-90 EX LIGHT FIXTURE
- 91-92 EX LIGHT FIXTURE
- 93-94 EX LIGHT FIXTURE
- 95-96 EX LIGHT FIXTURE
- 97-98 EX LIGHT FIXTURE
- 99-100 EX LIGHT FIXTURE

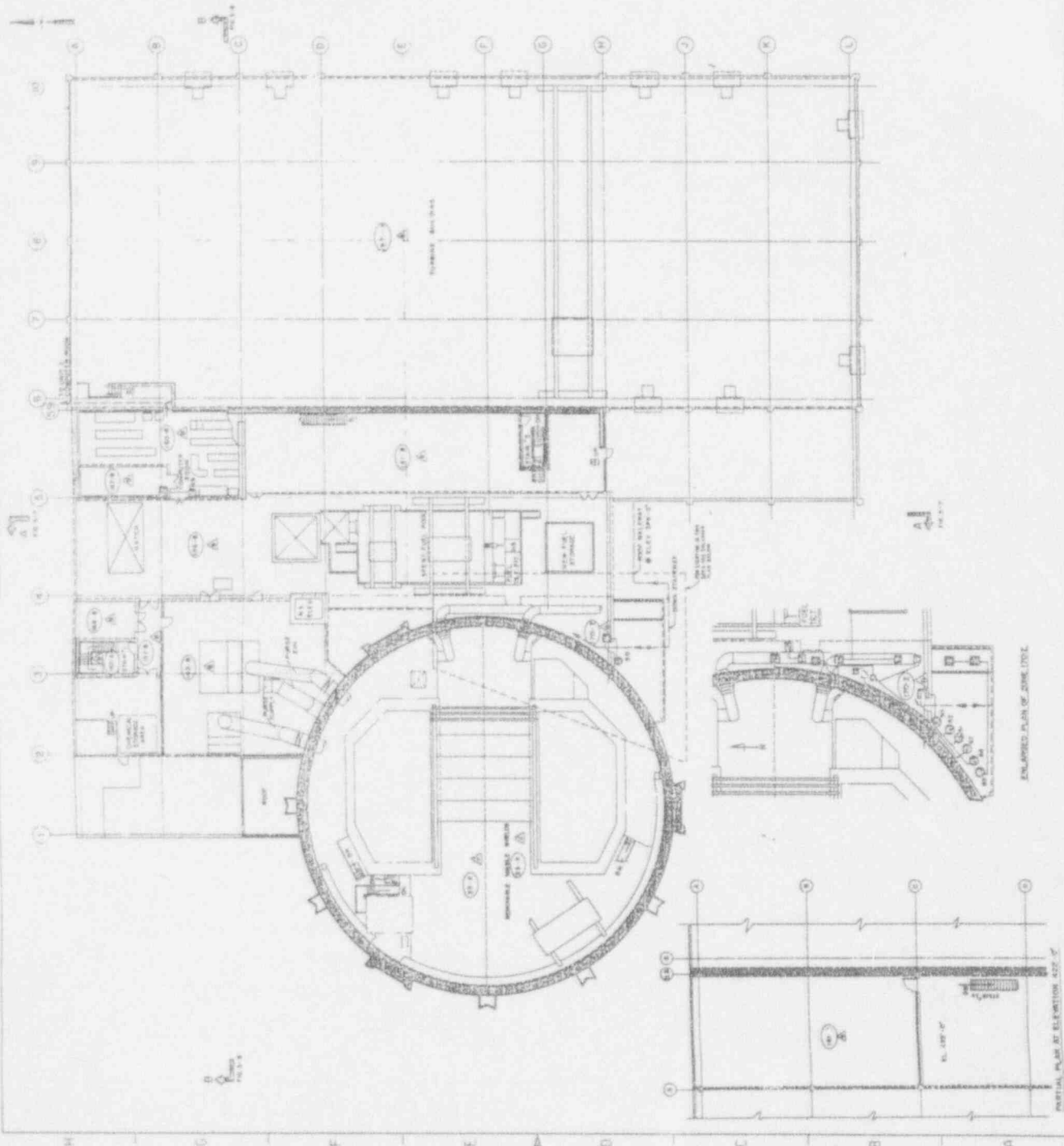
NO.	DESCRIPTION	QTY.	UNIT	PRICE	TOTAL
1	EX LIGHT AND DIM NUMBER				
2	EX LIGHT FIXTURE				
3	EX LIGHT FIXTURE				
4	EX LIGHT FIXTURE				
5	EX LIGHT FIXTURE				
6	EX LIGHT FIXTURE				
7	EX LIGHT FIXTURE				
8	EX LIGHT FIXTURE				
9	EX LIGHT FIXTURE				
10	EX LIGHT FIXTURE				
11	EX LIGHT FIXTURE				
12	EX LIGHT FIXTURE				
13	EX LIGHT FIXTURE				
14	EX LIGHT FIXTURE				
15	EX LIGHT FIXTURE				
16	EX LIGHT FIXTURE				
17	EX LIGHT FIXTURE				
18	EX LIGHT FIXTURE				
19	EX LIGHT FIXTURE				
20	EX LIGHT FIXTURE				
21	EX LIGHT FIXTURE				
22	EX LIGHT FIXTURE				
23	EX LIGHT FIXTURE				
24	EX LIGHT FIXTURE				
25	EX LIGHT FIXTURE				
26	EX LIGHT FIXTURE				
27	EX LIGHT FIXTURE				
28	EX LIGHT FIXTURE				
29	EX LIGHT FIXTURE				
30	EX LIGHT FIXTURE				
31	EX LIGHT FIXTURE				
32	EX LIGHT FIXTURE				
33	EX LIGHT FIXTURE				
34	EX LIGHT FIXTURE				
35	EX LIGHT FIXTURE				
36	EX LIGHT FIXTURE				
37	EX LIGHT FIXTURE				
38	EX LIGHT FIXTURE				
39	EX LIGHT FIXTURE				
40	EX LIGHT FIXTURE				
41	EX LIGHT FIXTURE				
42	EX LIGHT FIXTURE				
43	EX LIGHT FIXTURE				
44	EX LIGHT FIXTURE				
45	EX LIGHT FIXTURE				
46	EX LIGHT FIXTURE				
47	EX LIGHT FIXTURE				
48	EX LIGHT FIXTURE				
49	EX LIGHT FIXTURE				
50	EX LIGHT FIXTURE				
51	EX LIGHT FIXTURE				
52	EX LIGHT FIXTURE				
53	EX LIGHT FIXTURE				
54	EX LIGHT FIXTURE				
55	EX LIGHT FIXTURE				
56	EX LIGHT FIXTURE				
57	EX LIGHT FIXTURE				
58	EX LIGHT FIXTURE				
59	EX LIGHT FIXTURE				
60	EX LIGHT FIXTURE				
61	EX LIGHT FIXTURE				
62	EX LIGHT FIXTURE				
63	EX LIGHT FIXTURE				
64	EX LIGHT FIXTURE				
65	EX LIGHT FIXTURE				
66	EX LIGHT FIXTURE				
67	EX LIGHT FIXTURE				
68	EX LIGHT FIXTURE				
69	EX LIGHT FIXTURE				
70	EX LIGHT FIXTURE				
71	EX LIGHT FIXTURE				
72	EX LIGHT FIXTURE				
73	EX LIGHT FIXTURE				
74	EX LIGHT FIXTURE				
75	EX LIGHT FIXTURE				
76	EX LIGHT FIXTURE				
77	EX LIGHT FIXTURE				
78	EX LIGHT FIXTURE				
79	EX LIGHT FIXTURE				
80	EX LIGHT FIXTURE				
81	EX LIGHT FIXTURE				
82	EX LIGHT FIXTURE				
83	EX LIGHT FIXTURE				
84	EX LIGHT FIXTURE				
85	EX LIGHT FIXTURE				
86	EX LIGHT FIXTURE				
87	EX LIGHT FIXTURE				
88	EX LIGHT FIXTURE				
89	EX LIGHT FIXTURE				
90	EX LIGHT FIXTURE				
91	EX LIGHT FIXTURE				
92	EX LIGHT FIXTURE				
93	EX LIGHT FIXTURE				
94	EX LIGHT FIXTURE				
95	EX LIGHT FIXTURE				
96	EX LIGHT FIXTURE				
97	EX LIGHT FIXTURE				
98	EX LIGHT FIXTURE				
99	EX LIGHT FIXTURE				
100	EX LIGHT FIXTURE				

NOT TO SCALE

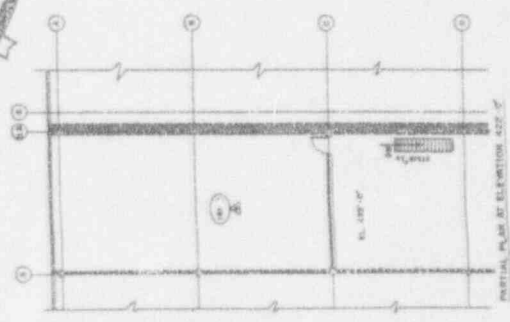
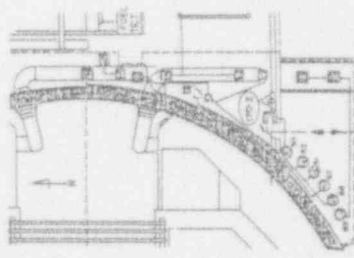
SEE SHEET 2 FOR DETAILS

NO.	DATE	BY	CHKD.
1	1957-11-14	J. J. JAMES	J. J. JAMES
2			
3			
4			
5			
6			
7			
8			
9			
10			

PROJECT NO. 57-214

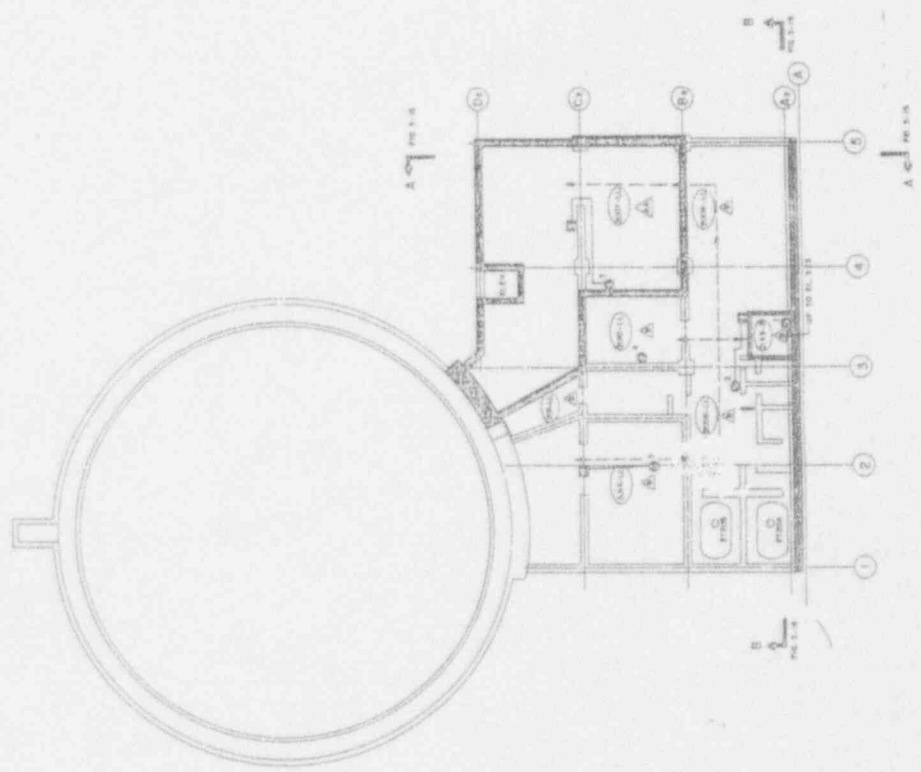


A1



- LEGEND**
- ⊙ - EXISTING AND NEW LIGHTING
 - - EXISTING LIGHT
 - - NEW LIGHT
 - - EXISTING LIGHT FIXTURE
 - - NEW LIGHT FIXTURE
 - - EXISTING LIGHT FIXTURE
 - - NEW LIGHT FIXTURE
 - - EXISTING LIGHT FIXTURE
 - - NEW LIGHT FIXTURE

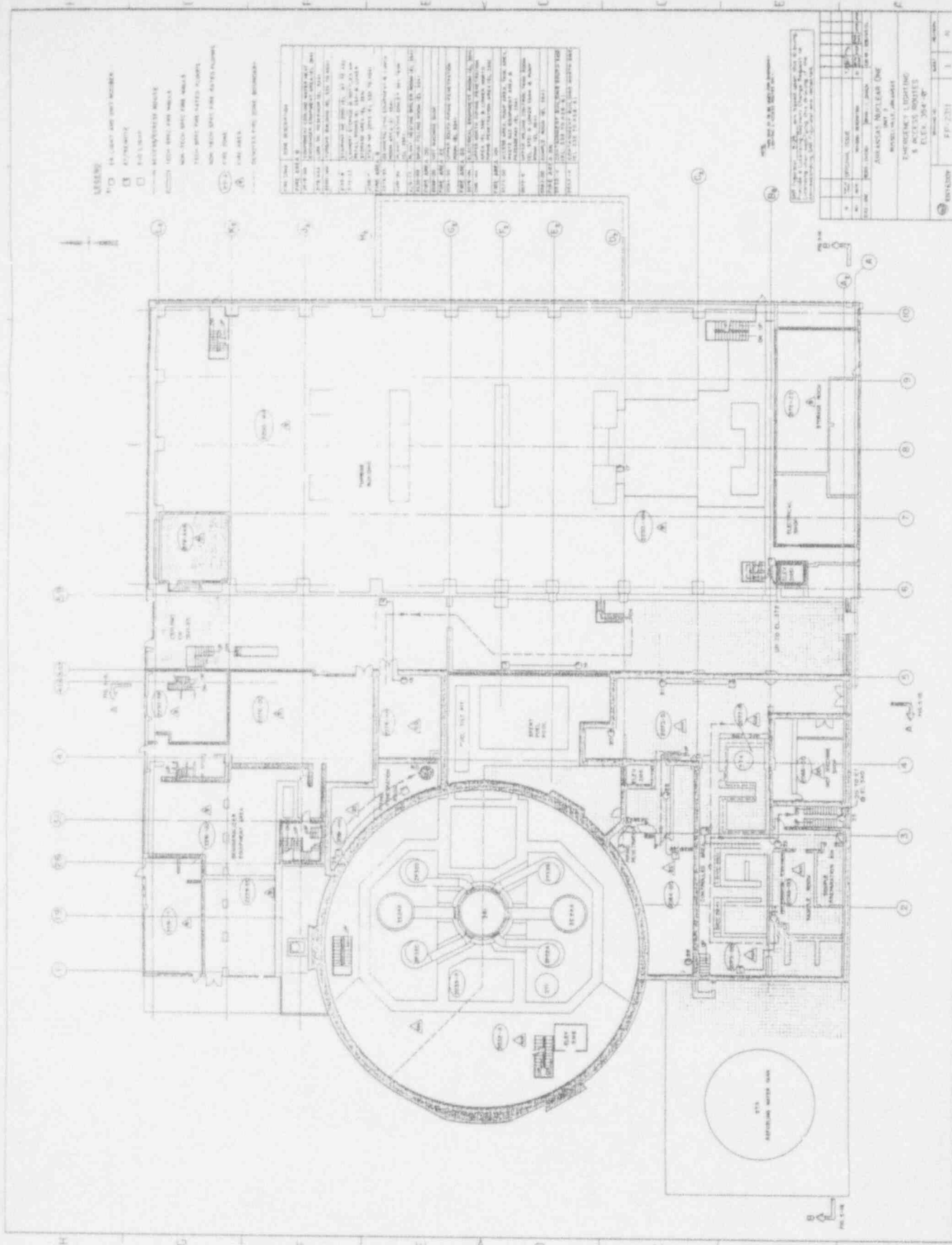
NO.	DESCRIPTION	QTY.	UNIT	PRICE	TOTAL
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50



NOT TO SCALE
 ALL DIMENSIONS SHOWN IN THIS DRAWING ARE TO BE TAKEN FROM THE CENTER OF THE LIGHT FIXTURE UNLESS OTHERWISE SPECIFIED.
 ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

NO.	DATE	BY	CHECKED	SCALE
1	10/1/54	J. N.	J. N.	1/8" = 1'-0"

APPROVED BY: [Signature]
 TITLE: [Title]
 PROJECT: [Project Name]
 SHEET NO.: [Sheet Number]



- LEGEND**
- 14. LIGHT AND SMOKE INDICATOR
 - 15. EXTINGUISHER
 - 16. EXIT
 - 17. EXIT SIGN
 - 18. EXIT SIGN
 - 19. EXIT SIGN
 - 20. EXIT SIGN
 - 21. EXIT SIGN
 - 22. EXIT SIGN
 - 23. EXIT SIGN
 - 24. EXIT SIGN
 - 25. EXIT SIGN
 - 26. EXIT SIGN
 - 27. EXIT SIGN
 - 28. EXIT SIGN
 - 29. EXIT SIGN
 - 30. EXIT SIGN
 - 31. EXIT SIGN
 - 32. EXIT SIGN
 - 33. EXIT SIGN
 - 34. EXIT SIGN
 - 35. EXIT SIGN
 - 36. EXIT SIGN
 - 37. EXIT SIGN
 - 38. EXIT SIGN
 - 39. EXIT SIGN
 - 40. EXIT SIGN
 - 41. EXIT SIGN
 - 42. EXIT SIGN
 - 43. EXIT SIGN
 - 44. EXIT SIGN
 - 45. EXIT SIGN
 - 46. EXIT SIGN
 - 47. EXIT SIGN
 - 48. EXIT SIGN
 - 49. EXIT SIGN
 - 50. EXIT SIGN
 - 51. EXIT SIGN
 - 52. EXIT SIGN
 - 53. EXIT SIGN
 - 54. EXIT SIGN
 - 55. EXIT SIGN
 - 56. EXIT SIGN
 - 57. EXIT SIGN
 - 58. EXIT SIGN
 - 59. EXIT SIGN
 - 60. EXIT SIGN
 - 61. EXIT SIGN
 - 62. EXIT SIGN
 - 63. EXIT SIGN
 - 64. EXIT SIGN
 - 65. EXIT SIGN
 - 66. EXIT SIGN
 - 67. EXIT SIGN
 - 68. EXIT SIGN
 - 69. EXIT SIGN
 - 70. EXIT SIGN
 - 71. EXIT SIGN
 - 72. EXIT SIGN
 - 73. EXIT SIGN
 - 74. EXIT SIGN
 - 75. EXIT SIGN
 - 76. EXIT SIGN
 - 77. EXIT SIGN
 - 78. EXIT SIGN
 - 79. EXIT SIGN
 - 80. EXIT SIGN
 - 81. EXIT SIGN
 - 82. EXIT SIGN
 - 83. EXIT SIGN
 - 84. EXIT SIGN
 - 85. EXIT SIGN
 - 86. EXIT SIGN
 - 87. EXIT SIGN
 - 88. EXIT SIGN
 - 89. EXIT SIGN
 - 90. EXIT SIGN
 - 91. EXIT SIGN
 - 92. EXIT SIGN
 - 93. EXIT SIGN
 - 94. EXIT SIGN
 - 95. EXIT SIGN
 - 96. EXIT SIGN
 - 97. EXIT SIGN
 - 98. EXIT SIGN
 - 99. EXIT SIGN
 - 100. EXIT SIGN

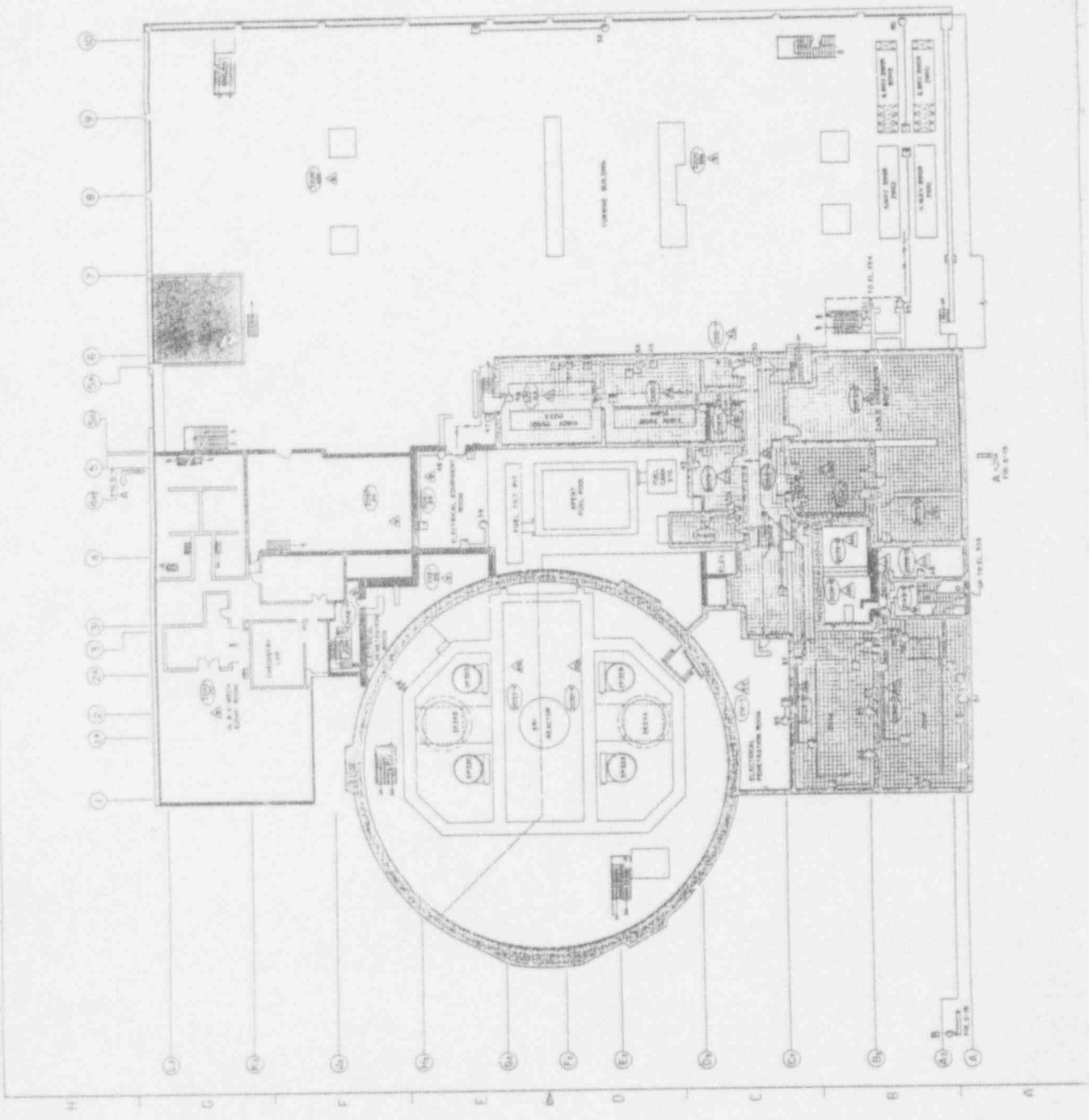
NO.	DESCRIPTION	QTY.	REMARKS
1	EMERGENCY LIGHTING	100	100
2	EMERGENCY LIGHTING	100	100
3	EMERGENCY LIGHTING	100	100
4	EMERGENCY LIGHTING	100	100
5	EMERGENCY LIGHTING	100	100
6	EMERGENCY LIGHTING	100	100
7	EMERGENCY LIGHTING	100	100
8	EMERGENCY LIGHTING	100	100
9	EMERGENCY LIGHTING	100	100
10	EMERGENCY LIGHTING	100	100
11	EMERGENCY LIGHTING	100	100
12	EMERGENCY LIGHTING	100	100
13	EMERGENCY LIGHTING	100	100
14	EMERGENCY LIGHTING	100	100
15	EMERGENCY LIGHTING	100	100
16	EMERGENCY LIGHTING	100	100
17	EMERGENCY LIGHTING	100	100
18	EMERGENCY LIGHTING	100	100
19	EMERGENCY LIGHTING	100	100
20	EMERGENCY LIGHTING	100	100
21	EMERGENCY LIGHTING	100	100
22	EMERGENCY LIGHTING	100	100
23	EMERGENCY LIGHTING	100	100
24	EMERGENCY LIGHTING	100	100
25	EMERGENCY LIGHTING	100	100
26	EMERGENCY LIGHTING	100	100
27	EMERGENCY LIGHTING	100	100
28	EMERGENCY LIGHTING	100	100
29	EMERGENCY LIGHTING	100	100
30	EMERGENCY LIGHTING	100	100
31	EMERGENCY LIGHTING	100	100
32	EMERGENCY LIGHTING	100	100
33	EMERGENCY LIGHTING	100	100
34	EMERGENCY LIGHTING	100	100
35	EMERGENCY LIGHTING	100	100
36	EMERGENCY LIGHTING	100	100
37	EMERGENCY LIGHTING	100	100
38	EMERGENCY LIGHTING	100	100
39	EMERGENCY LIGHTING	100	100
40	EMERGENCY LIGHTING	100	100
41	EMERGENCY LIGHTING	100	100
42	EMERGENCY LIGHTING	100	100
43	EMERGENCY LIGHTING	100	100
44	EMERGENCY LIGHTING	100	100
45	EMERGENCY LIGHTING	100	100
46	EMERGENCY LIGHTING	100	100
47	EMERGENCY LIGHTING	100	100
48	EMERGENCY LIGHTING	100	100
49	EMERGENCY LIGHTING	100	100
50	EMERGENCY LIGHTING	100	100
51	EMERGENCY LIGHTING	100	100
52	EMERGENCY LIGHTING	100	100
53	EMERGENCY LIGHTING	100	100
54	EMERGENCY LIGHTING	100	100
55	EMERGENCY LIGHTING	100	100
56	EMERGENCY LIGHTING	100	100
57	EMERGENCY LIGHTING	100	100
58	EMERGENCY LIGHTING	100	100
59	EMERGENCY LIGHTING	100	100
60	EMERGENCY LIGHTING	100	100
61	EMERGENCY LIGHTING	100	100
62	EMERGENCY LIGHTING	100	100
63	EMERGENCY LIGHTING	100	100
64	EMERGENCY LIGHTING	100	100
65	EMERGENCY LIGHTING	100	100
66	EMERGENCY LIGHTING	100	100
67	EMERGENCY LIGHTING	100	100
68	EMERGENCY LIGHTING	100	100
69	EMERGENCY LIGHTING	100	100
70	EMERGENCY LIGHTING	100	100
71	EMERGENCY LIGHTING	100	100
72	EMERGENCY LIGHTING	100	100
73	EMERGENCY LIGHTING	100	100
74	EMERGENCY LIGHTING	100	100
75	EMERGENCY LIGHTING	100	100
76	EMERGENCY LIGHTING	100	100
77	EMERGENCY LIGHTING	100	100
78	EMERGENCY LIGHTING	100	100
79	EMERGENCY LIGHTING	100	100
80	EMERGENCY LIGHTING	100	100
81	EMERGENCY LIGHTING	100	100
82	EMERGENCY LIGHTING	100	100
83	EMERGENCY LIGHTING	100	100
84	EMERGENCY LIGHTING	100	100
85	EMERGENCY LIGHTING	100	100
86	EMERGENCY LIGHTING	100	100
87	EMERGENCY LIGHTING	100	100
88	EMERGENCY LIGHTING	100	100
89	EMERGENCY LIGHTING	100	100
90	EMERGENCY LIGHTING	100	100
91	EMERGENCY LIGHTING	100	100
92	EMERGENCY LIGHTING	100	100
93	EMERGENCY LIGHTING	100	100
94	EMERGENCY LIGHTING	100	100
95	EMERGENCY LIGHTING	100	100
96	EMERGENCY LIGHTING	100	100
97	EMERGENCY LIGHTING	100	100
98	EMERGENCY LIGHTING	100	100
99	EMERGENCY LIGHTING	100	100
100	EMERGENCY LIGHTING	100	100

JAVANAKA NUCLEAR INC. 1000 N. 10th St., Suite 100 Phoenix, Arizona 85004 (602) 944-1111	
PROJECT NO. 1000 SHEET NO. 1000	
DRAWN BY: JAVANAKA NUCLEAR INC. CHECKED BY: JAVANAKA NUCLEAR INC. DATE: 10/10/10	
PROJECT TITLE: EMERGENCY LIGHTING ELEC. 1000-1000	
PROJECT NO. 1000	SHEET NO. 1000
DRAWN BY: JAVANAKA NUCLEAR INC.	CHECKED BY: JAVANAKA NUCLEAR INC.
DATE: 10/10/10	SCALE: 1/8" = 1'-0"

- LEGEND
- 10 LIGHT AND SIGHT NUMBER
 - 11 SWITCH
 - 12 LIGHT
 - 13 LIGHT FIXTURE
 - 14 LIGHT FIXTURE
 - 15 LIGHT FIXTURE
 - 16 LIGHT FIXTURE
 - 17 LIGHT FIXTURE
 - 18 LIGHT FIXTURE
 - 19 LIGHT FIXTURE
 - 20 LIGHT FIXTURE
 - 21 LIGHT FIXTURE
 - 22 LIGHT FIXTURE
 - 23 LIGHT FIXTURE
 - 24 LIGHT FIXTURE
 - 25 LIGHT FIXTURE
 - 26 LIGHT FIXTURE
 - 27 LIGHT FIXTURE
 - 28 LIGHT FIXTURE
 - 29 LIGHT FIXTURE
 - 30 LIGHT FIXTURE
 - 31 LIGHT FIXTURE
 - 32 LIGHT FIXTURE
 - 33 LIGHT FIXTURE
 - 34 LIGHT FIXTURE
 - 35 LIGHT FIXTURE
 - 36 LIGHT FIXTURE
 - 37 LIGHT FIXTURE
 - 38 LIGHT FIXTURE
 - 39 LIGHT FIXTURE
 - 40 LIGHT FIXTURE
 - 41 LIGHT FIXTURE
 - 42 LIGHT FIXTURE
 - 43 LIGHT FIXTURE
 - 44 LIGHT FIXTURE
 - 45 LIGHT FIXTURE
 - 46 LIGHT FIXTURE
 - 47 LIGHT FIXTURE
 - 48 LIGHT FIXTURE
 - 49 LIGHT FIXTURE
 - 50 LIGHT FIXTURE
 - 51 LIGHT FIXTURE
 - 52 LIGHT FIXTURE
 - 53 LIGHT FIXTURE
 - 54 LIGHT FIXTURE
 - 55 LIGHT FIXTURE
 - 56 LIGHT FIXTURE
 - 57 LIGHT FIXTURE
 - 58 LIGHT FIXTURE
 - 59 LIGHT FIXTURE
 - 60 LIGHT FIXTURE
 - 61 LIGHT FIXTURE
 - 62 LIGHT FIXTURE
 - 63 LIGHT FIXTURE
 - 64 LIGHT FIXTURE
 - 65 LIGHT FIXTURE
 - 66 LIGHT FIXTURE
 - 67 LIGHT FIXTURE
 - 68 LIGHT FIXTURE
 - 69 LIGHT FIXTURE
 - 70 LIGHT FIXTURE
 - 71 LIGHT FIXTURE
 - 72 LIGHT FIXTURE
 - 73 LIGHT FIXTURE
 - 74 LIGHT FIXTURE
 - 75 LIGHT FIXTURE
 - 76 LIGHT FIXTURE
 - 77 LIGHT FIXTURE
 - 78 LIGHT FIXTURE
 - 79 LIGHT FIXTURE
 - 80 LIGHT FIXTURE
 - 81 LIGHT FIXTURE
 - 82 LIGHT FIXTURE
 - 83 LIGHT FIXTURE
 - 84 LIGHT FIXTURE
 - 85 LIGHT FIXTURE
 - 86 LIGHT FIXTURE
 - 87 LIGHT FIXTURE
 - 88 LIGHT FIXTURE
 - 89 LIGHT FIXTURE
 - 90 LIGHT FIXTURE
 - 91 LIGHT FIXTURE
 - 92 LIGHT FIXTURE
 - 93 LIGHT FIXTURE
 - 94 LIGHT FIXTURE
 - 95 LIGHT FIXTURE
 - 96 LIGHT FIXTURE
 - 97 LIGHT FIXTURE
 - 98 LIGHT FIXTURE
 - 99 LIGHT FIXTURE
 - 100 LIGHT FIXTURE

NO.	DESCRIPTION
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...
11	...
12	...
13	...
14	...
15	...
16	...
17	...
18	...
19	...
20	...
21	...
22	...
23	...
24	...
25	...
26	...
27	...
28	...
29	...
30	...
31	...
32	...
33	...
34	...
35	...
36	...
37	...
38	...
39	...
40	...
41	...
42	...
43	...
44	...
45	...
46	...
47	...
48	...
49	...
50	...
51	...
52	...
53	...
54	...
55	...
56	...
57	...
58	...
59	...
60	...
61	...
62	...
63	...
64	...
65	...
66	...
67	...
68	...
69	...
70	...
71	...
72	...
73	...
74	...
75	...
76	...
77	...
78	...
79	...
80	...
81	...
82	...
83	...
84	...
85	...
86	...
87	...
88	...
89	...
90	...
91	...
92	...
93	...
94	...
95	...
96	...
97	...
98	...
99	...
100	...

NO.	DESCRIPTION
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...
11	...
12	...
13	...
14	...
15	...
16	...
17	...
18	...
19	...
20	...
21	...
22	...
23	...
24	...
25	...
26	...
27	...
28	...
29	...
30	...
31	...
32	...
33	...
34	...
35	...
36	...
37	...
38	...
39	...
40	...
41	...
42	...
43	...
44	...
45	...
46	...
47	...
48	...
49	...
50	...
51	...
52	...
53	...
54	...
55	...
56	...
57	...
58	...
59	...
60	...
61	...
62	...
63	...
64	...
65	...
66	...
67	...
68	...
69	...
70	...
71	...
72	...
73	...
74	...
75	...
76	...
77	...
78	...
79	...
80	...
81	...
82	...
83	...
84	...
85	...
86	...
87	...
88	...
89	...
90	...
91	...
92	...
93	...
94	...
95	...
96	...
97	...
98	...
99	...
100	...

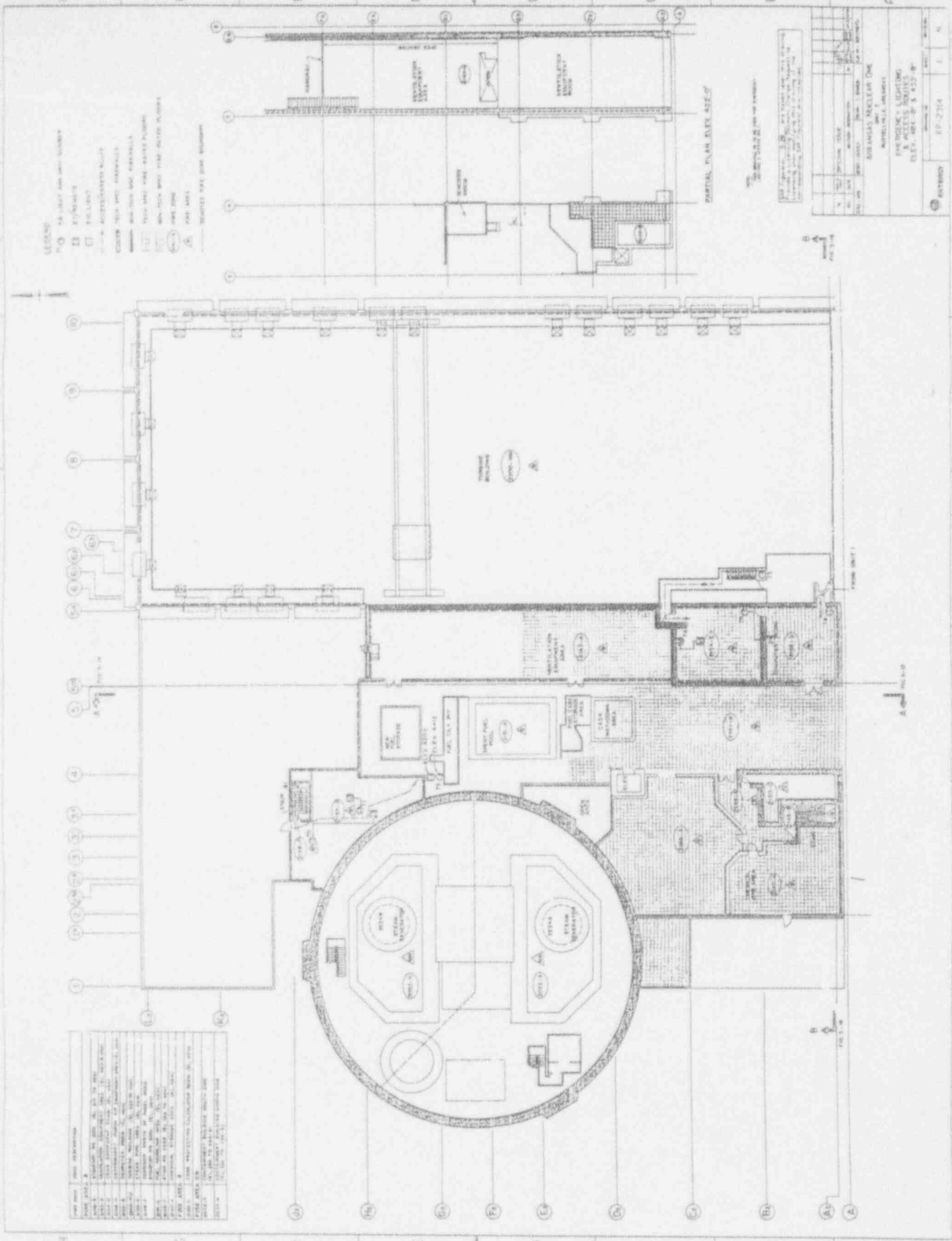


DATE: 11/15/54
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 PROJECT: [Name]
 SHEET NO.: [Number]
 OF [Total] SHEETS

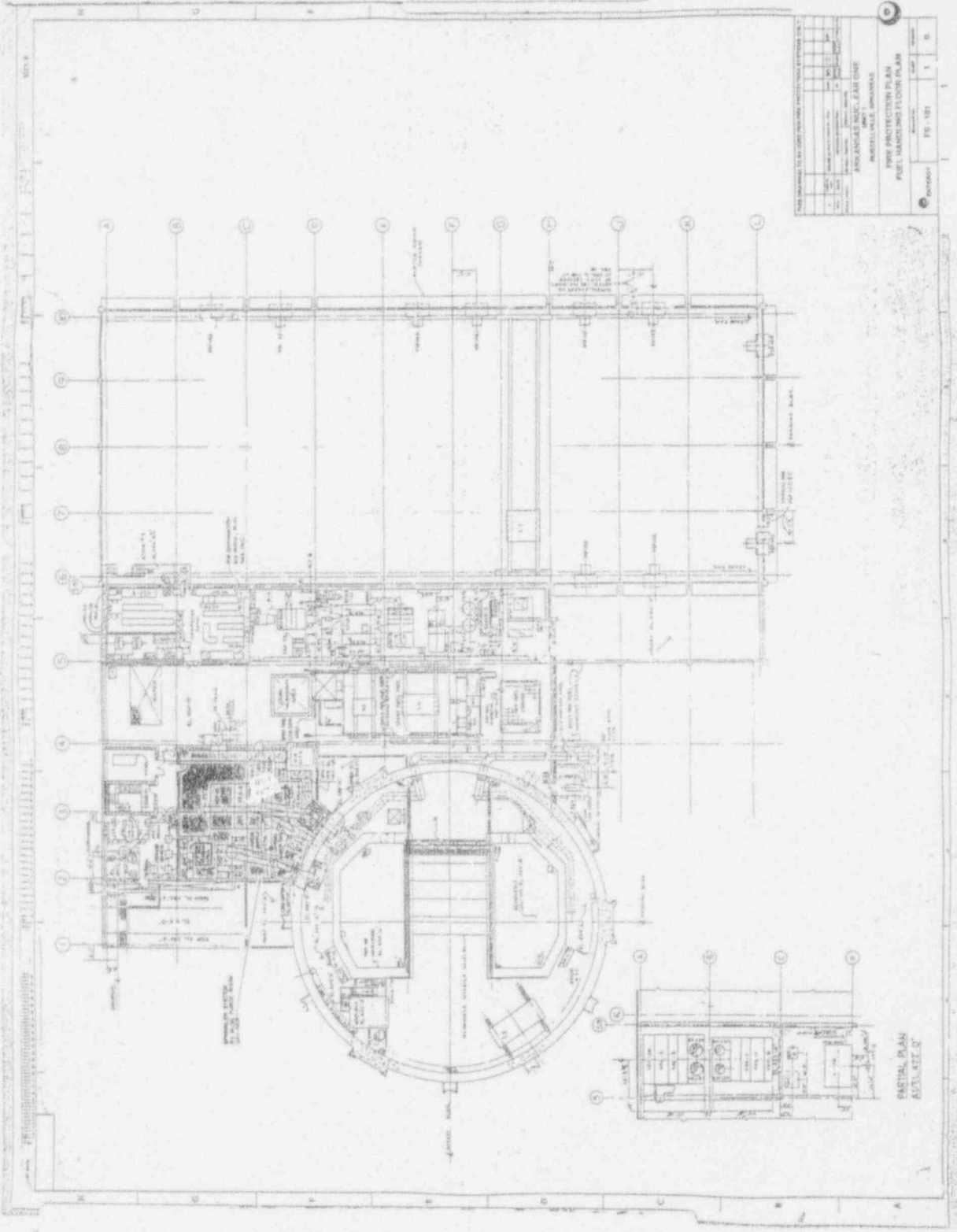
LEGEND

- 1. 14-120V AND 240V WIRING
- 2. 120V/240V
- 3. 120V/240V
- 4. 120V/240V
- 5. 120V/240V
- 6. 120V/240V
- 7. 120V/240V
- 8. 120V/240V
- 9. 120V/240V
- 10. 120V/240V
- 11. 120V/240V
- 12. 120V/240V
- 13. 120V/240V
- 14. 120V/240V
- 15. 120V/240V
- 16. 120V/240V
- 17. 120V/240V
- 18. 120V/240V
- 19. 120V/240V
- 20. 120V/240V
- 21. 120V/240V
- 22. 120V/240V
- 23. 120V/240V
- 24. 120V/240V
- 25. 120V/240V
- 26. 120V/240V
- 27. 120V/240V
- 28. 120V/240V
- 29. 120V/240V
- 30. 120V/240V
- 31. 120V/240V
- 32. 120V/240V
- 33. 120V/240V
- 34. 120V/240V
- 35. 120V/240V
- 36. 120V/240V
- 37. 120V/240V
- 38. 120V/240V
- 39. 120V/240V
- 40. 120V/240V
- 41. 120V/240V
- 42. 120V/240V
- 43. 120V/240V
- 44. 120V/240V
- 45. 120V/240V
- 46. 120V/240V
- 47. 120V/240V
- 48. 120V/240V
- 49. 120V/240V
- 50. 120V/240V
- 51. 120V/240V
- 52. 120V/240V
- 53. 120V/240V
- 54. 120V/240V
- 55. 120V/240V
- 56. 120V/240V
- 57. 120V/240V
- 58. 120V/240V
- 59. 120V/240V
- 60. 120V/240V
- 61. 120V/240V
- 62. 120V/240V
- 63. 120V/240V
- 64. 120V/240V
- 65. 120V/240V
- 66. 120V/240V
- 67. 120V/240V
- 68. 120V/240V
- 69. 120V/240V
- 70. 120V/240V
- 71. 120V/240V
- 72. 120V/240V
- 73. 120V/240V
- 74. 120V/240V
- 75. 120V/240V
- 76. 120V/240V
- 77. 120V/240V
- 78. 120V/240V
- 79. 120V/240V
- 80. 120V/240V
- 81. 120V/240V
- 82. 120V/240V
- 83. 120V/240V
- 84. 120V/240V
- 85. 120V/240V
- 86. 120V/240V
- 87. 120V/240V
- 88. 120V/240V
- 89. 120V/240V
- 90. 120V/240V
- 91. 120V/240V
- 92. 120V/240V
- 93. 120V/240V
- 94. 120V/240V
- 95. 120V/240V
- 96. 120V/240V
- 97. 120V/240V
- 98. 120V/240V
- 99. 120V/240V
- 100. 120V/240V

NO.	DESCRIPTION	DATE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100



PROJECT INFORMATION	
PROJECT NO.	...
DATE	...
DESIGNER	...
CLIENT	...
LOCATION	...
SCALE	...
PROJECT NAME	
...	
PROJECT NO.	
...	
DATE	
...	
DESIGNER	
...	
CLIENT	
...	
LOCATION	
...	
SCALE	
...	

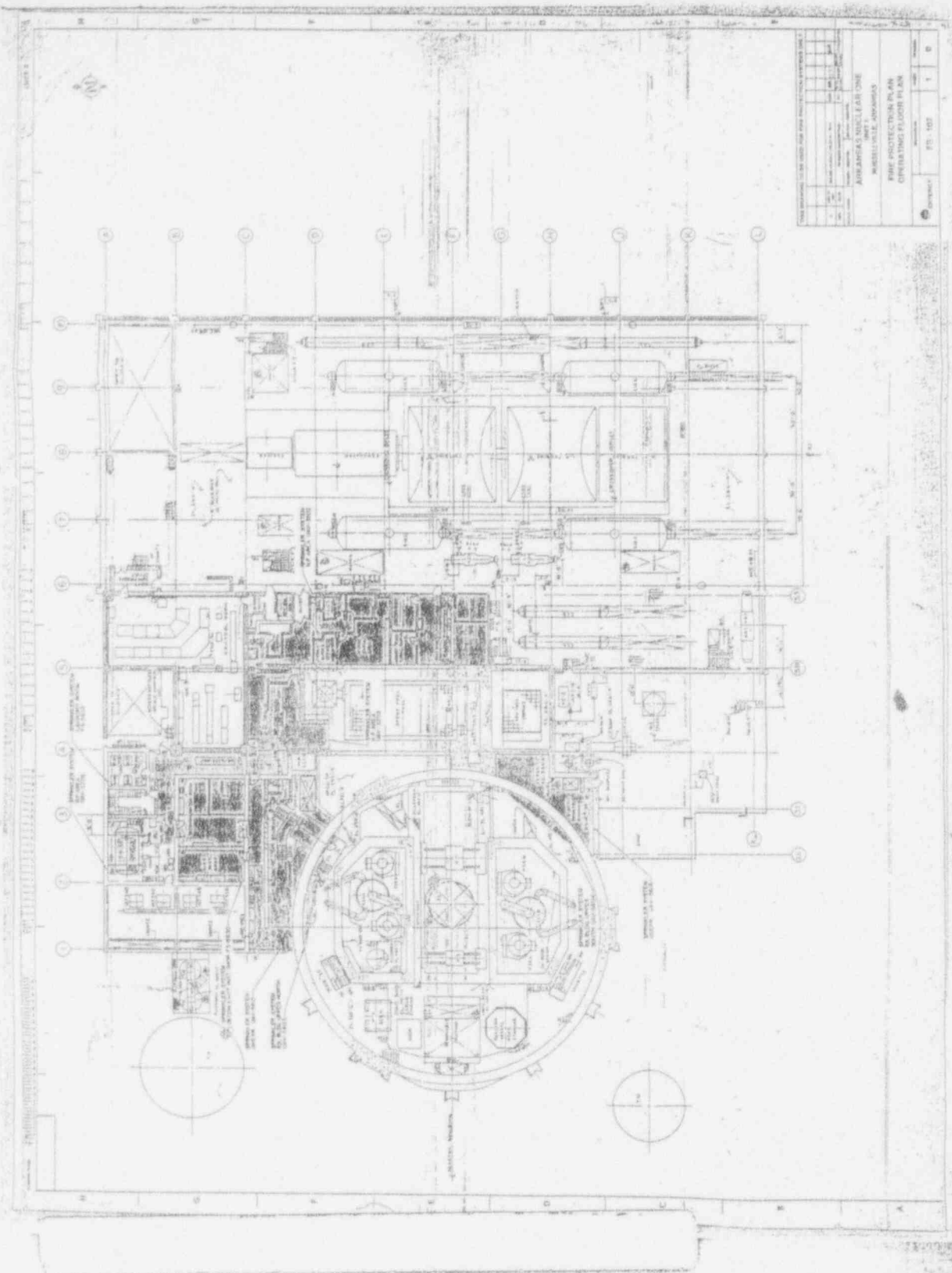


THIS DRAWING IS TO BE USED IN CONNECTION WITH THE PROJECT REPORT ON THE

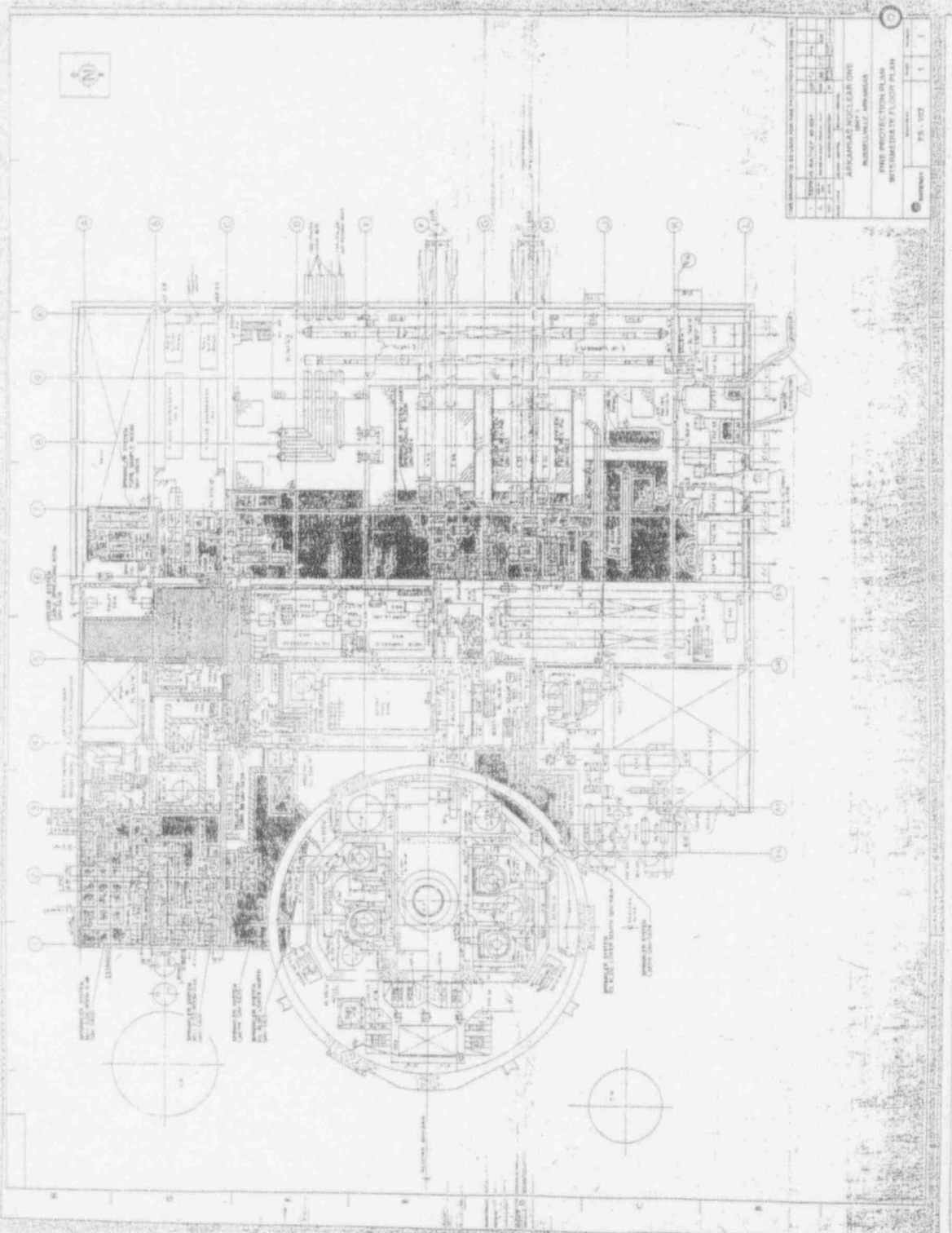
NO.	DATE	BY	CHKD.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

ARKANSAS NAT. LAB. DIV.
 MODEL CELL LABORATORY
 FIRE PROTECTION PLAN
 FUEL HANDLING FLOOR PLAN
 PROJECT NO. FS-1871 1 6
 DRAWN BY

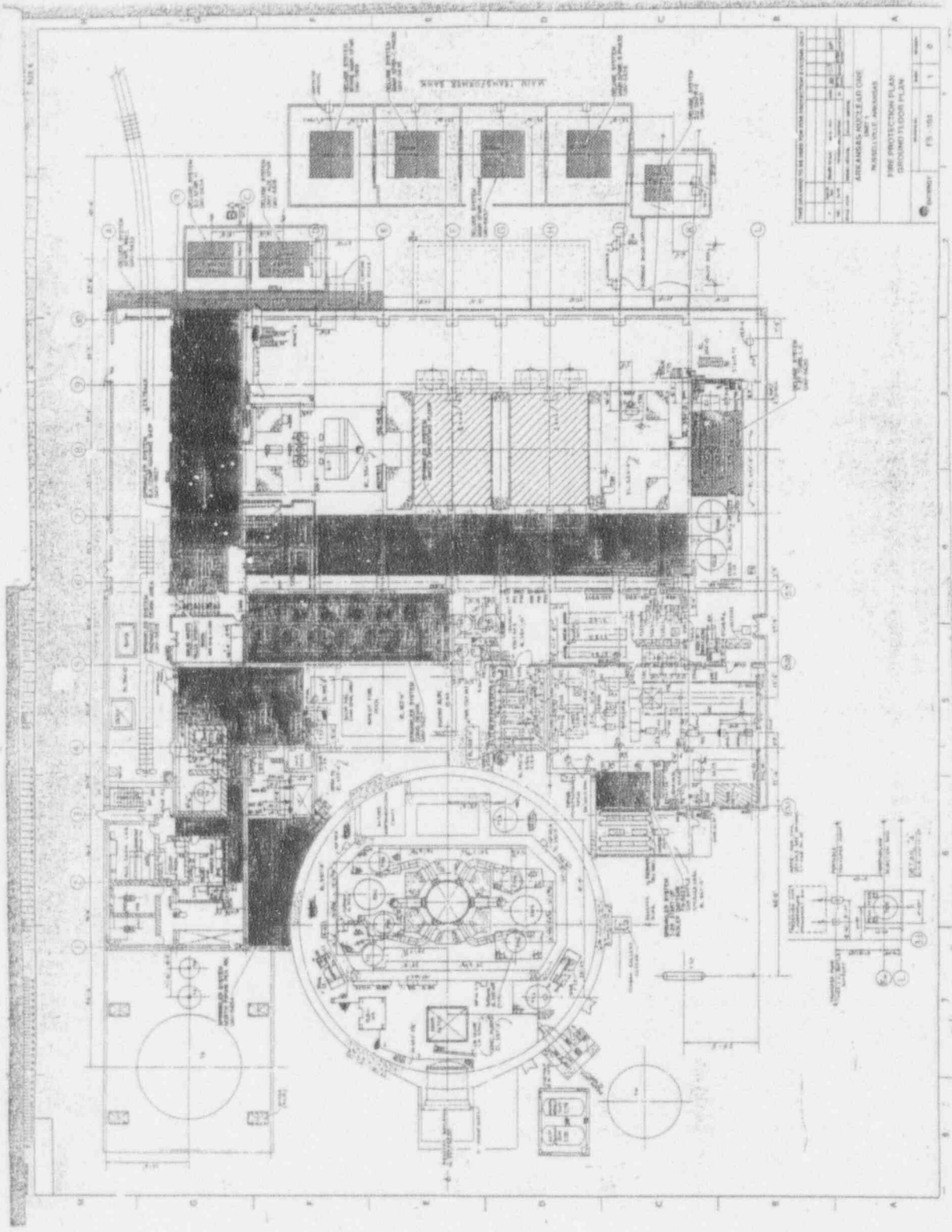
PARTIAL PLAN
AUT. 412.0



THE DRAWING IS TO BE USED FOR THE PROJECT DESCRIBED ONLY. ANY OTHER USE IS UNAUTHORIZED.	
PROJECT NO. _____ SHEET NO. _____	DATE _____ DRAWN BY _____ CHECKED BY _____
AIRBORNE MOBILE LAB ONE UNIT FIRE PROTECTION PLAN OPERATING FLOOR PLAN	
CONTRACT NO. _____ PROJECT NO. _____ SHEET NO. _____	DRAWN BY _____ CHECKED BY _____ DATE _____



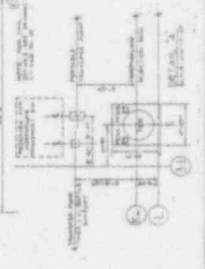
PROJECT NO. 100-1000-1000 SHEET NO. 100-1000-1000-1000	
PROJECT TITLE PROJECT PROTECTION PLAN INTERIOR FLOOR PLAN	
DRAWN BY CHECKED BY DATE	
PROJECT NO. 100-1000-1000-1000	
SHEET NO. 100-1000-1000-1000	
DATE	



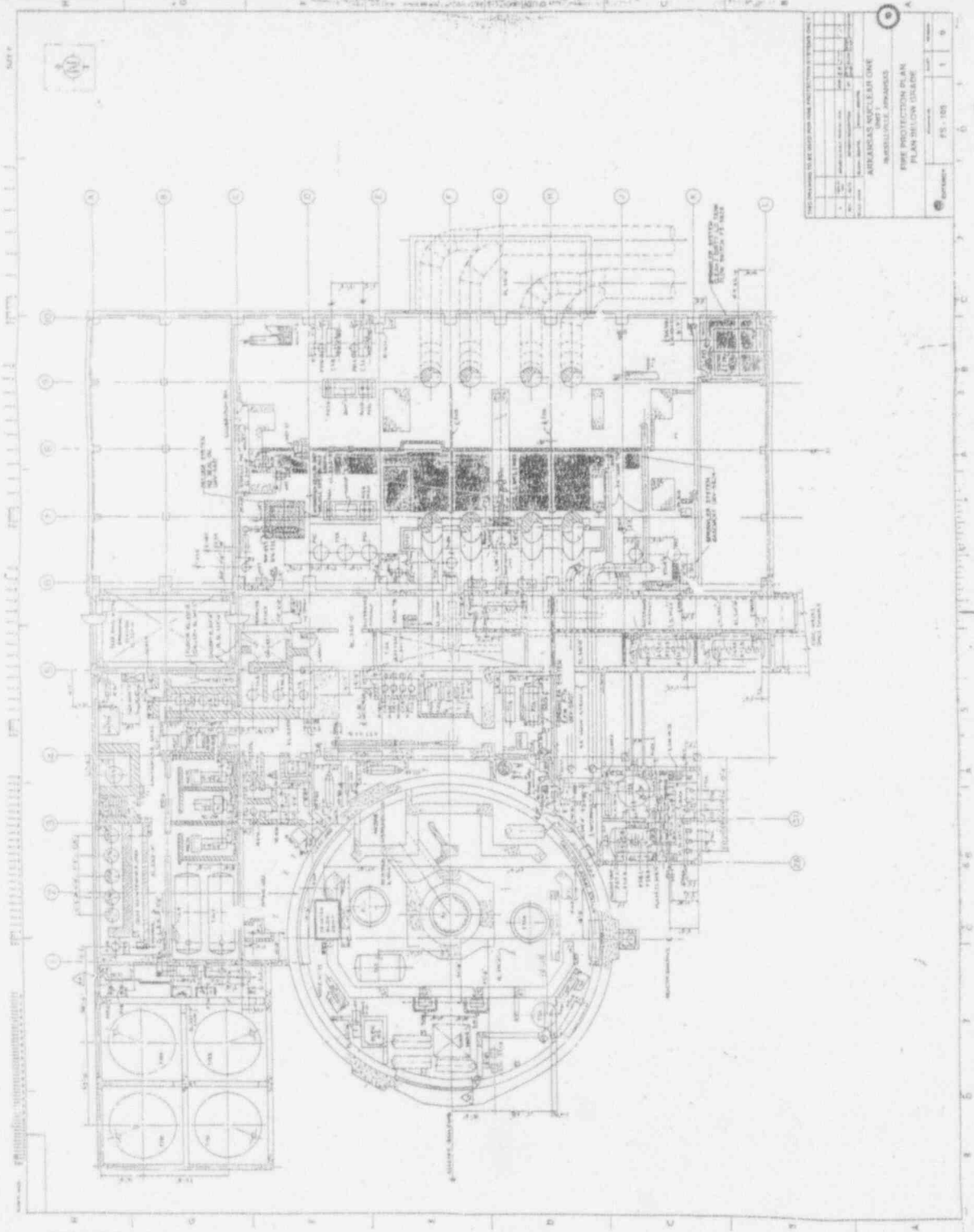
THIS DRAWING IS TO BE USED FOR THE DESIGN OF A FIRE PROTECTION PLAN

PROJECT NO.	FS-102	1	0
DATE			
DESIGNED BY			
CHECKED BY			
APPROVED BY			

ATKINS AND ASSOCIATES
INCORPORATED
FIRE PROTECTION PLAN
GROUND FLOOR PLAN



01104

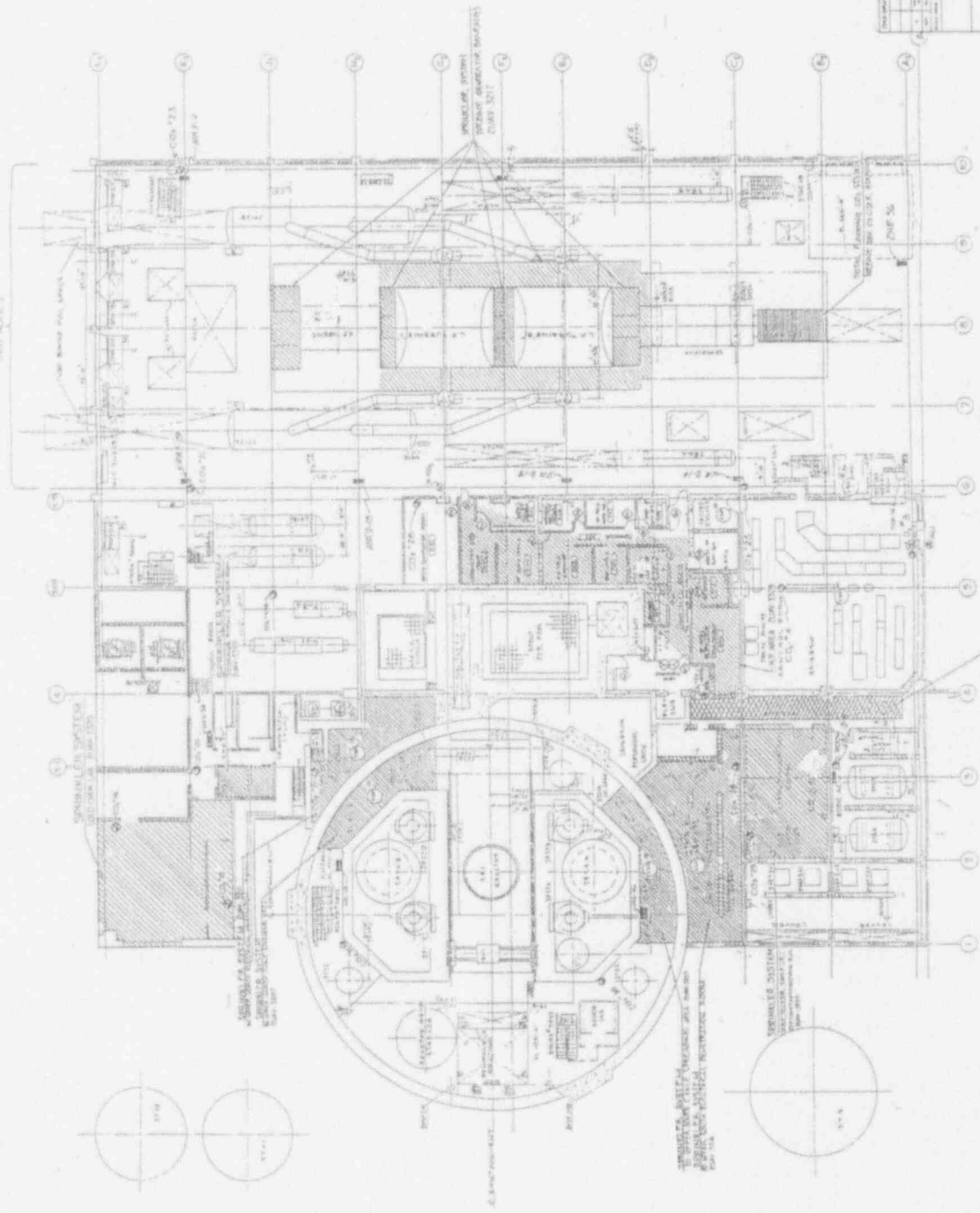


THE ARCHITECTS: W. H. HARRIS & COMPANY ARCHITECTS 1001 MARKET STREET ST. LOUIS, MISSOURI	
PROJECT: ARKANSAS WYCLIFF ONE UNIT: WYCLIFF JUNIATA FIRE PROTECTION PLAN PLAN BELOW GROUND	
SHEET NO.: FS-105	TOTAL SHEETS: 105
DATE: 1954	SCALE: AS SHOWN

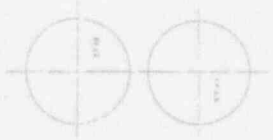
11-11



SEE NOTE 2



FOR INFORMATION TO THE USER AND FOR PROTECTION OF THE USER	
PROJECT NO.	ARNS-1000
DATE	11/19/77
DESIGNER	ARNS-1000
CHECKED	ARNS-1000
APPROVED	ARNS-1000
SCALE	AS SHOWN
ARKANSAS NUCLEAR ONE	
REACTOR BUILDING	
PIPE PROTECTION PLAN	
OPERATING FLOOR PLAN	
FIG. NO.	1
SHEET NO.	1
TOTAL SHEETS	1

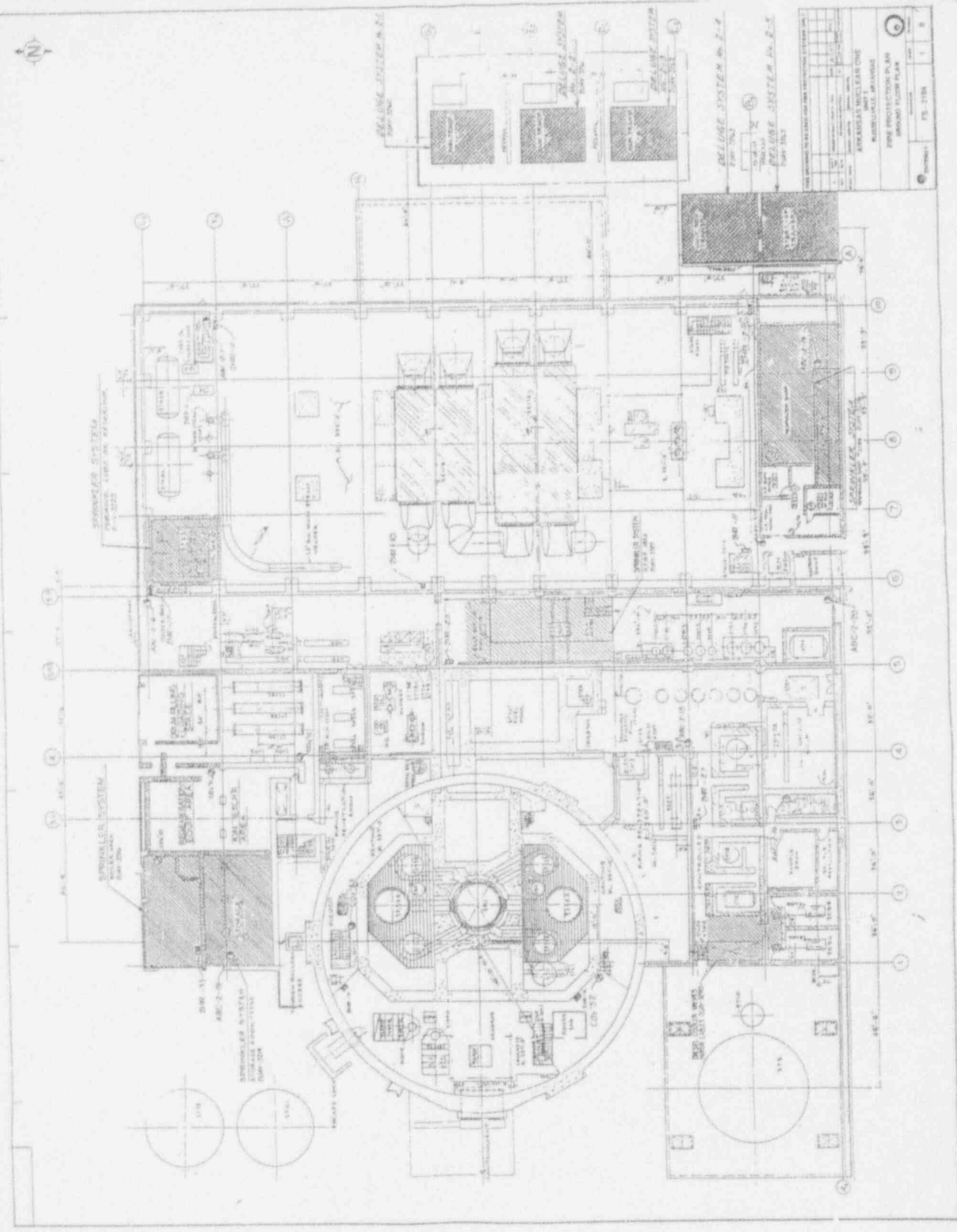


REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS

SPRINKLER SYSTEM
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS

SPRINKLER SYSTEM
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS

SPRINKLER SYSTEM
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS
 REACTOR BUILDING - FRESH WATER SYSTEM COMPONENTS



APPROVED FOR CONSTRUCTION BY THE BOARD OF FIRE PROTECTION PLANS BOARD OF FIRE PROTECTION PLANS BOARD OF FIRE PROTECTION PLANS BOARD OF FIRE PROTECTION PLANS	
PROJECT NO. 175-1158 DATE 1-1-58	SHEET NO. 1 OF 1



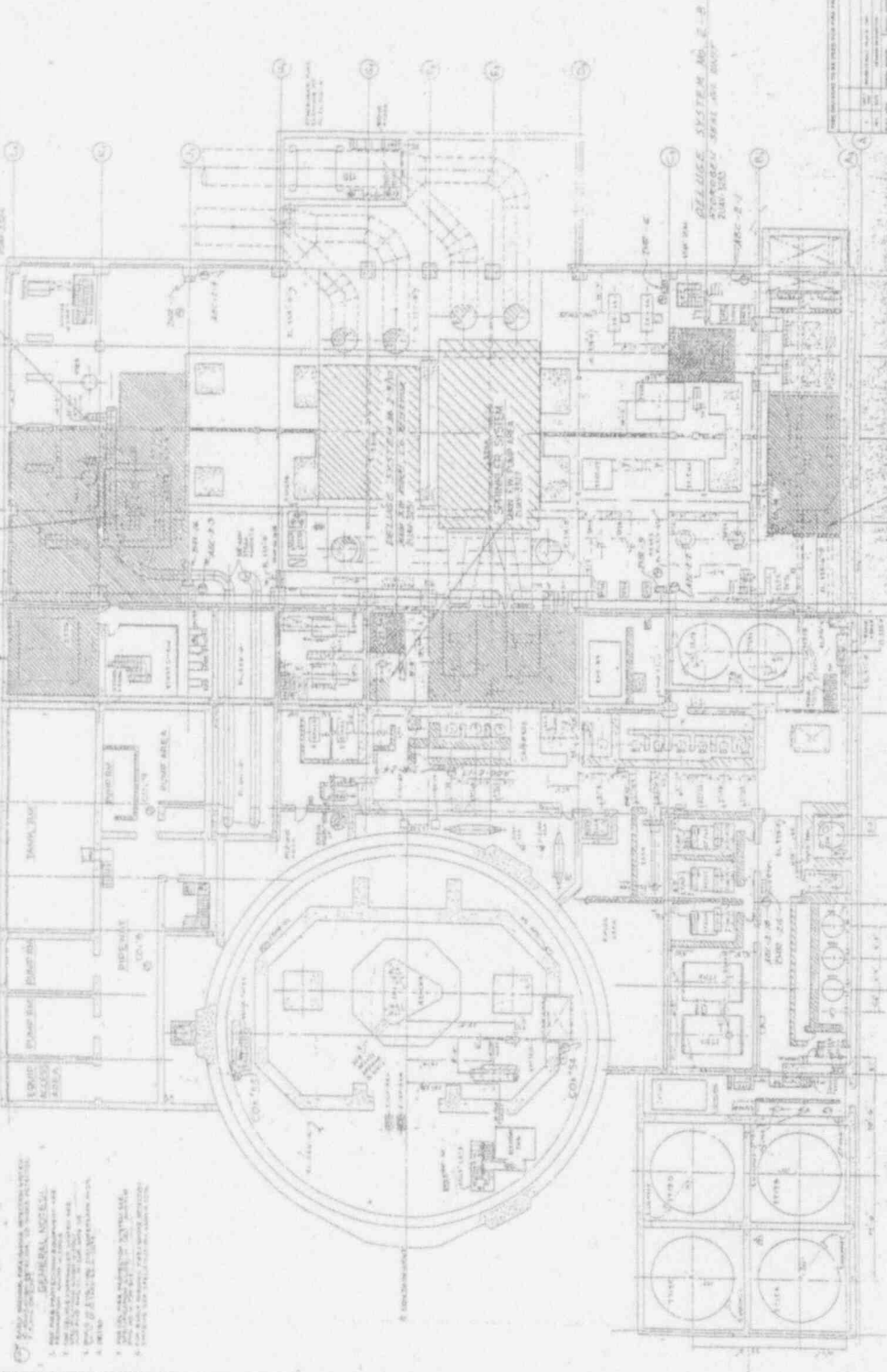
TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM



TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

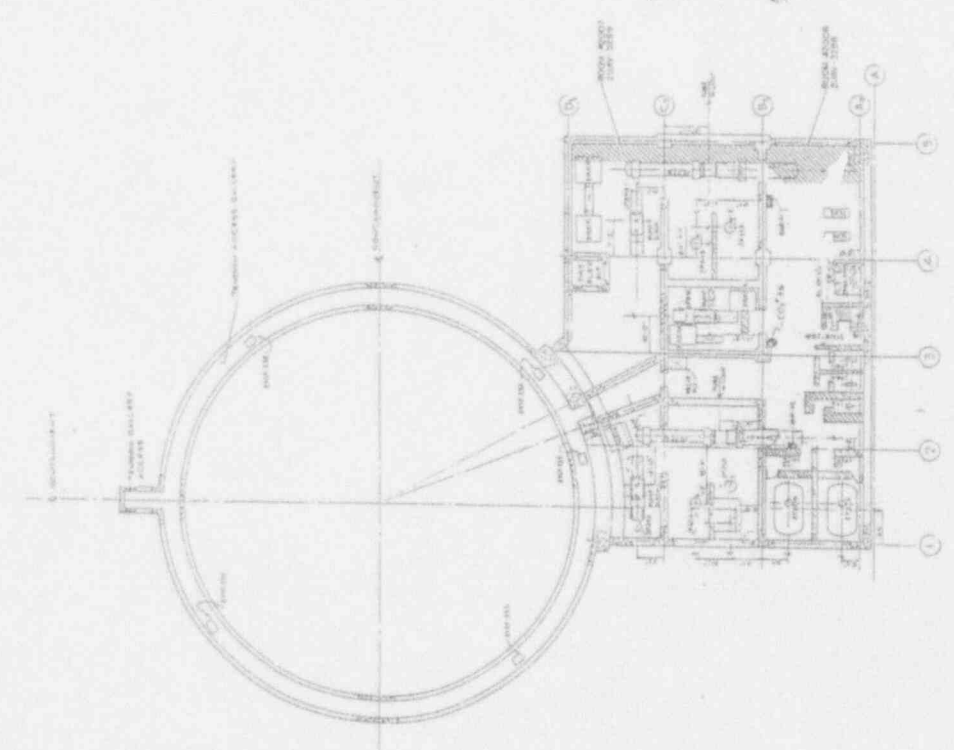
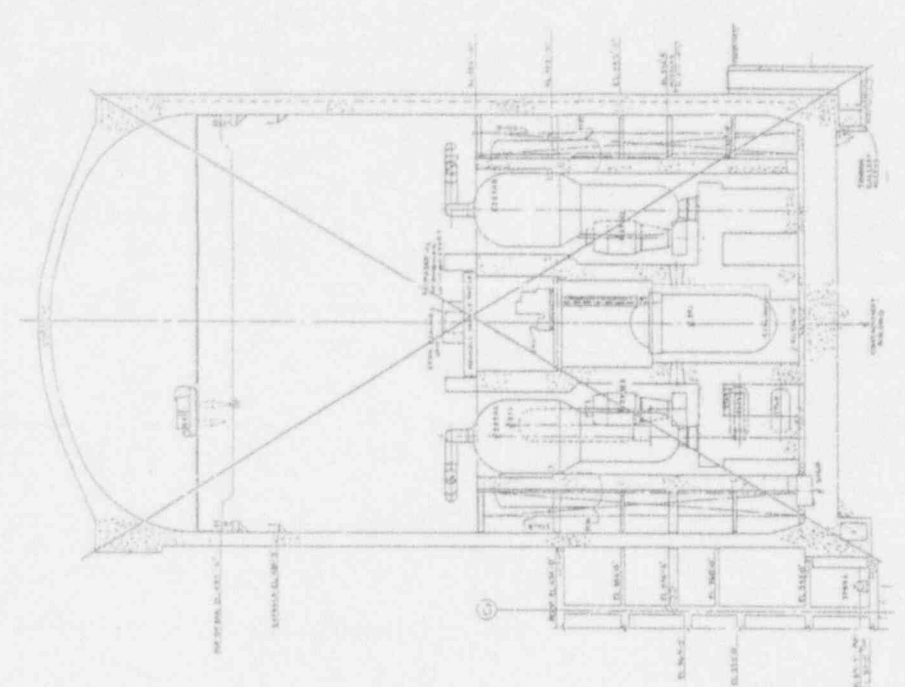
TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

TEMPERATURE SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM
 AIR CONDITIONING SYSTEM

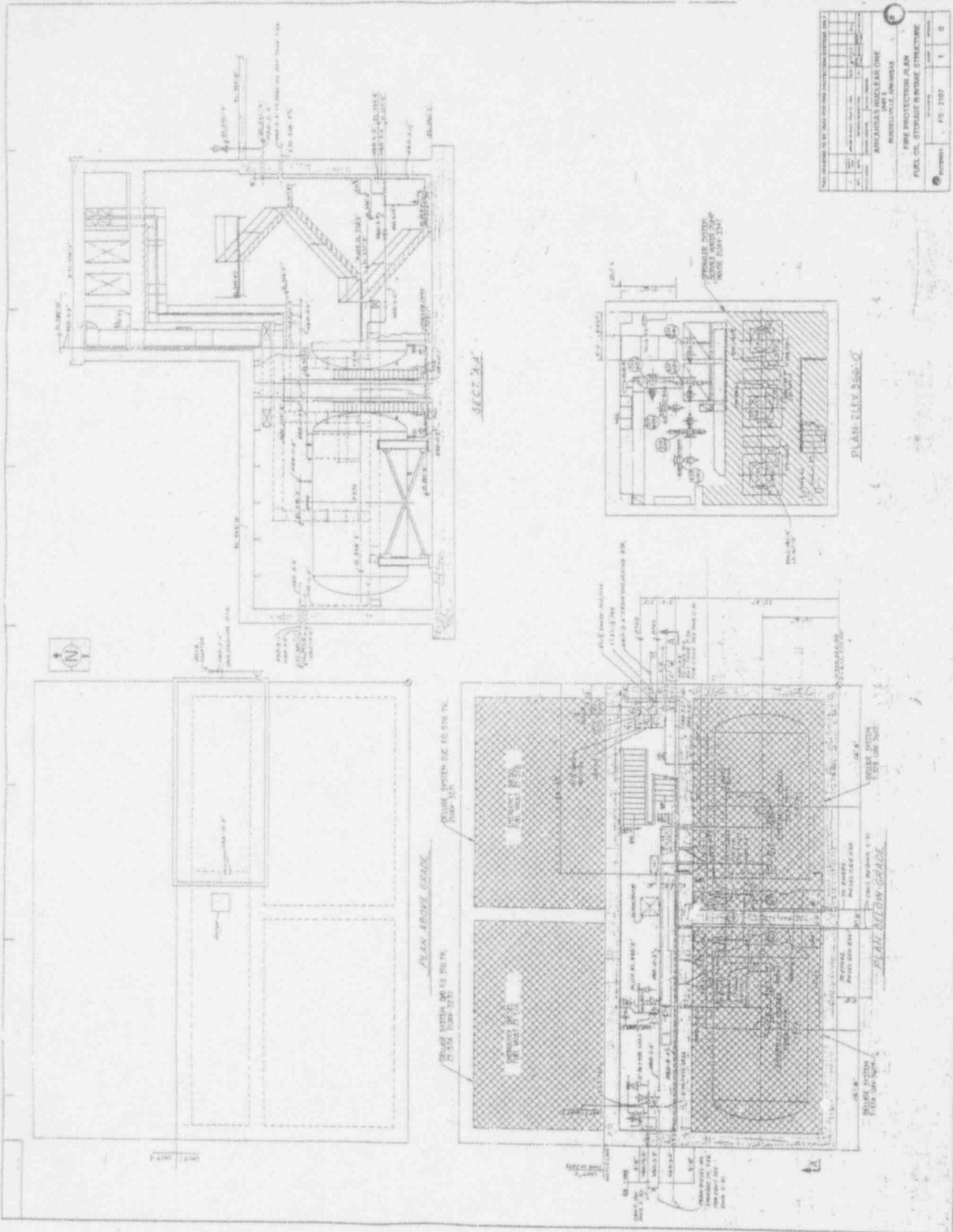
NO.	DATE	REVISION
1	1955	REVISED
2	1955	REVISED
3	1955	REVISED
4	1955	REVISED
5	1955	REVISED
6	1955	REVISED
7	1955	REVISED
8	1955	REVISED
9	1955	REVISED
10	1955	REVISED

GENERAL CONTRACTOR
 ARCHITECTURAL FIRM
 ENGINEER
 MECHANICAL ENGINEER
 ELECTRICAL ENGINEER
 PLUMBING ENGINEER
 STRUCTURAL ENGINEER
 CIVIL ENGINEER
 CHEMICAL ENGINEER
 METALLURGICAL ENGINEER
 AERONAUTICAL ENGINEER
 MARINE ENGINEER
 INDUSTRIAL ENGINEER
 AGRICULTURAL ENGINEER
 MINING ENGINEER
 PETROLEUM ENGINEER
 CHEMICAL ENGINEER
 METALLURGICAL ENGINEER
 AERONAUTICAL ENGINEER
 MARINE ENGINEER
 INDUSTRIAL ENGINEER
 AGRICULTURAL ENGINEER
 MINING ENGINEER
 PETROLEUM ENGINEER



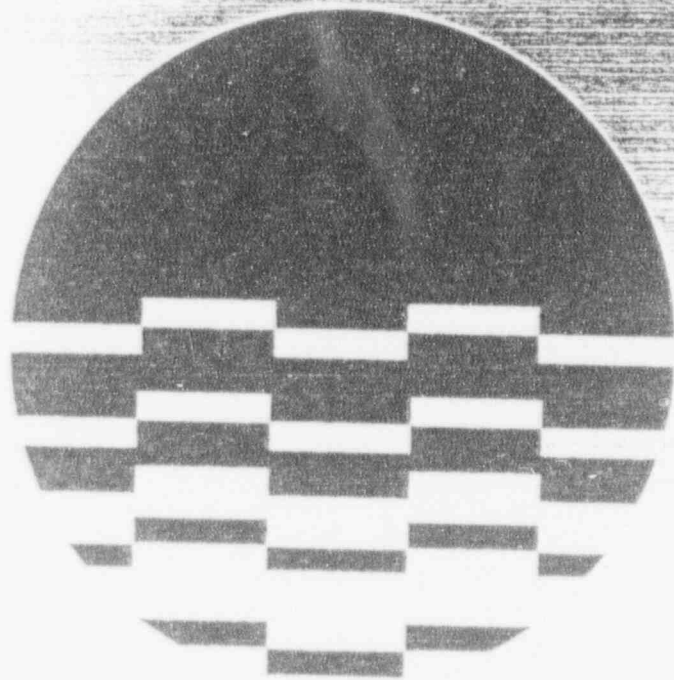
PLAN AT SILEV. SITO

ADVANCED NUCLEAR ONE MOBILE REACTOR FIRE PROTECTION PLAN AT FUEL STAGE			PS - 108 1 0
PROJECT NO. SHEET NO. DATE	DRAWN BY CHECKED BY APPROVED BY		



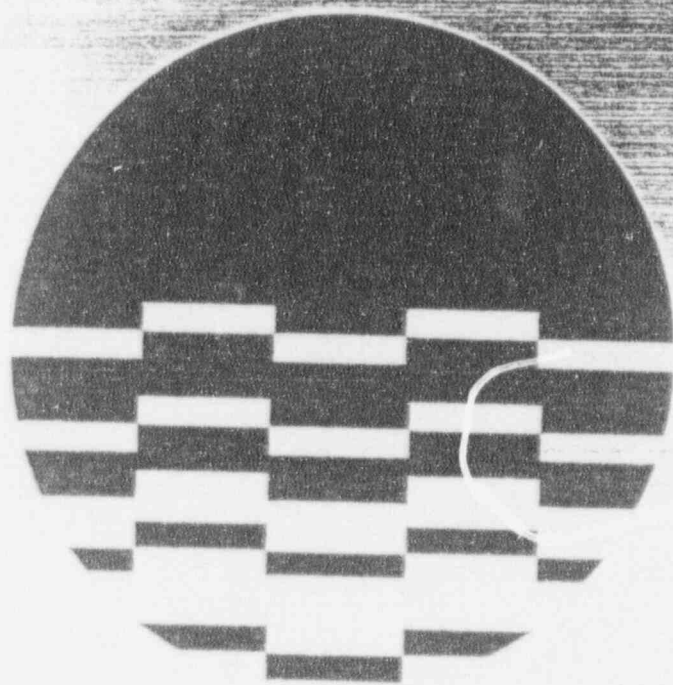
THIS DRAWING IS TO BE USED FOR THE PROJECT AND NOT FOR ANY OTHER PROJECT.	
PROJECT NO.	PS-2107
DATE	1 10
DESIGNER	W. H. HARRIS
CHECKED	
APPROVED	
PROJECT TITLE FIRE PROTECTION ALARM FUEL OIL STORAGE IN ROTARY STRUCTURE	
PROJECT LOCATION INDUSTRIAL AREA	

ARKANSAS NUCLEAR ONE
FIRE HAZARDS ANALYSIS

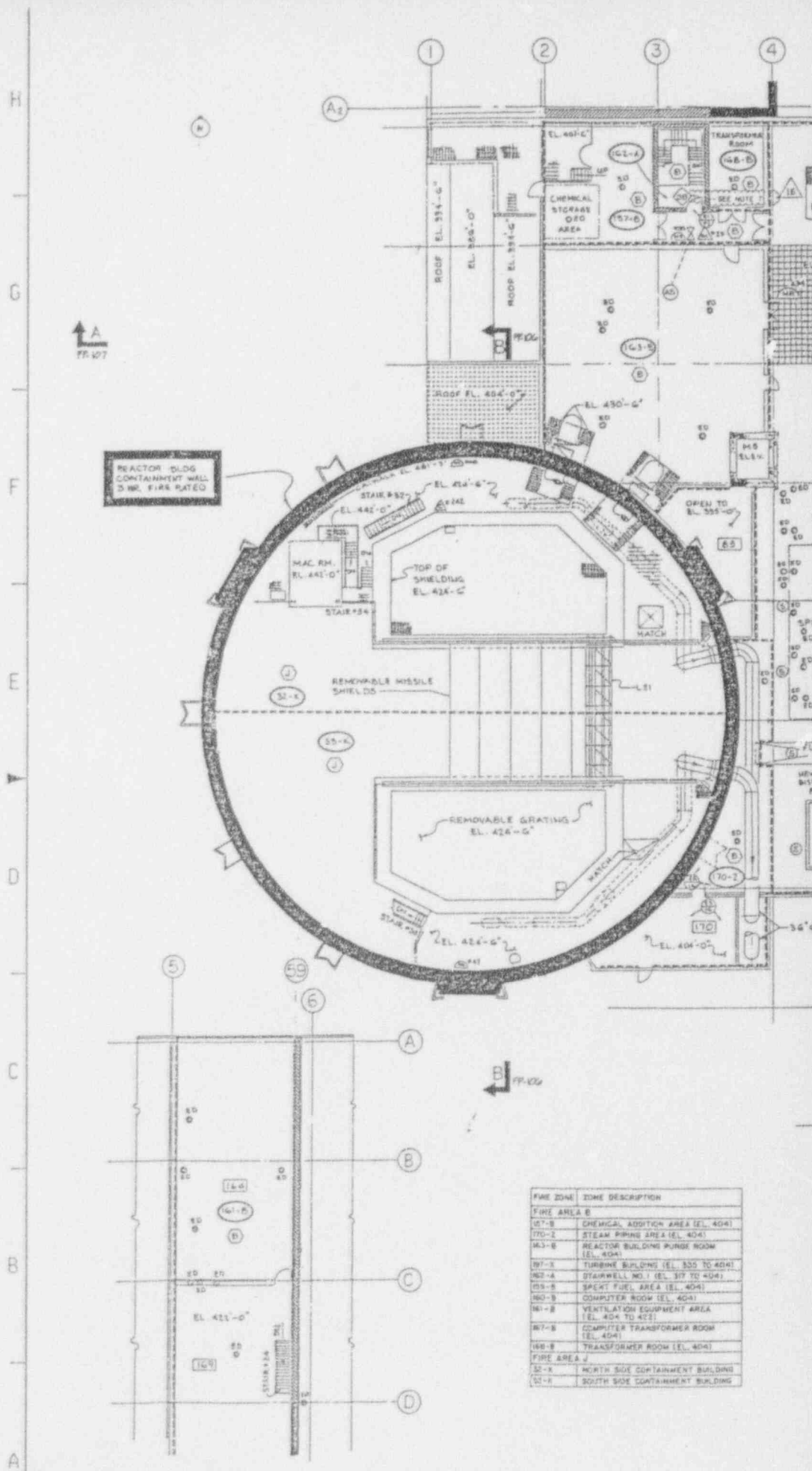


ENTERGY

ARKANSAS NUCLEAR ONE
FIRE HAZARDS ANALYSIS



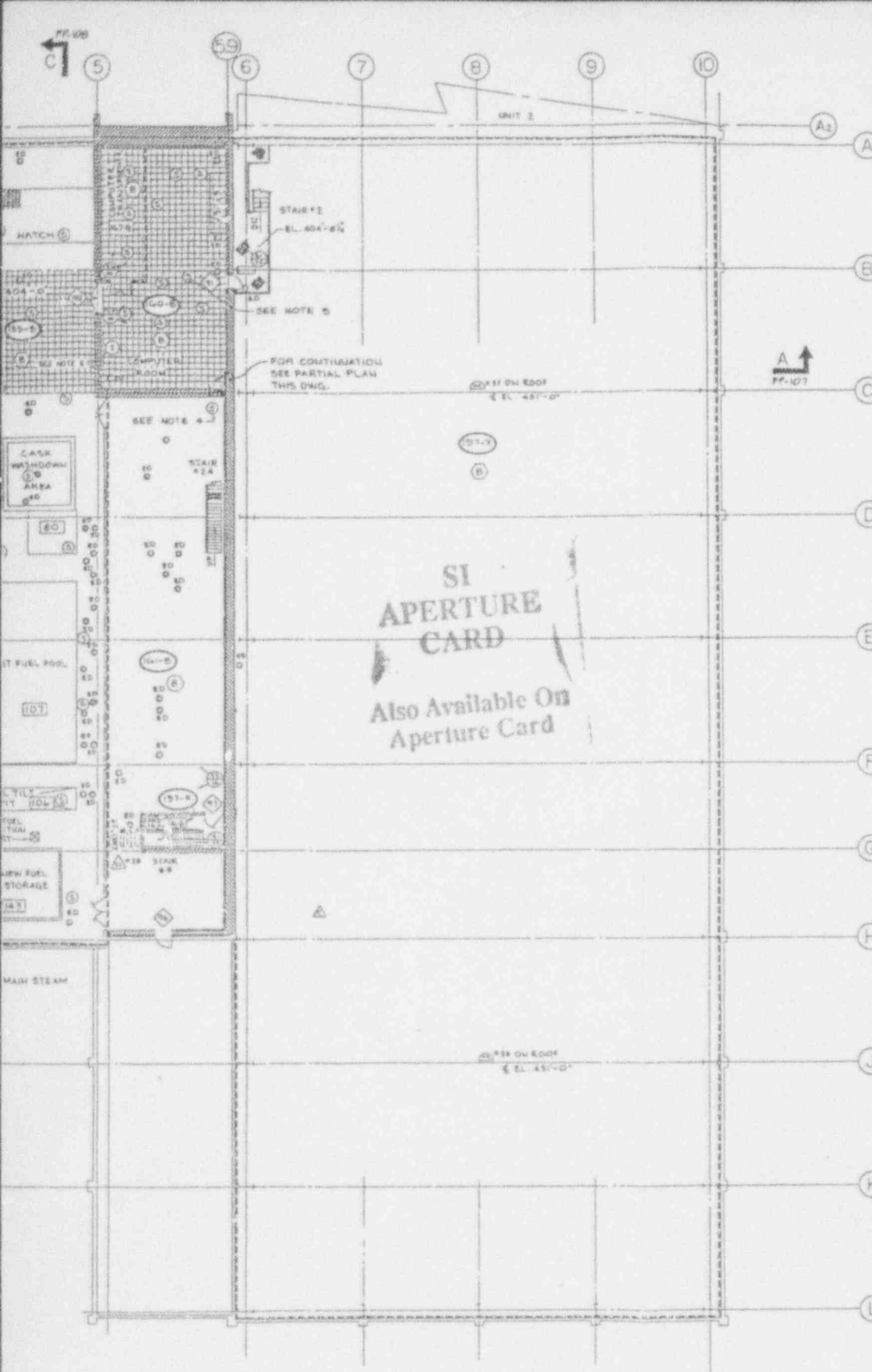
ENTERGY



REACTOR BLDG
CONTAINMENT WALL
3 IN. FIRE RATED

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
07-B	CHEMICAL ADDITION AREA (EL. 404)
770-2	STEAM PIPING AREA (EL. 404)
03-B	REACTOR BUILDING PUMPS ROOM (EL. 404)
07-X	TURBINE BUILDING (EL. 330 TO 404)
02-A	STAIRWELL NO. 1 (EL. 317 TO 404)
05-B	SPEAK FUEL AREA (EL. 404)
06-B	COMPUTER ROOM (EL. 404)
06-B	VENTILATION EQUIPMENT AREA (EL. 404 TO 422)
07-B	COMPUTER TRANSFORMER ROOM (EL. 404)
08-B	TRANSFORMER ROOM (EL. 404)
FIRE AREA J	
32-X	NORTH SIDE CONTAINMENT BUILDING
32-Y	SOUTH SIDE CONTAINMENT BUILDING

PARTIAL PLAN
AT EL. 422'-0"



FIRE PROTECTION INFORMATION SYMBOLS

- FLOOR SYMBOLS**
- TECH. SPEC. (NRC)
 - OTHER (ANI)
- WALL SYMBOLS**
- TECH. SPEC. (NRC)
 - OTHER (ANI)
- FIRE ZONE BOUNDARY**
- UL CLASS A FIRE DOOR
 - CO₂ PORTABLE EXTINGUISHER - 20 LBS - U.L. RATING
 - CLASS ABC, DRY CHEMICALS - PORTABLE EXTINGUISHER

- CO₂ 75 LBS. WHEELED TYPE EXTINGUISHER - U.L. RATING
- SMOKE DETECTOR
- HEAT DETECTOR
- FLAME DETECTOR
- PORTABLE HALON 1211 FIRE EXTINGUISHER - UL LISTING 10 BC
- HOSE REEL (WITH NUMBER IF KNOWN)
- ROOM NUMBER (SHOWN IF DIFFERENT FROM ZONE PREFIX)
- FLOOR DRAIN
- EQUIPMENT DRAIN
- EMERGENCY LIGHTING ENTIRE WITH PANEL NO.
- BATTERY POWERED EMERGENCY LIGHT
- FIRE ZONE NUMBER
- FIRE AREA

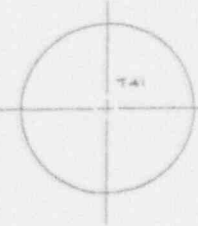
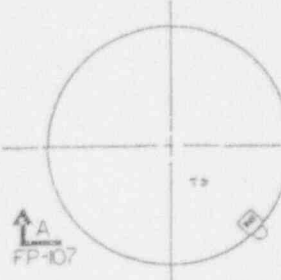
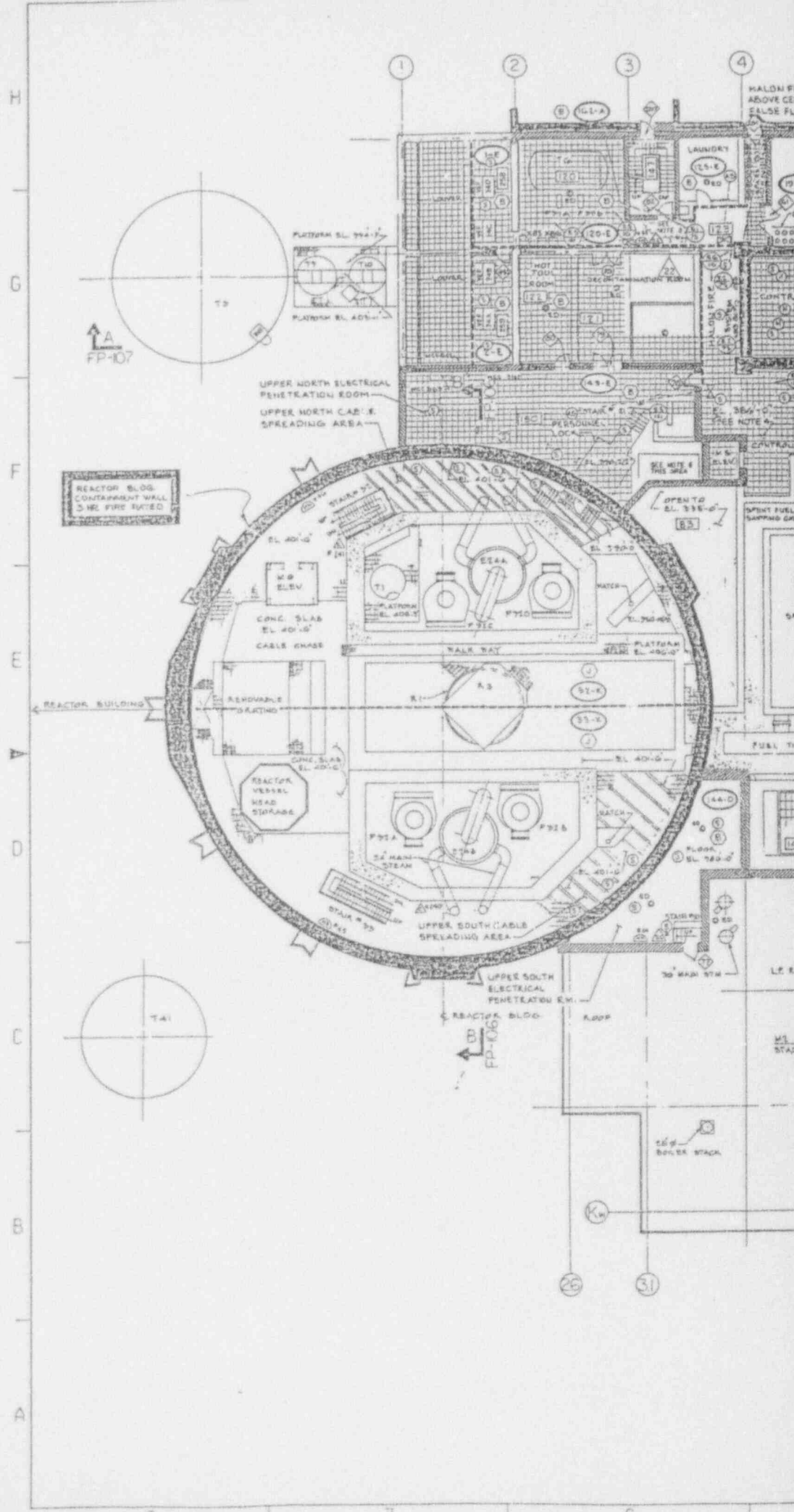
NOTES:

- ALL FLOORS AND CEILING WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BLDG. CONTAINMENT WALLS ARE 3 HR. FIRE RATED (UNLESS INDICATED OTHERWISE) STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR. FIRE RATED REQUIREMENT.
- THIS DRAWING SHOWS FIRE BARRIERS (WALLS + FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- REFER TO FD-00-02 FOR FIRE BARRIER KEY PLAN.
- SMOKE DETECTOR GS-707 LOCATED IN DUCT (ON CEILING) TO SUCTION OF VEF AB.
- SMOKE DETECTOR GS-708 LOCATED IN DUCT TO SUCTION OF VEF-04/B.
- SMOKE DETECTION SYSTEM CABINETS AND ROOF CEILING.
- CRITICAL FIRE DOOR.

9307280070 - 01

SAR Figure 2 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figure is impacted. This drawing has no SAR number assigned see Appendix 9B for Fire Hazards Analysis.

REV	DATE	REVISION DESCRIPTION	BY	CHECKED
16	05/17/78	AS-BUILT, DNR 93-819'S (SAR 93-172)	JK	JK
15	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
14	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
13	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
12	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
11	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
10	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
9	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
8	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
7	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
6	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
5	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
4	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
3	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
2	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
1	05/17/78	AS-BUILT, DNR 92-118'S (SAR 92-0873)	JK	JK
<p>SCALE: 1/8" = 1'-0" (OVER 1/2" = 1'-0") (OVER 1/4" = 1'-0") (OVER 1/8" = 1'-0")</p> <p>ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS</p> <p>FIRE ZONES FUEL HANDLING FLOOR PLAN EL. 404'-0" AND 422'-0"</p> <p>DRAWING NO. FP-101 SHEET 1 OF 16</p> <p>ENTERY</p>				



REACTOR BLDG.
CONTAINMENT WALL
3 HR FIRE RATED

H
G
F
E
D
C
B
A

1 2 3 4

HALON FIRE ABOVE CEILING EL. 50-0

PLATFORM EL. 494-0

PLATFORM EL. 405-0

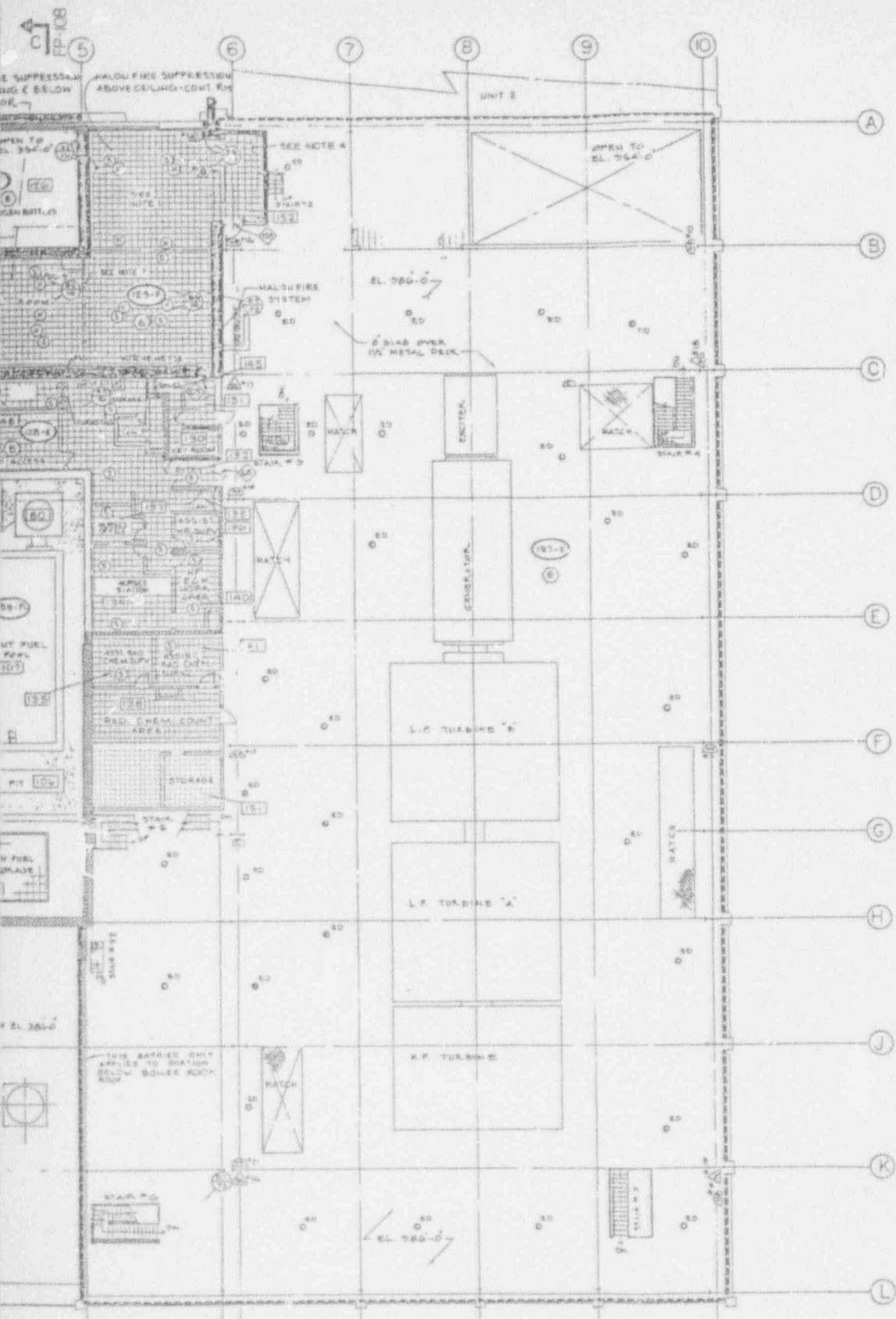
UPPER NORTH ELECTRICAL PENETRATION ROOM
UPPER NORTH CABLE SPREADING AREA

OPEN TO EL. 335-0

REACTOR BLDG.
FP-06

60# BOILER STACK

R 1 7 1



SI APERTURE CARD
 Also Available On Aperture Card

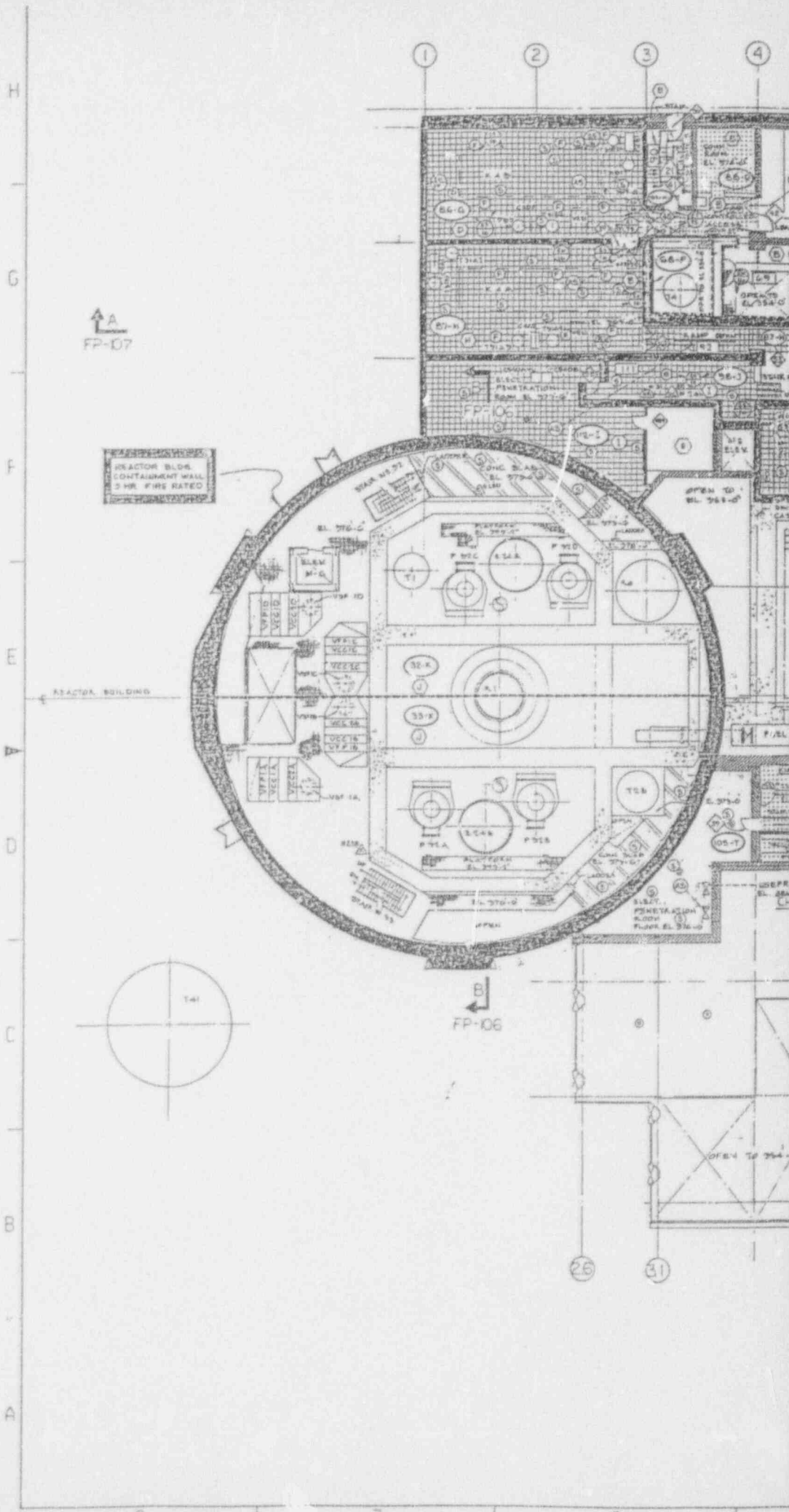
FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
125-E	RESPIRATOR STORAGE ROOM (EL. 386)
126-E	SULFURIC ACID ADDITION TANK AND PUMP ROOM (EL. 386)
127-E	TURBINE BUILDING (EL. 370 TO 404)
128-A	STAIRWELL NO. 1 (EL. 377 TO 404)
128-E	UPPER NORTH ELECTRICAL PENETRATION ROOM, NOT TOOL ROOM, DECONTAMINATION ROOM (EL. 386)
129-E	CONTROLLED ACCESS (EL. 386)
130-D	UPPER SOUTH ELECTRICAL PENETRATION ROOM (EL. 386)
131-E	NORTH EMERGENCY DIESEL GENERATOR EXHAUST FANS (EL. 386)
132-E	SOUTH EMERGENCY DIESEL GENERATOR EXHAUST FANS (EL. 386)
FIRE AREA G	
129-F	CONTROL ROOM (EL. 386)
FIRE AREA J	
133-K	NORTH SIDE CONTAINMENT BUILDING
133-L	SOUTH SIDE CONTAINMENT BUILDING

- NOTES:**
- FOR GENERAL NOTES SEE DWG. FP-101.
 - EACH CONTROL PANEL AND CONSOLE IN THE FRONT OF THE CONTROL ROOM CONTAIN ONE SMOKE DETECTOR (5 OF A TOTAL OF 11).
 - ALL FLOORS AND CEILING WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR CONTAINMENT BUILDING ARE 3 HR FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR FIRE RATED REQUIREMENT.
 - THIS DRAWING SHOWS 3/4" FIRE BARRIER (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
 - THE ROOF OF ROOM 152 (UNIT 1 SHIFT SUPERVISOR'S OFFICE; FB-152-1A) IS A TECH. SPEC. (NRC) BARRIER.
 - REFER TO FB-00-05 FOR THE FIRE BARRIER KEY PLAN.
 - THE FLOOR AREA IN THE SOUTHWEST CORNER OF ROOM 152 UPPER NORTH ELECTRICAL PENETRATION ROOM OF FLOOR 386 (AREA SOUTH SIDE WEST TO PERFORMERS LOCK DIRECTLY OVER THE S/C CONTROL ROOM ON ELEV. 386) IS NOT UNDER NORTH ELECTRICAL PENETRATION ROOM IS NOT A FIRE BARRIER.
 - WALL SYSTEMS 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

9307280079 -02

SI Figure is based upon this drawing. Provide a License to Document Change Request to Licensing when modifying this drawing if the corresponding SI Figure is impacted. * This drawing has no SI Figure assigned see Appendix 9B for Fire Hazard Analysis.

22	REV	AS-BUILT FROM 10-B1816 (10-B-11-1073)	6/2/82	1/1
21	REV	AS-BUILT FROM 10-B1816 (10-B-11-1073)	6/2/82	1/1
REV	DATE	REVISION DESCRIPTION	BY	CHKD
SCALE	1:1	AS-BUILT	DATE	10/21/82
ARKANSAS NUCLEAR ONE UNIT				
RUSSELLVILLE, ARKANSAS				
FIRE ZONE OPERATING FLOOR PLAN EL. 386'-0"				
DRAWING NO.		SHEET		REVISION
FP-182		1		22
FIG. 1 OF 2				

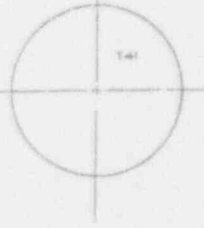


↑ AA
FP-07

REACTOR BLDG.
CONTAINMENT WALL
3 HR FIRE RATED

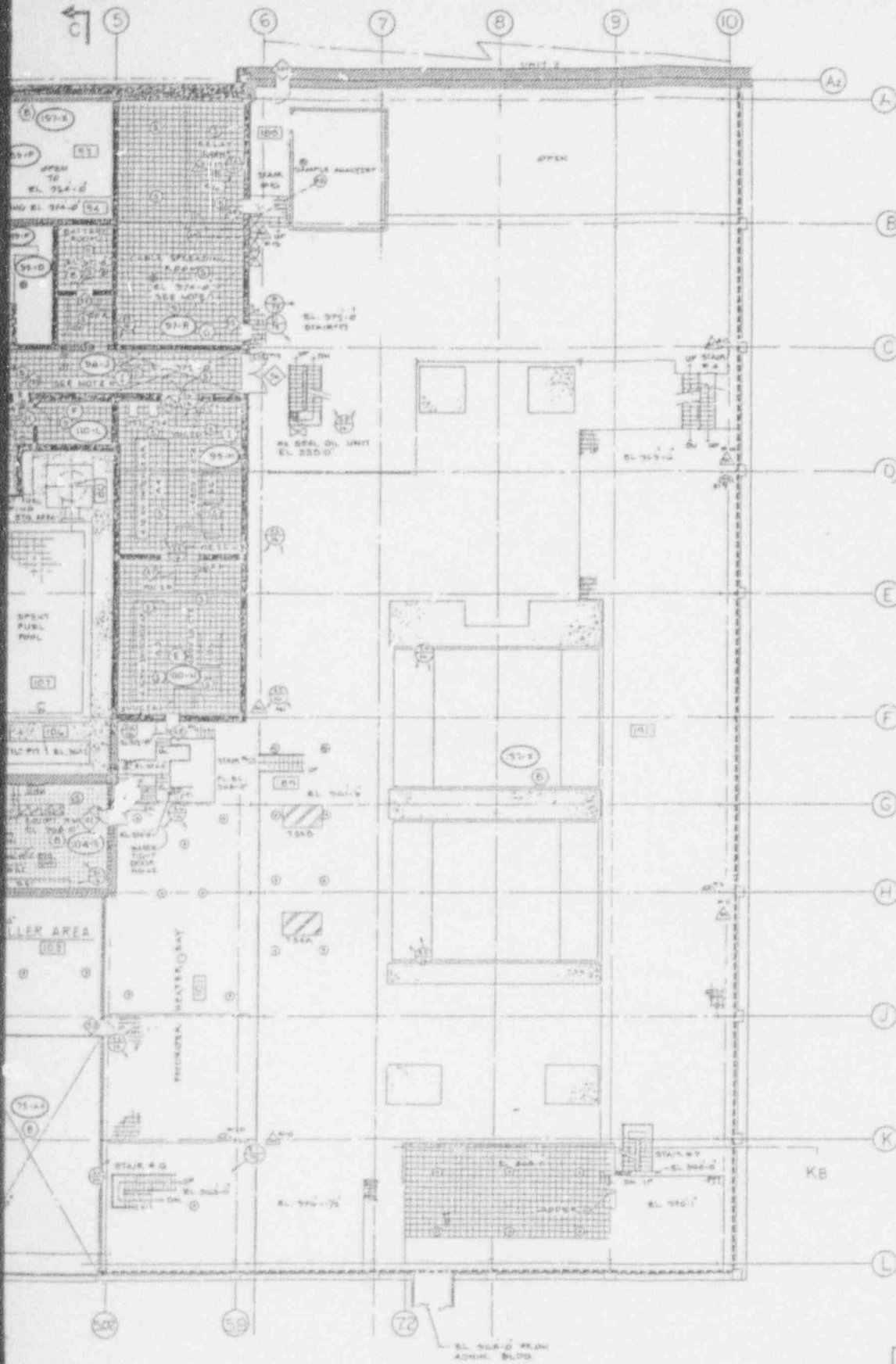
← REACTOR BUILDING

↓ BB
FP-06



26

31



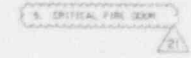
SI APERTURE CARD

Also Available On Aperture Card

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
100-T	LOWER SOUTH ELECTRICAL PENETRATION ROOM (EL. 374-01)
104-S	ELECTRICAL EQUIPMENT ROOM (EL. 368)
175-AA	BOILER ROOM (EL. 354)
107-X	TURBINE BUILDING (EL. 35 TO 404)
105-O	NORTH BATTERY ROOM (EL. 372)
106-P	REACTOR COOLANT MAKEUP TANK ROOM (EL. 354 & 368)
103-F	CONTROLLED ACCESS (EL. 374)
108-O	COMMUNICATIONS ROOM (EL. 374)
102-S	STARWELL NO. 1 (EL. 37 TO 404)
FIRE AREA D	
104-G	NORTH DIESEL GENERATOR ROOM (EL. 368)
FIRE AREA E	
100-N	SOUTH SWITCHGEAR ROOM (EL. 372)
FIRE AREA F	
100-L	SOUTH BATTERY ROOM (EL. 372)
FIRE AREA J	
107-R	CABLE SPREADING ROOM AND RELAY ROOM (EL. 372)
FIRE AREA H	
107-K	SOUTH DIESEL GENERATOR ROOM (EL. 368)
FIRE AREA I	
109-M	NORTH SWITCHGEAR ROOM (EL. 372)
106-J	UNCONTROLLED ACCESS (EL. 372)
103-T	LOWER NORTH ELECTRICAL PENETRATION ROOM (EL. 373-8)
FIRE AREA K	
103-X	NORTH SIX CONTAINMENT BUILDING
103-Y	SOUTH SIX CONTAINMENT BUILDING

NOTES

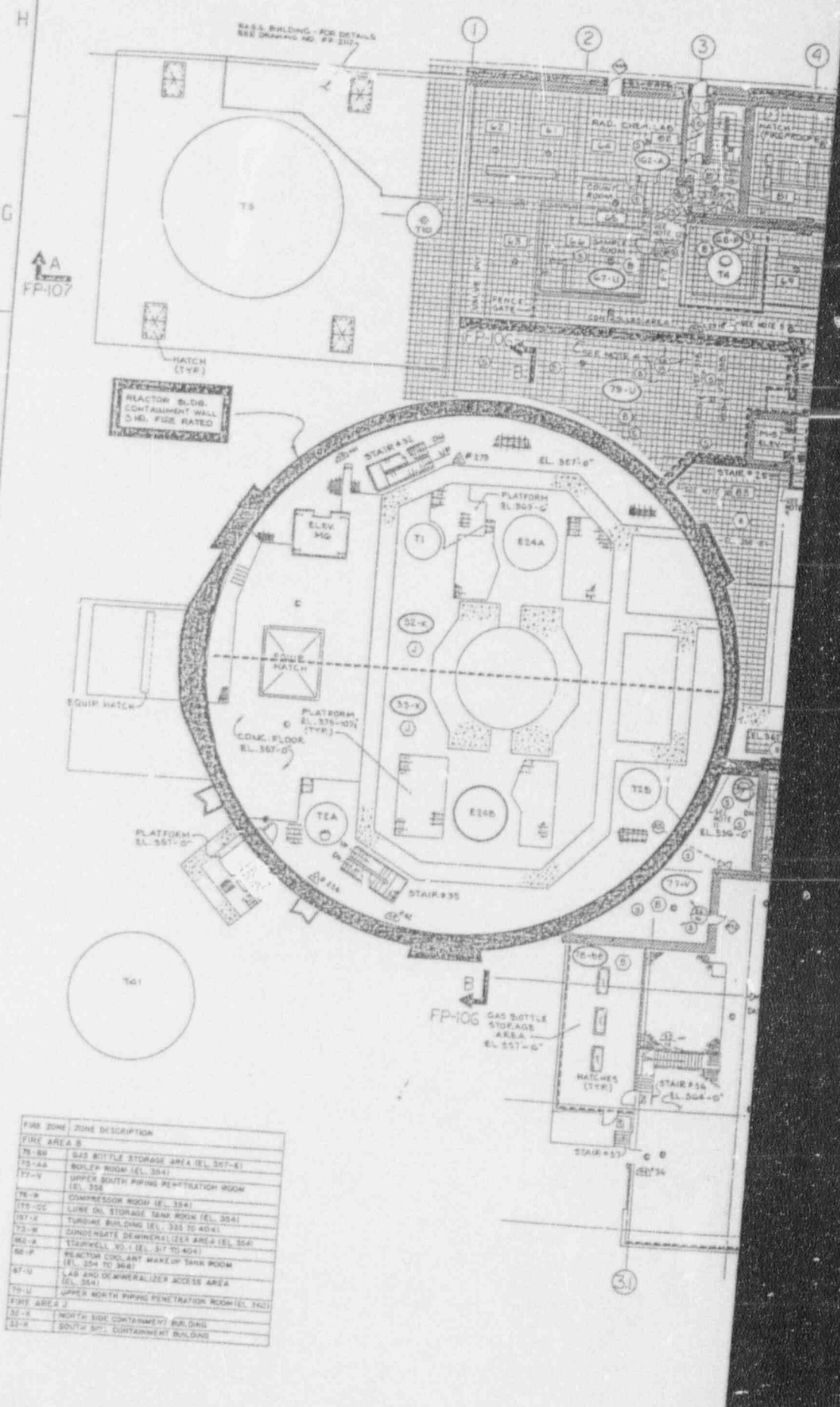
- FOR GENERAL NOTES SEE DWG FP-101.
- 1. CABLE TRAYS IN THIS ZONE ARE MONITORED BY BROU/TOWHRE LINE TYPE HEAT DETECTORS.
- 2. ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3-HR FIRE RATED. UPTM INDICATED OTHERWISE SIGNATURE AND DATE ARE EXEMPT FROM THE 3-HR FIRE RATED REQUIREMENT.
- 3. THIS DRAWING SHOWS FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- 4. REFER TO PE 00-04 FOR THE FIRE BARRIER KEY PLAN.



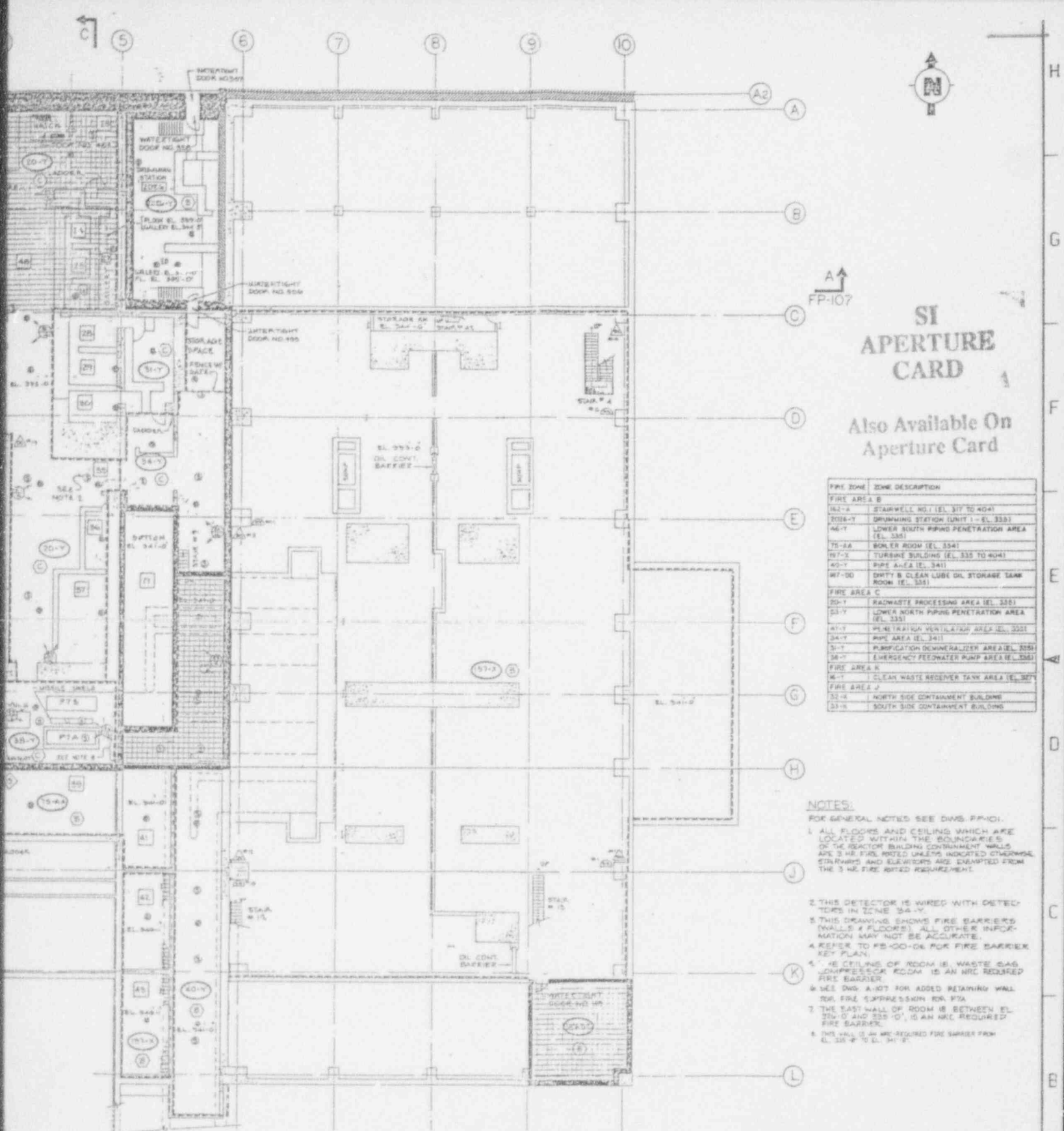
21	AS-BUILT	DRN 93-01597	4	TR	XX	XX	XX
22	AS-BUILT	DRN 93-01598	4	TR	XX	XX	XX
REV	DATE	REVISION DESCRIPTION	4	BY	CHKD	APP'D	DATE
NATIONAL INSTRUMENTS & DESIGN, INC. DRAWN: J. HILLIS JOB NO.: 88-194-170							
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS							
FIRE ZONES INTERMEDIATE FL. 3R PLAN EL. 368'-8" AND 372'-8"							
DRAWING NO.		SHEET		REVISION			
ENTENGY		FP-103		1			

SIAR Figure 1 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SIAR figure is impacted. This drawing has no SIAR number assigned see Appendix 10 for Fire Hazard Analysis.

9307280079-03



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA 1	
78-B	GAS BOTTLE STORAGE AREA (EL. 357'-6")
75-AB	BOLTER ROOM (EL. 354)
77-V	UPPER SOUTH PIPING PENETRATION ROOM (EL. 358)
76-W	COMPRESSOR ROOM (EL. 354)
77-CC	LUBE OIL STORAGE TANK ROOM (EL. 354)
77-X	TURBINE BUILDING (EL. 353 TO 404)
73-W	ZARONINATE DEMINERALIZER AREA (EL. 354)
80-W	STAIRWELL NO. 1 (EL. 347 TO 404)
82-F	REACTOR COOLANT MAKEUP TANK ROOM (EL. 354 TO 368)
87-U	LAB AND DEMINERALIZER ACCESS AREA (EL. 354)
79-U	UPPER NORTH PIPING PENETRATION ROOM (EL. 362)
FIRE AREA 2	
31-E	NORTH SIDE CONTAINMENT BUILDING
31-S	SOUTH SIDE CONTAINMENT BUILDING



SI APERTURE CARD

Also Available On
Aperture Card

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
162-A	STAIRWELL NO. 1 (EL. 317 TO 404)
2026-Y	DRUMMING STATION (UNIT 1 - EL. 333)
46-Y	LOWER SOUTH PIPING PENETRATION AREA (EL. 333)
75-AA	BOILER ROOM (EL. 334)
87-X	TURBINE BUILDING (EL. 333 TO 404)
40-Y	PIPE AREA (EL. 341)
87-DD	DRYTY B CLEAN LUBE OIL STORAGE TANK ROOM (EL. 333)
FIRE AREA C	
20-Y	RADWASTE PROCESSING AREA (EL. 333)
33-Y	LOWER NORTH PIPING PENETRATION AREA (EL. 333)
87-Y	PERIMETER VENTILATION AREA (EL. 333)
34-Y	PIPE AREA (EL. 341)
31-Y	PURIFICATION DEMINERALIZER AREA (EL. 333)
38-Y	EMERGENCY FEEDWATER PUMP AREA (EL. 333)
FIRE AREA H	
86-Y	CLEAN WASTE RECEIVER TANK AREA (EL. 327)
FIRE AREA J	
32-A	NORTH SIDE CONTAINMENT BUILDING
33-B	SOUTH SIDE CONTAINMENT BUILDING

NOTES:

FOR GENERAL NOTES SEE DWG. FP-101.

1. ALL FLOORS AND CEILING WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3 HR. FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR. FIRE RATED REQUIREMENT.

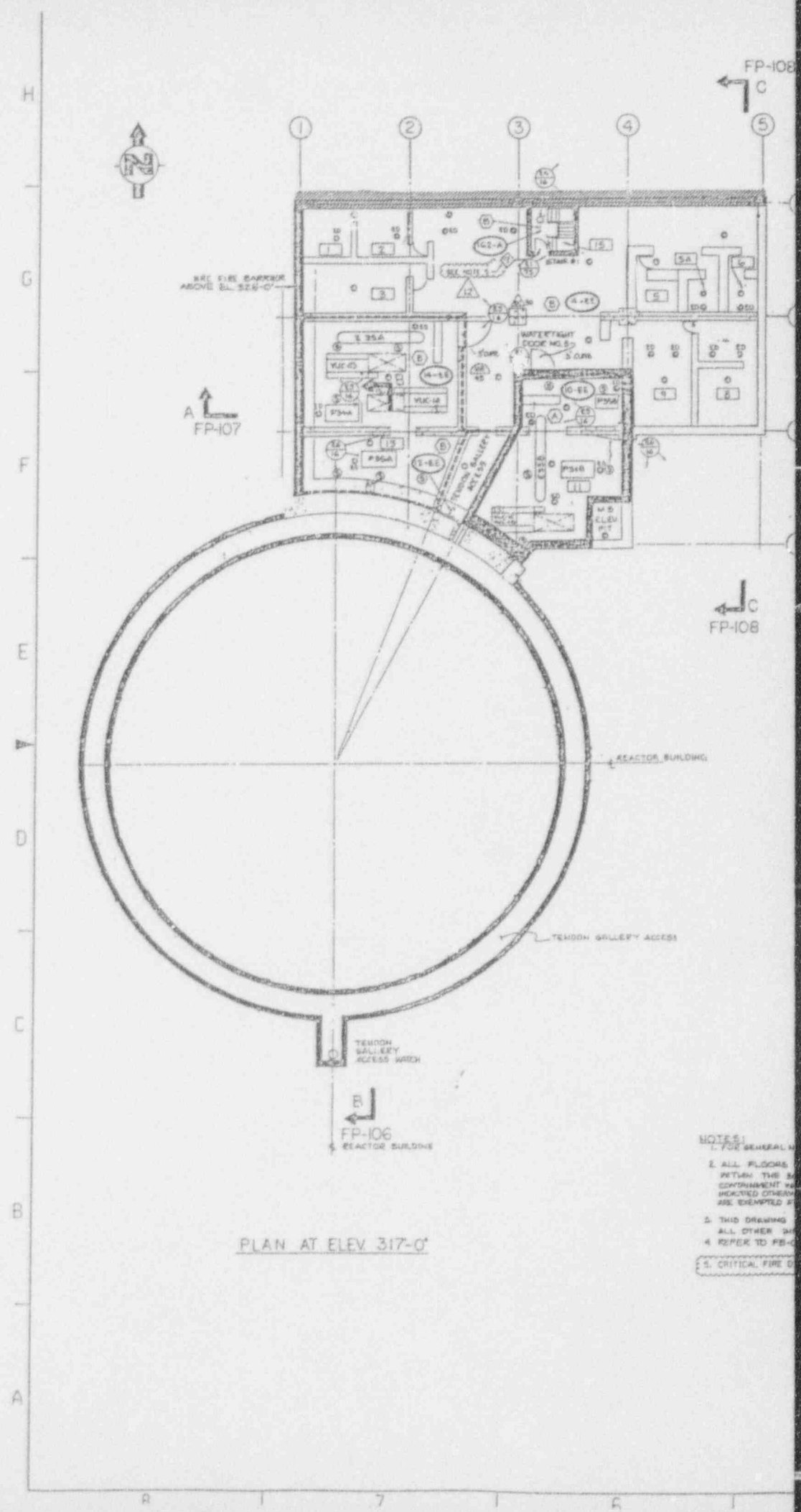
2. THIS DETECTOR IS WIRED WITH DETECTORS IN ZONE 34-Y.
3. THIS DRAWING SHOWS FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
4. REFER TO PB-00-06 FOR FIRE BARRIER KEY PLAN.
5. THE CEILING OF ROOM 18, WASTE GAS COMPRESSION ROOM IS AN ARI REQUIRED FIRE BARRIER.
6. SEE DWG. A-107 FOR ADDED RETAINING WALL FOR FIRE SUPPRESSION FOR RTA.
7. THE EAST WALL OF ROOM 18 BETWEEN EL. 324'-0" AND 325'-0", IS AN ARI REQUIRED FIRE BARRIER.
8. THIS WALL IS AN ARI REQUIRED FIRE BARRIER FROM EL. 325'-0" TO EL. 341'-0".

16	REV. 1	AS BUILT, 08/22/84	NO. 11814	BY JKL
NO.	DATE	REVISION DESCRIPTION	BY	CHKD BY
162	1/17/84	1. AS BUILT	DRW: J.C. HILLIS	CHKD BY: G.M. STANLEY
ARKANSAS NUCLEAR ONE (UNIT 1) RUSSELLVILLE, ARKANSAS				
FIRE ZONE PLAN BELOW GRADE EL. 335'-0"				
DRAWING NO.		SHEET		REVISION
FP-105		1		16
ENERGY		REC 3" OF ORIGINAL		

SI Figure 16 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SI Figure is indicated. * This drawing has no SI# number assigned see Appendix 18 for Fire Hazards Analysis.

9307280079-05

FP-108



SEE FIRE BARRIER ABOVE EL. 328'-0"

A
FP-107

FP-108
C

C
FP-108

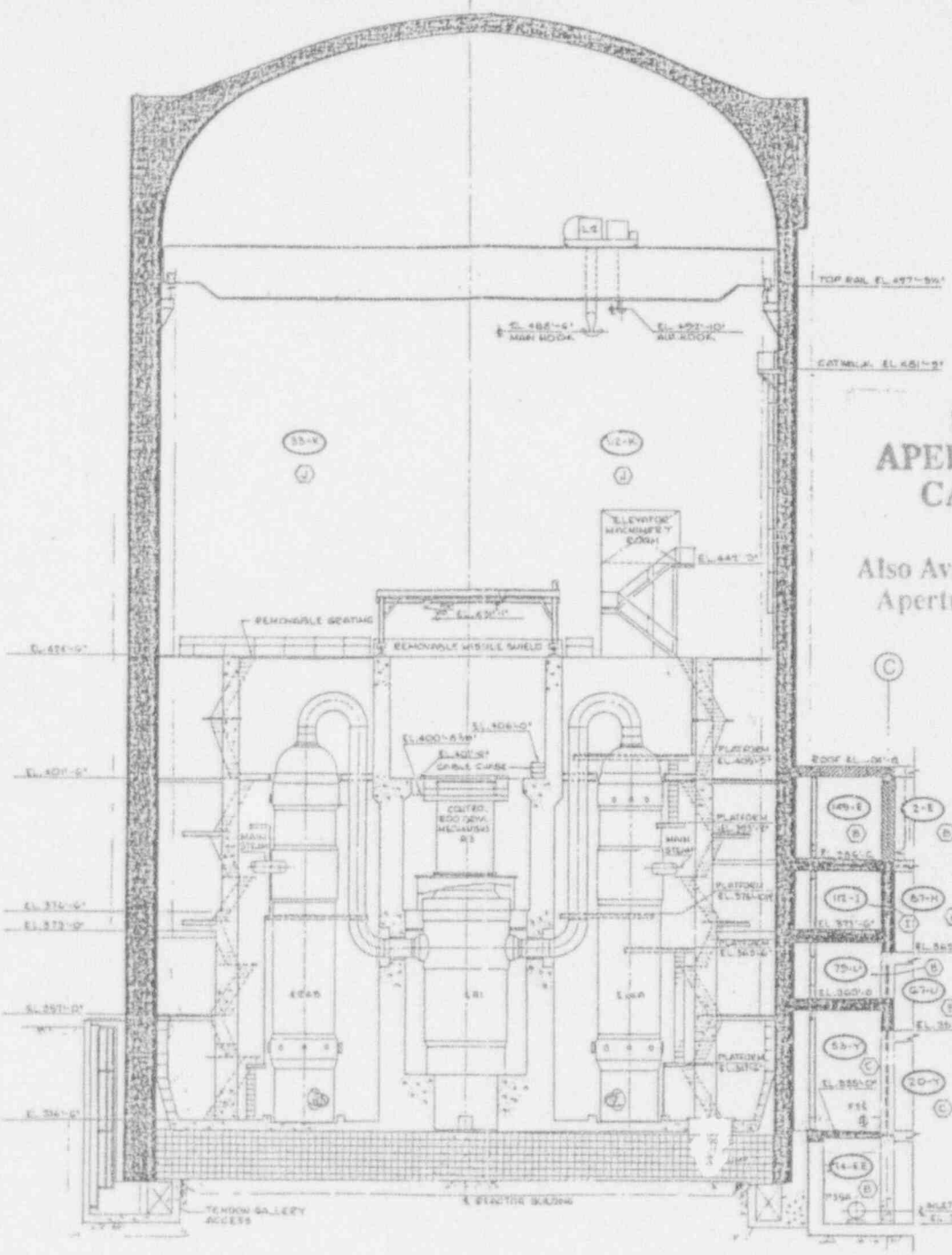
B
FP-106
REACTOR BUILDING

PLAN AT ELEV 317'-0"

- NOTES:
1. FOR GENERAL...
 2. ALL FLOORS WITHIN THE B... COMPARTMENT ARE INDICATED OTHER... ARE EXEMPTED F...
 3. THIS DRAWING ALL OTHER SH...
 4. REFER TO RE-C...
 5. CRITICAL FIRE D...

FP407

FR-101
FR-102
FR-103
FR-104
FR-105



SI APERTURE CARD

Also Available On Aperture Card

SECTION B-B

CEILING FR-101 ARE LOCATED UNDESIRABLE OF THE REACTOR BUILDING...
SHOWS FIRE BARRIERS (WALLS & FLOORS) DIMENSION MAY NOT BE ACCURATE...
CHECK FOR FIRE BARRIER KEY PLAN.

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA A	
4-EE	EAST DECAT HEAT REMOVAL PUMP ROOM (EL. 317)
FIRE AREA B	
2-EE	TENDON GALLERY A LESS AREA (EL. 317)
3-EE	WEST DECAT HEAT REMOVAL PUMP ROOM (EL. 317)
4-EE	CENTRAL ACCESS AREA (EL. 317)
40-A	STAIRWELL NO. 1 (EL. 317 TO 404)

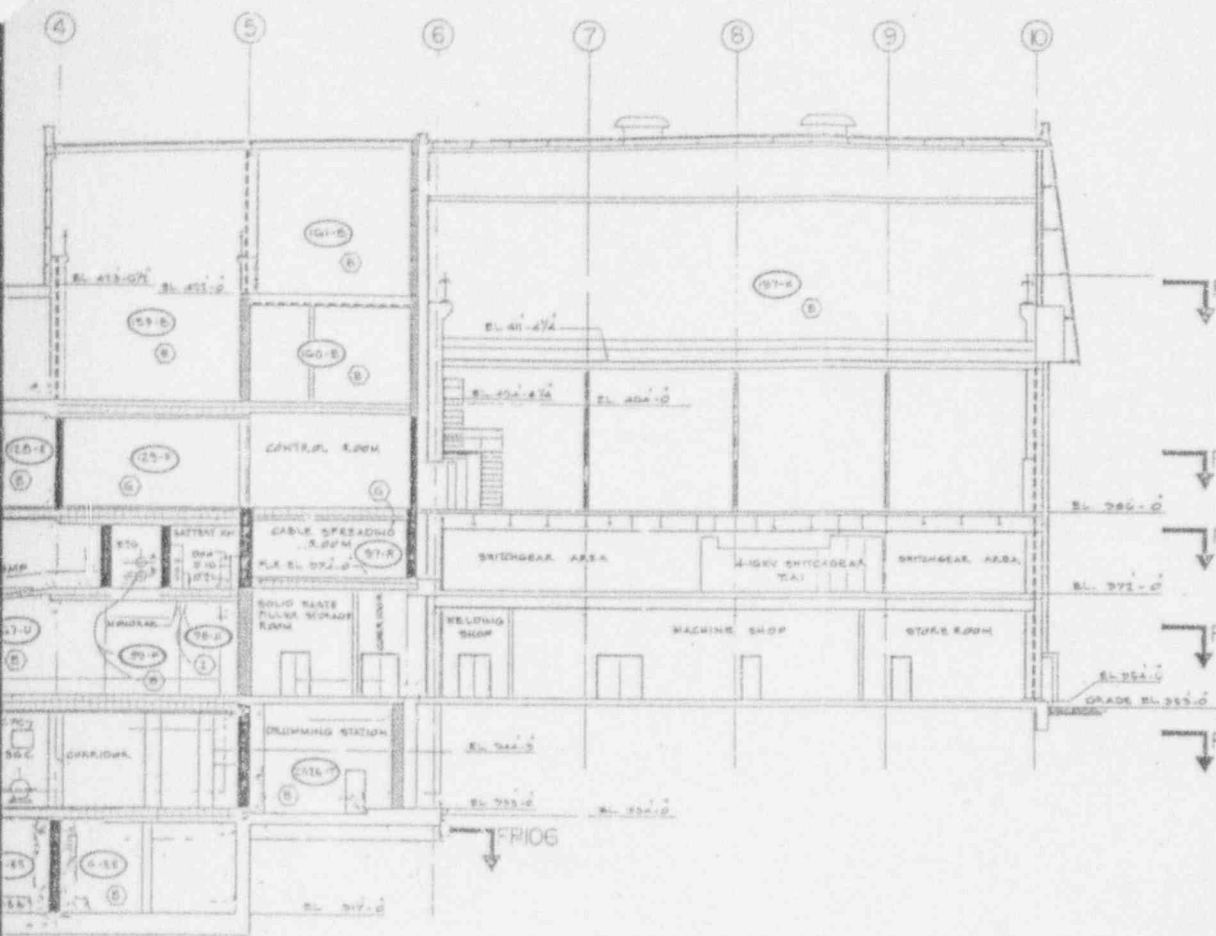
SAR Figure... is based upon this drawing. Provide a Licensing Document Change Request to Licensing when used. Using this drawing if the corresponding SAR figure is impacted. This drawing has no SAR number assigned see Appendix 4B for Fire Hazards Analysis.

11	REV. 1	AS-BUILT, ORN 42-11820	14	APPROVED REVISION
12	REV. 2	AS-BUILT, ORN 43-81889	15	REVISION
REV. 1	DATE	REVISION DESCRIPTION	BY	CHKD
SCALE	1/2" = 1'-0"	DESIGN - S. ALTON	DRWN - T. HILLIS	APP. NO. 880-214, 150
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS				
FIRE ZONE PLAN AT ELEV. 317'-0" & SECTION B-B				
DRAWING NO.		DATE	REVISION	
ENERGY		FP-106	1	

9307280079-06

SI APERTURE CARD

Also Available On Aperture Card



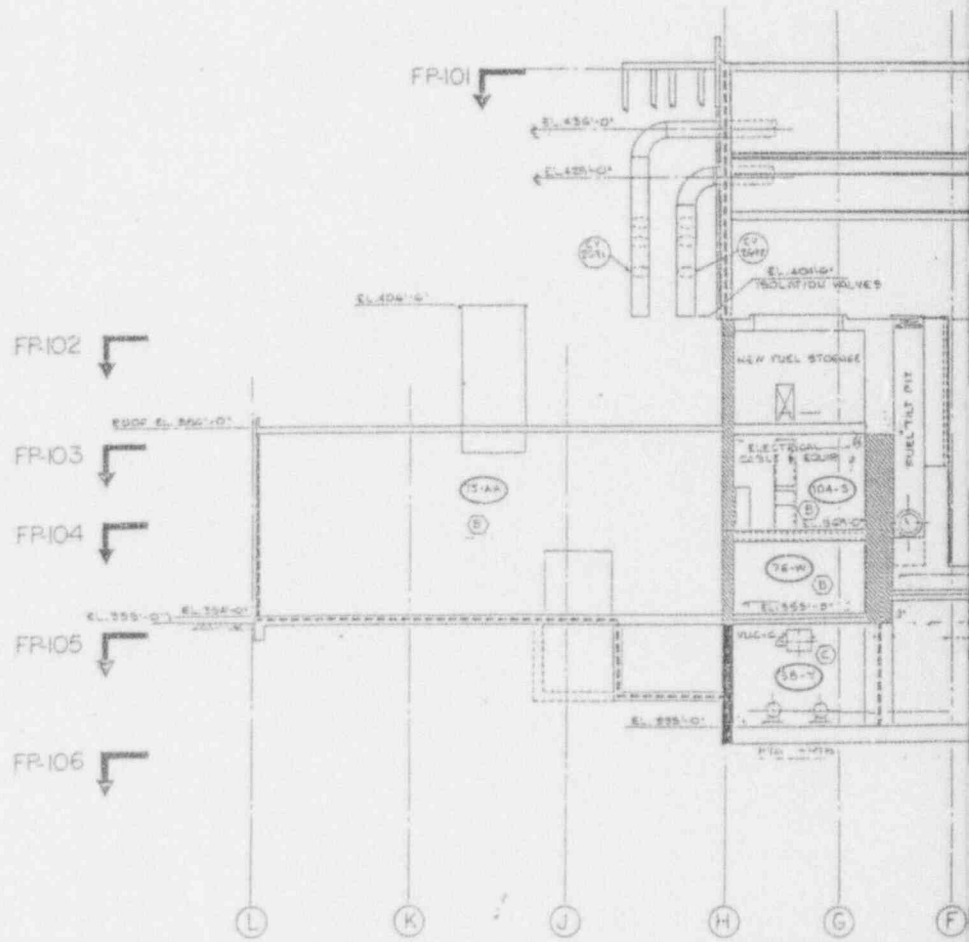
NOTE:
 1. FOR GENERAL NOTES SEE DWG. FP-101.
 2. THIS DRAWING SHOWS FIRE BARRIERS (DOWNS AND UP JOBS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
 3. ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3 HR. FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPT FROM THE 3 HR. FIRE RATED REQUIREMENT.

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA A	
10-E	EAST DECAY HEAT REMOVAL PUMP ROOM (EL. 371)
FIRE AREA B	
14-E	WEST DECAY HEAT REMOVAL PUMP ROOM (EL. 371)
4-E	GENERAL ACCESS AREA (EL. 371)
20-E	DRUMMING STATION UNIT 1 - EL. 353/
27-U	LAB B DEMINERALIZER ACCESS AREA (EL. 354)
2-E	SOUTH EMERGENCY DIESEL GENERATOR EXHAUST SILE (EL. 384)
18-E	UPPER NORTH ELECTRICAL PENETRATION ROOM HOT TOOL ROOM DECONTAMINATION ROOM (EL. 368)
10-E	CONTROLLED ACCESS (EL. 368)
10-E	REACTOR BUILDING PURGE ROOM (EL. 368)
10-E	COMPUTER ROOM (EL. 404)
10-E	VENTILATION EQUIPMENT AREA (EL. 404 & 402)
10-E	SPENT FUEL AREA (EL. 404)
10-E	TURBINE BUILDING (EL. 335 TO 404)
10-E	CONTROLLED ACCESS (EL. 372)
FIRE AREA C	
10-E	RADWASTE PROCESSING AREA (EL. 335)
FIRE AREA G	
10-E	CONTROL ROOM (EL. 365)
10-E	CABLE SPREADING ROOM & RELAY ROOM (EL. 372)
FIRE AREA H	
10-E	SOUTH DIESEL GENERATOR ROOM
FIRE AREA I	
10-E	UNCONTROLLED ACCESS (EL. 372)
FIRE AREA K	
10-E	CLEAN WASTE RECEIVER TANK AREA (EL. 327)

See Figure 1 for details regarding the drawing. This drawing is a preliminary drawing and is subject to change without notice. This drawing has an SAH number assigned. See Appendix 10 for SAH Number Assignments.

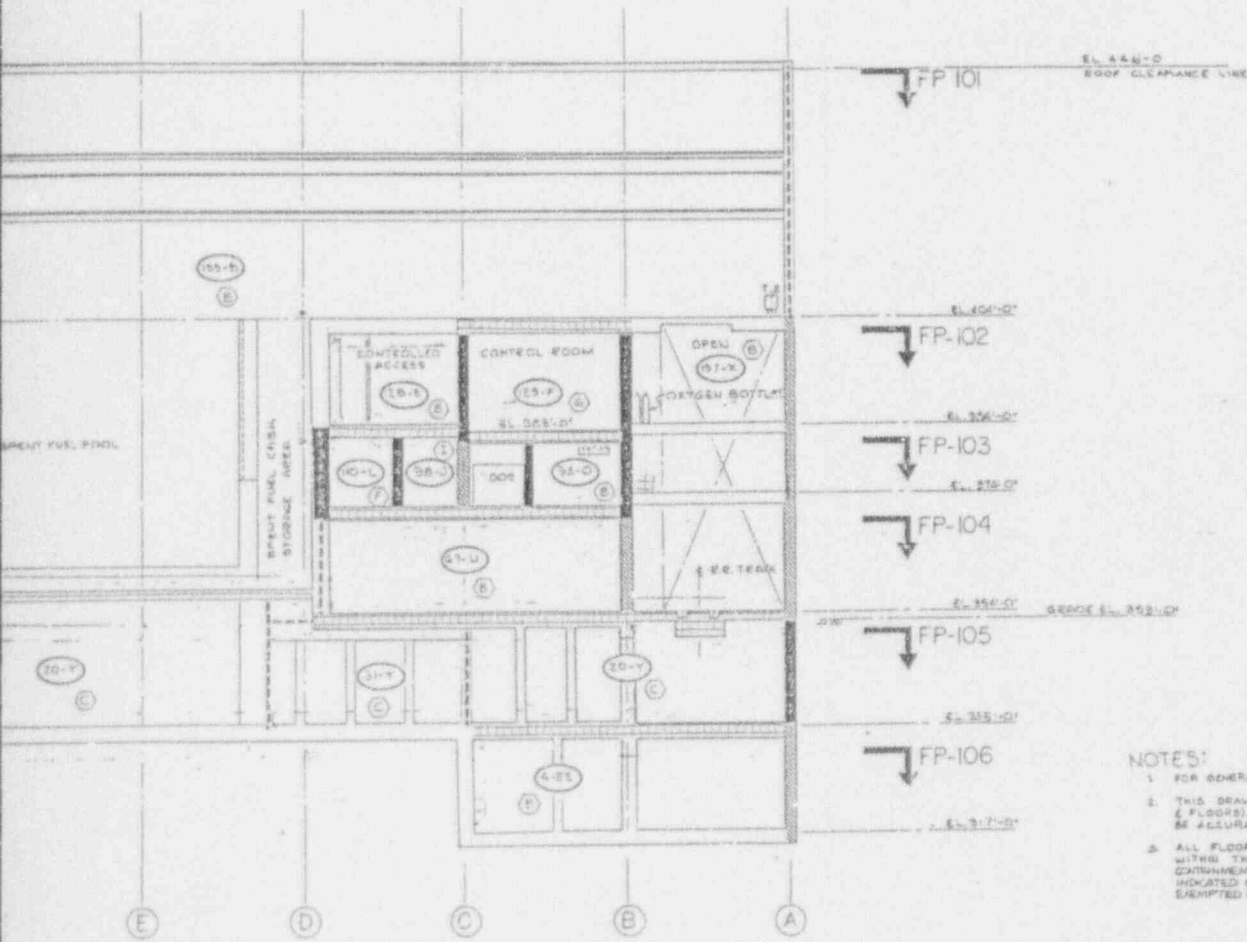
5	AS-BUILT	REV 12-1981	NO	37-5
4	AS-BUILT	REV 09-1981	NO	37-5
3	AS-BUILT	REV 09-1981	NO	37-5
NO DATE	REVISED	BY DATE	BY DATE	BY DATE
ARKANSAS POWER AND LIGHT COMPANY ARKANSAS NUCLEAR ONE UNIT 1 FIRE ZONE SECTION A-A FP-107				

9307280079-07



SI APERTURE CARD

Also Available On Aperture Card



NOTES:

- FOR GENERAL NOTES SEE DRAWING FP-101.
- THIS DRAWING SHOWS 3 HR. FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3 HR. FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR. FIRE RATED REQUIREMENT.

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
TS-3A	ENGINE ROOM (EL. 354)
TS-3B	COMPRESSOR ROOM (EL. 354)
304-S	ELECTRICAL EQUIPMENT ROOM (EL. 348)
304-B	SPENT FUEL AREA (EL. 404)
4-E	GENERAL ACCESS AREA (EL. 377)
67-U	LAB & DEMINERALIZER ACCESS AREA (EL. 354)
33-C	SOUTH BATTERY ROOM (EL. 372)
33-E	CONTROLLED ACCESS AREA (EL. 386)
107-S	TURBINE BUILDING (EL. 333 TO 404)
FIRE AREA C	
38-Y	EMERGENCY FEEDWATER PUMP AREA (EL. 353)
20-Y	RAHWAG'S PROCESSING AREA (EL. 353)
3-Y	PURIFICATION DEMINERALIZER AREA (EL. 353)
FIRE AREA F	
100-L	SOUTH BATTERY ROOM (EL. 372)
FIRE AREA G	
109-P	CONTROL ROOM (EL. 386)
FIRE AREA I	
30-J	UNCONTROLLED ACCESS AREA (EL. 372)

SI APERTURE CARD is based upon this drawing. It is not to be used for any other purpose. It is not to be used for any other purpose. It is not to be used for any other purpose.

5	ARCH AS-BUILT (REV. 02-11-82)	LD	JK
4	AS-BUILT (REV. 05-12-79)	FW	SD
3	AS-BUILT (REV. 05-12-79)	TR	CD
2	AS-BUILT (REV. 05-12-79)	TR	CD
1	AS-BUILT (REV. 05-12-79)	TR	CD

SCALE: NONE

ARKANSAS POWER AND LIGHT COMPANY
ARKANSAS NUCLEAR ONE
UNIT 1

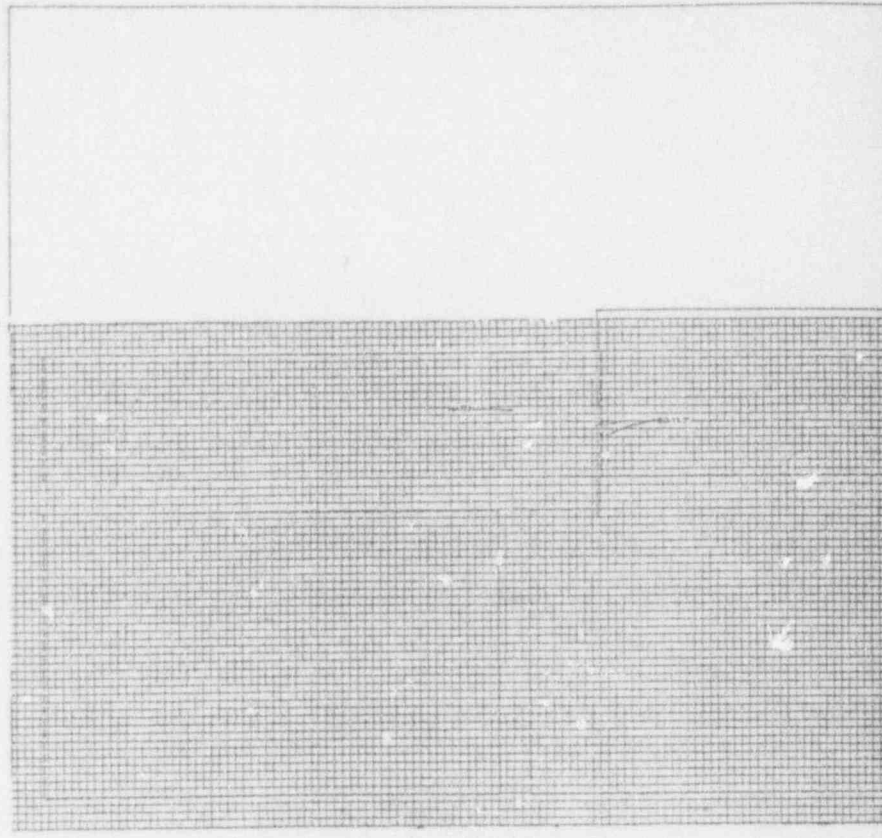
FIRE ZONE
SECTION C-C

FP-108

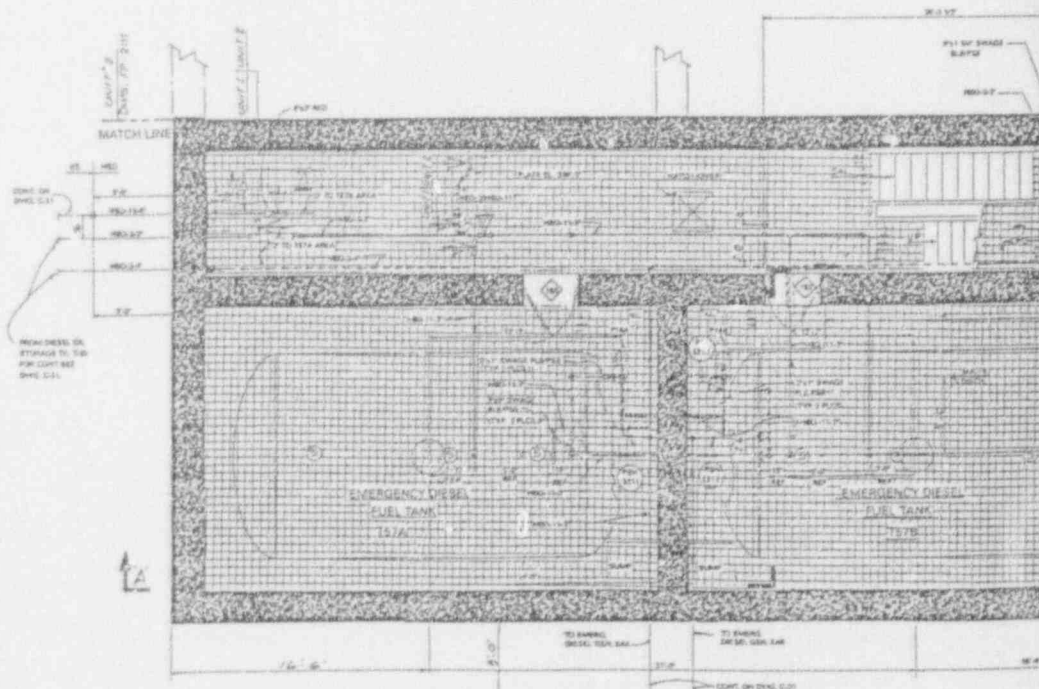
9307280079-08

H
G
F
E
D
C
B
A

UNIT 1 UNIT 2

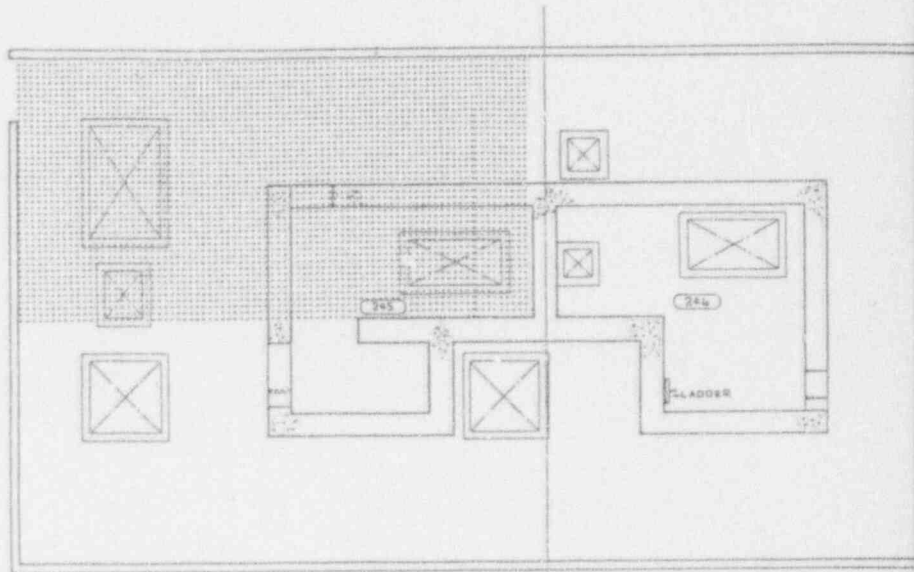


PLAN ABOVE GRADE



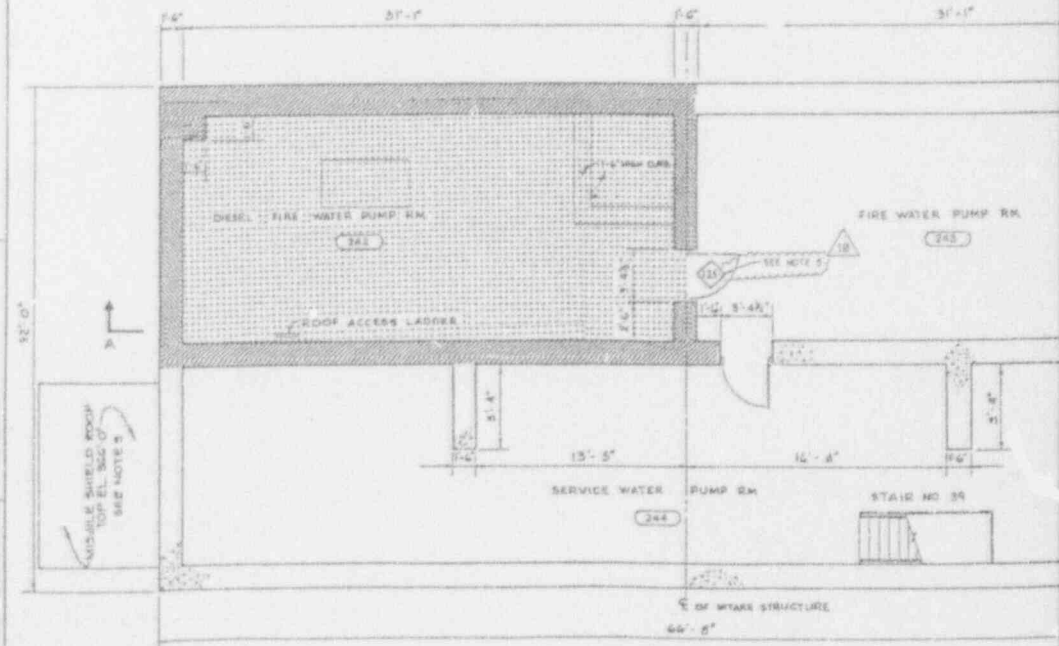
PLAN BELOW GRADE

H
G
F
E
D
C
B
A



OF INTAKE STRUCTURE

PLAN EL 378'-0"



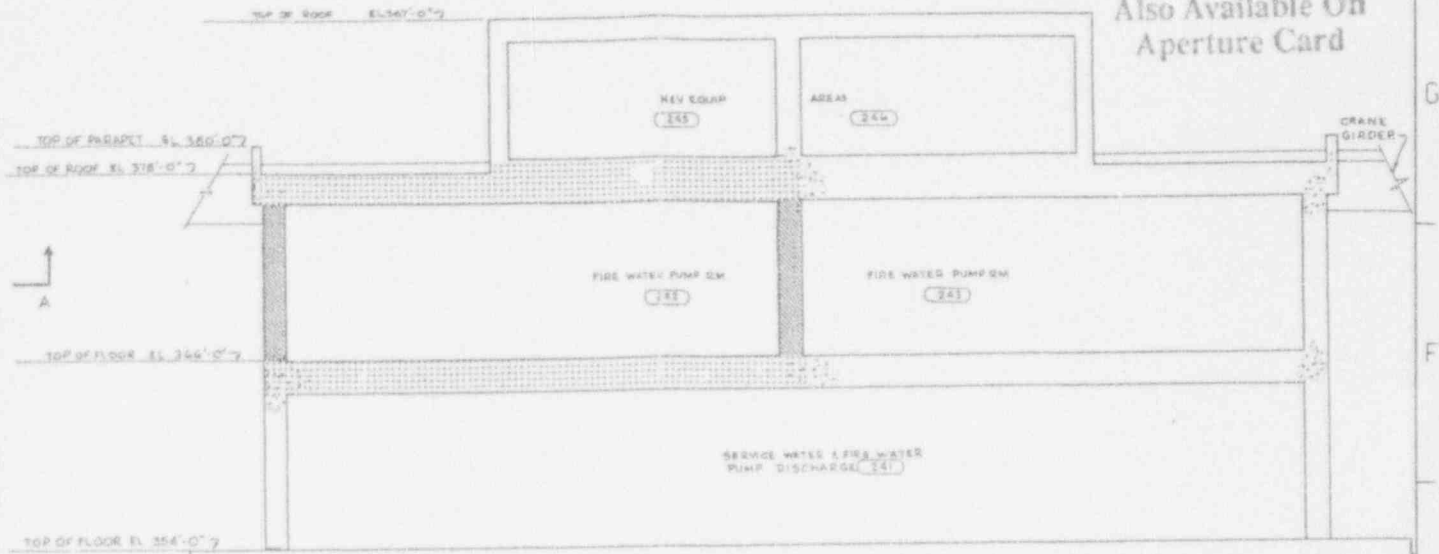
OF INTAKE STRUCTURE

PLAN EL 366'-0"

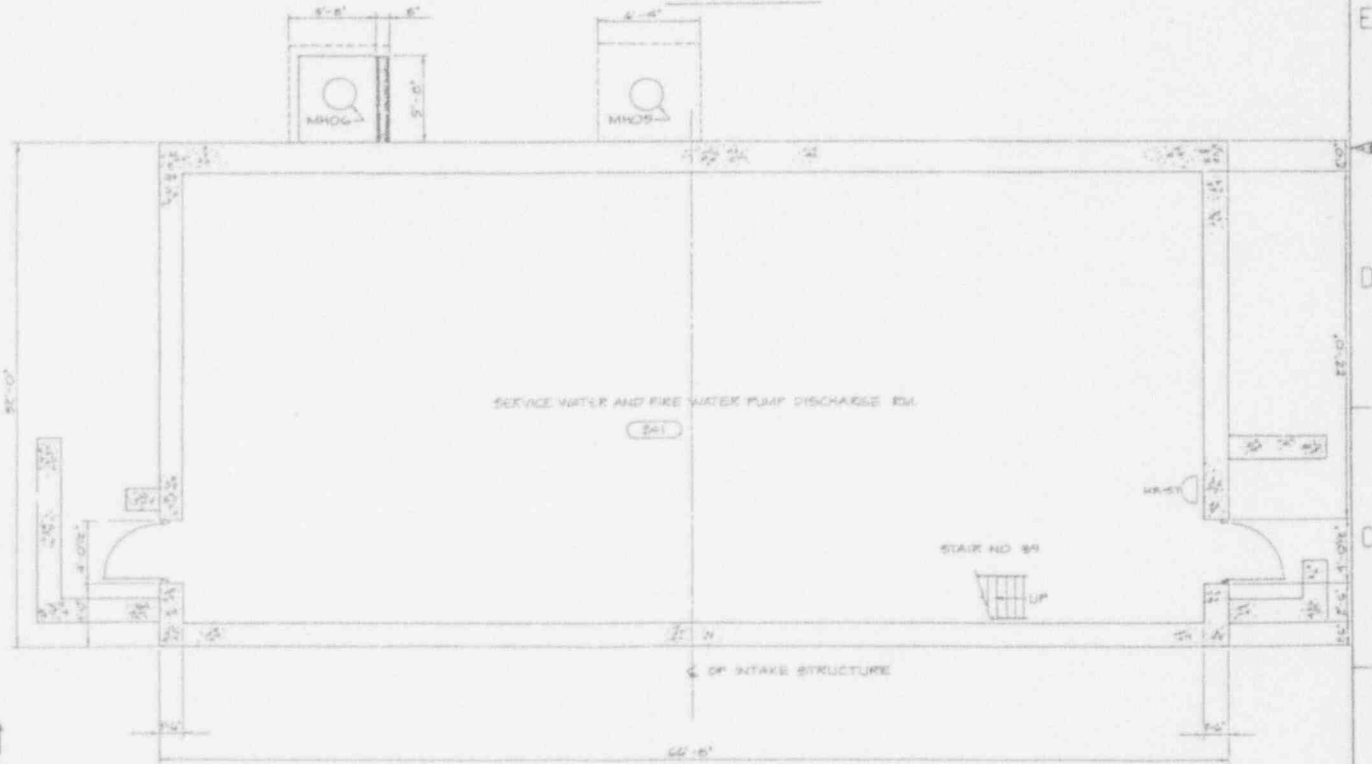
R 7 R

SI APERTURE CARD

Also Available On Aperture Card



SECTION A



PLAN EL. 354'-0"

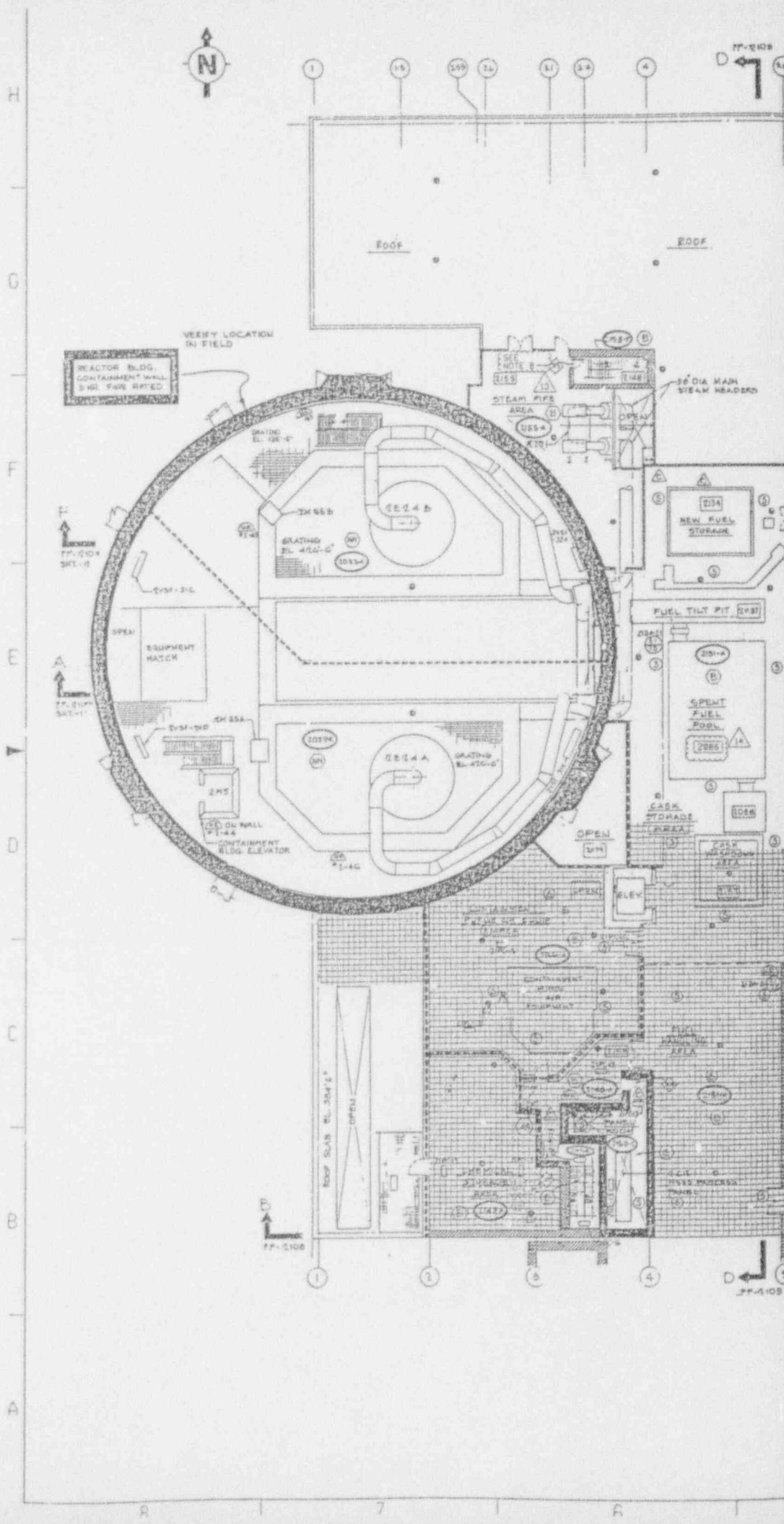
NOTES:

1. FOR GENERAL NOTES, SEE DWG. FP-101.
2. THIS DWG. SHOWS 2 HR. FIREBARRIER (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
3. FOR INFORMATION CONCERNING MISSILE SHIELDS, REFER TO DWG. C-81.
4. THIS STRUCTURE IS DESIGNATED AS FIRE AREA "N".
5. CHECK FIRE 500A.

S&P Figure _____ is based upon this drawing. Provide a Licensing Agent Change Request to Licensing when modifying this drawing if the corresponding S&P figure is required.
 * This drawing has an S&P number assigned see Appendix 10 for fire records analysis.

10	AS BUILT	CON 93-21828	# TR		
11	AS BUILT	CON 92-11828	# APPROVED REVISION		
12	AS BUILT	CON 92-11828	# APPROVED REVISION		
13	AS BUILT	CON 92-11828	# APPROVED REVISION		
14	AS BUILT	CON 92-11828	# APPROVED REVISION		
15	AS BUILT	CON 92-11828	# APPROVED REVISION		
16	AS BUILT	CON 92-11828	# APPROVED REVISION		
17	AS BUILT	CON 92-11828	# APPROVED REVISION		
18	AS BUILT	CON 92-11828	# APPROVED REVISION		
19	AS BUILT	CON 92-11828	# APPROVED REVISION		
20	AS BUILT	CON 92-11828	# APPROVED REVISION		
21	AS BUILT	CON 92-11828	# APPROVED REVISION		
22	AS BUILT	CON 92-11828	# APPROVED REVISION		
23	AS BUILT	CON 92-11828	# APPROVED REVISION		
24	AS BUILT	CON 92-11828	# APPROVED REVISION		
25	AS BUILT	CON 92-11828	# APPROVED REVISION		
26	AS BUILT	CON 92-11828	# APPROVED REVISION		
27	AS BUILT	CON 92-11828	# APPROVED REVISION		
28	AS BUILT	CON 92-11828	# APPROVED REVISION		
29	AS BUILT	CON 92-11828	# APPROVED REVISION		
30	AS BUILT	CON 92-11828	# APPROVED REVISION		
31	AS BUILT	CON 92-11828	# APPROVED REVISION		
32	AS BUILT	CON 92-11828	# APPROVED REVISION		
33	AS BUILT	CON 92-11828	# APPROVED REVISION		
34	AS BUILT	CON 92-11828	# APPROVED REVISION		
35	AS BUILT	CON 92-11828	# APPROVED REVISION		
36	AS BUILT	CON 92-11828	# APPROVED REVISION		
37	AS BUILT	CON 92-11828	# APPROVED REVISION		
38	AS BUILT	CON 92-11828	# APPROVED REVISION		
39	AS BUILT	CON 92-11828	# APPROVED REVISION		
40	AS BUILT	CON 92-11828	# APPROVED REVISION		
41	AS BUILT	CON 92-11828	# APPROVED REVISION		
42	AS BUILT	CON 92-11828	# APPROVED REVISION		
43	AS BUILT	CON 92-11828	# APPROVED REVISION		
44	AS BUILT	CON 92-11828	# APPROVED REVISION		
45	AS BUILT	CON 92-11828	# APPROVED REVISION		
46	AS BUILT	CON 92-11828	# APPROVED REVISION		
47	AS BUILT	CON 92-11828	# APPROVED REVISION		
48	AS BUILT	CON 92-11828	# APPROVED REVISION		
49	AS BUILT	CON 92-11828	# APPROVED REVISION		
50	AS BUILT	CON 92-11828	# APPROVED REVISION		
51	AS BUILT	CON 92-11828	# APPROVED REVISION		
52	AS BUILT	CON 92-11828	# APPROVED REVISION		
53	AS BUILT	CON 92-11828	# APPROVED REVISION		
54	AS BUILT	CON 92-11828	# APPROVED REVISION		
55	AS BUILT	CON 92-11828	# APPROVED REVISION		
56	AS BUILT	CON 92-11828	# APPROVED REVISION		
57	AS BUILT	CON 92-11828	# APPROVED REVISION		
58	AS BUILT	CON 92-11828	# APPROVED REVISION		
59	AS BUILT	CON 92-11828	# APPROVED REVISION		
60	AS BUILT	CON 92-11828	# APPROVED REVISION		
61	AS BUILT	CON 92-11828	# APPROVED REVISION		
62	AS BUILT	CON 92-11828	# APPROVED REVISION		
63	AS BUILT	CON 92-11828	# APPROVED REVISION		
64	AS BUILT	CON 92-11828	# APPROVED REVISION		
65	AS BUILT	CON 92-11828	# APPROVED REVISION		
66	AS BUILT	CON 92-11828	# APPROVED REVISION		
67	AS BUILT	CON 92-11828	# APPROVED REVISION		
68	AS BUILT	CON 92-11828	# APPROVED REVISION		
69	AS BUILT	CON 92-11828	# APPROVED REVISION		
70	AS BUILT	CON 92-11828	# APPROVED REVISION		
71	AS BUILT	CON 92-11828	# APPROVED REVISION		
72	AS BUILT	CON 92-11828	# APPROVED REVISION		
73	AS BUILT	CON 92-11828	# APPROVED REVISION		
74	AS BUILT	CON 92-11828	# APPROVED REVISION		
75	AS BUILT	CON 92-11828	# APPROVED REVISION		
76	AS BUILT	CON 92-11828	# APPROVED REVISION		
77	AS BUILT	CON 92-11828	# APPROVED REVISION		
78	AS BUILT	CON 92-11828	# APPROVED REVISION		
79	AS BUILT	CON 92-11828	# APPROVED REVISION		
80	AS BUILT	CON 92-11828	# APPROVED REVISION		
81	AS BUILT	CON 92-11828	# APPROVED REVISION		
82	AS BUILT	CON 92-11828	# APPROVED REVISION		
83	AS BUILT	CON 92-11828	# APPROVED REVISION		
84	AS BUILT	CON 92-11828	# APPROVED REVISION		
85	AS BUILT	CON 92-11828	# APPROVED REVISION		
86	AS BUILT	CON 92-11828	# APPROVED REVISION		
87	AS BUILT	CON 92-11828	# APPROVED REVISION		
88	AS BUILT	CON 92-11828	# APPROVED REVISION		
89	AS BUILT	CON 92-11828	# APPROVED REVISION		
90	AS BUILT	CON 92-11828	# APPROVED REVISION		
91	AS BUILT	CON 92-11828	# APPROVED REVISION		
92	AS BUILT	CON 92-11828	# APPROVED REVISION		
93	AS BUILT	CON 92-11828	# APPROVED REVISION		
94	AS BUILT	CON 92-11828	# APPROVED REVISION		
95	AS BUILT	CON 92-11828	# APPROVED REVISION		
96	AS BUILT	CON 92-11828	# APPROVED REVISION		
97	AS BUILT	CON 92-11828	# APPROVED REVISION		
98	AS BUILT	CON 92-11828	# APPROVED REVISION		
99	AS BUILT	CON 92-11828	# APPROVED REVISION		
100	AS BUILT	CON 92-11828	# APPROVED REVISION		

9307280079 - 1φ



H
G
F
E
D
C
B
A

1 15 20 24 31 34 4

1 2 3 4

7 7

VERIFY LOCATION
IN FIELD

REACTOR BLDG.
CONTAINMENT WALL
3 HR. FIRE RATED

SECTION
77-2107
SHT.-1

SECTION
77-2107
SHT.-11

SECTION
77-2108

77-2108

77-2109

ROOF

ROOF

VERIFY LOCATION
IN FIELD

REACTOR BLDG.
CONTAINMENT WALL
3 HR. FIRE RATED

SEE
NOTE 8
(155)

STEAM PIPE
AREA (B)

3" DIA MAIN
STEAM HEADERS

NEW FUEL
STORAGE

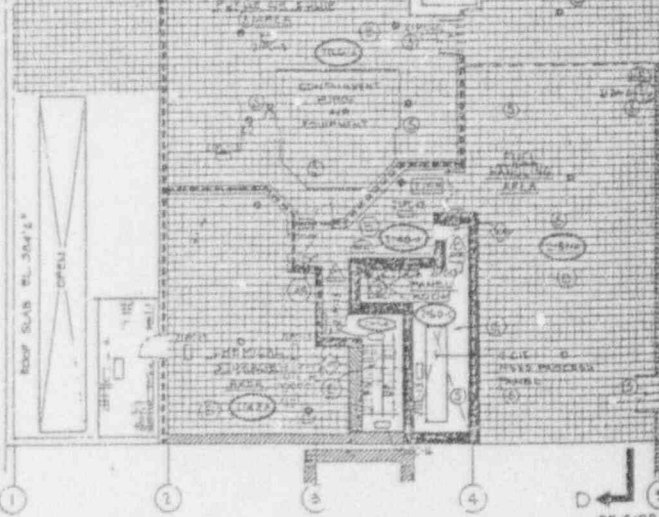
FUEL TILT PIT (103)

SPENT FUEL
POOL

CASK
STORAGE
AREA

CASK
HANDLING
AREA

CONTAINMENT
WALL
ELEVATOR



ROOF SLAB EL. 304'-2"

OPEN

CONTAINMENT
WALL
ELEVATOR

EQUIPMENT
AREA

STEAM PIPE

AREA

CONTAINMENT
WALL

ELEVATOR

AREA

CONTAINMENT
WALL

ELEVATOR

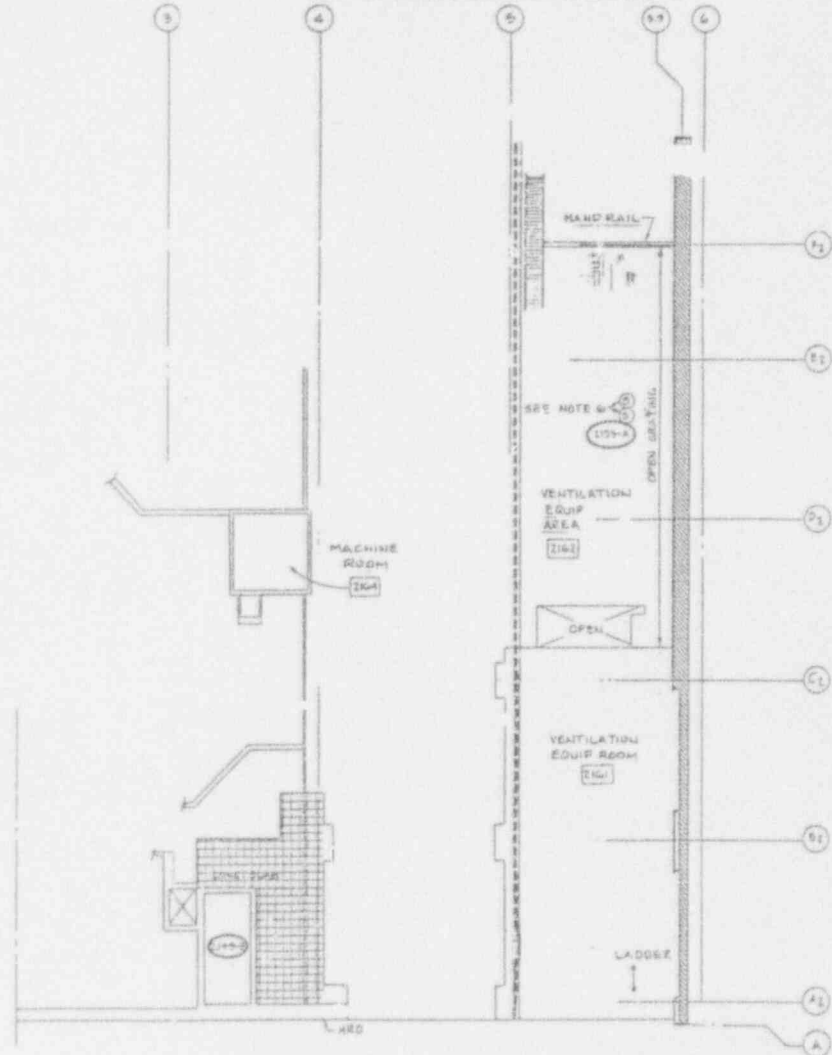
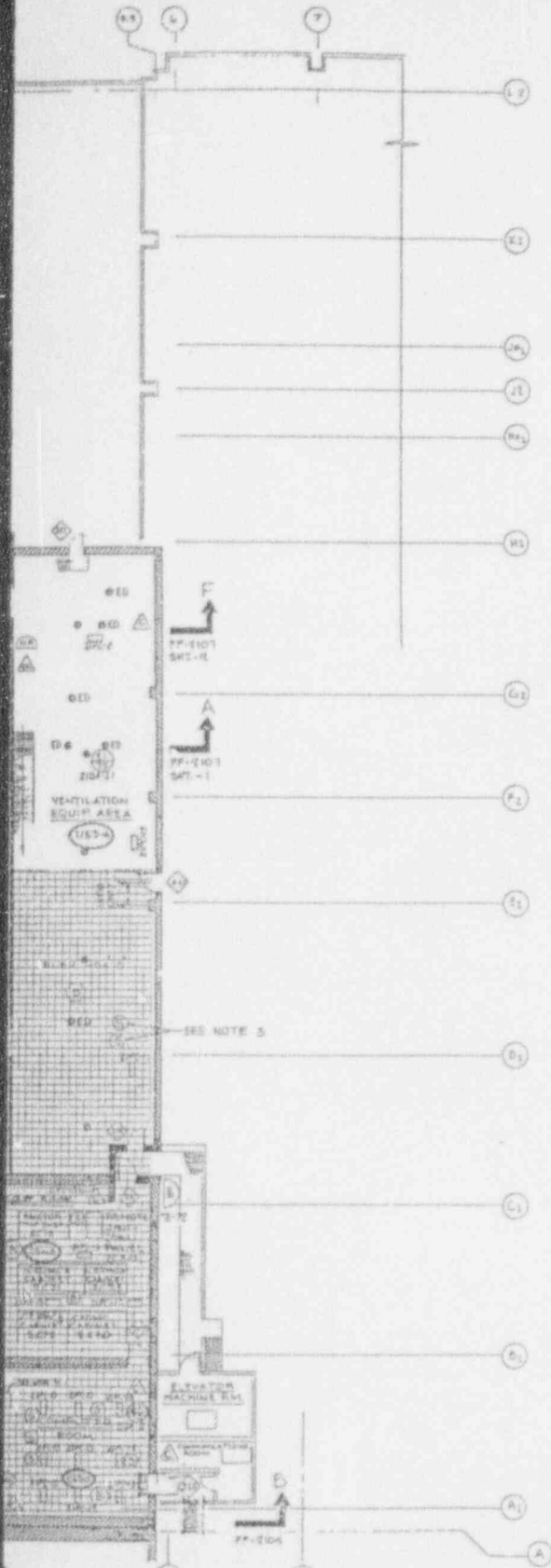
AREA

R 7 R

SI APERTURE CARD

Also Available On Aperture Card

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2149-B	STAIRWAY NO. 2001 (EL. 317 TO 422)
2153-A	VENTILATION EQUIPMENT AREA (EL. 404 & 422)
2154-E	CEM EQUIPMENT ROOM (EL. 404)
2156-B	CONTAINMENT PURGE AIR EQUIPMENT AREA (EL. 404)
2151-D	COMPUTER ROOM (EL. 404)
2200-MM	TURBINE BUILDING (EL. 335 TO 404)
2155-2	STEAM PIPE AREA (EL. 404)
2148-A	CORRIDOR NORTH OF PANEL ROOM AND STAIRWAY NO. 2001 (EL. 404)
2151-A	FUEL HANDLING AREA (EL. 404)
2156-F	STAIR NO. 2005 (EL. 381 TO 404)
2147-A	CHEMICAL STORAGE AREA (EL. 404)
FIRE AREA G	
2190-C	CORE PROTECTION CALCULATOR ROOM (EL. 404)
FIRE AREA M	
2032-M	CONTAINMENT BUILDING SOUTH SIDE (EL. 355 TO 420-S)
2033-M	CONTAINMENT BUILDING NORTH SIDE (EL. 355 TO 420-S)



PARTIAL PLAN
EL. 422'-0"

BAR Figures are to be used with this drawing. Please refer to the drawing for the location of the bars. This drawing is for the fire zone analysis. See Appendix 10 for fire zone analysis.

NOTES:

- FOR DRAWING SYMBOLS SEE FP-2102
- ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3 HR FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR FIRE RATED REQUIREMENT.
- THIS DRAWING SHOWS 3 HOUR FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION NOT NOT BE ACCURATE.
- REFER TO FD-00-2002 FOR FIRE BARRIER KEY PLAN.
- SMOKE DETECTORS 2154-B (2001) & COMPUTER ROOM (SMOKE DETECTORS 2154-A & 2154-C) LOCATED IN SUCTON SUCKS OF 2001-2A120 (2001) & 2001-2A120 (2001) SUCTON SUCKS.
- SMOKE DETECTOR SYSTEM FOR BUILT COMPUTER.
- CRITICAL FIRE DOOR.

REV	DATE	REVISION	BY	CHKD
14	08/11/79	AS BUILT, COR 72-27245	TR	TR
13	08/11/79	AS BUILT, COR 43-18198	TR	TR
12	08/11/79	AS BUILT, COR 42-11625	TR	TR
11	08/11/79	AS BUILT, COR 42-11625	TR	TR

ARIZONA NUCLEAR ONE
UNIT 2
RUSSELLVILLE, ARIZONA

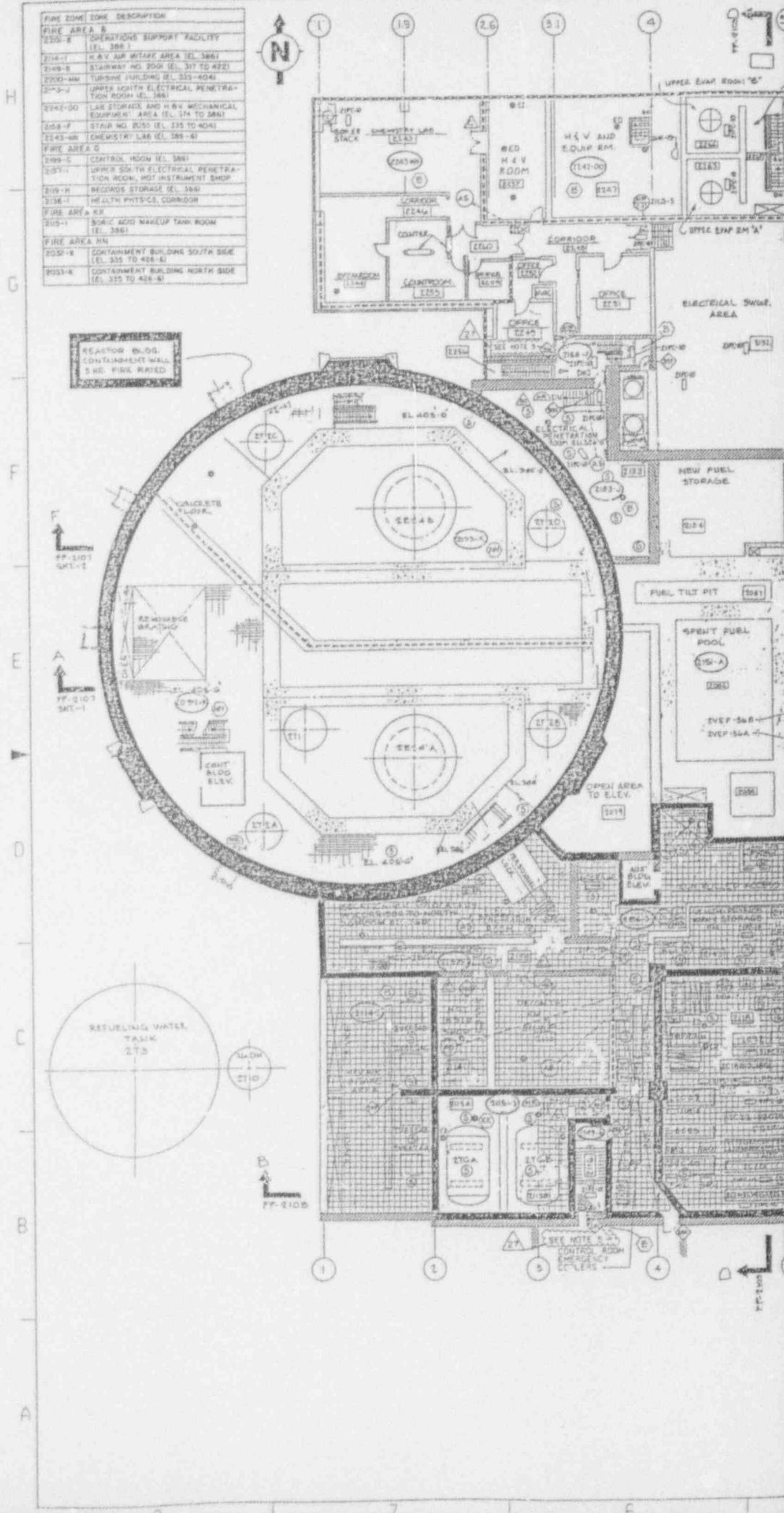
FIRE ZONES
FUEL HANDLING FLOOR PLAN
EL. 404'-0" AND 422'-0"

DRAWING NO. FP-2101
SHEET 1
REVISION 14

ENERGY

9307280079-11

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2101-B	OPERATIONS SUPPORT FACILITY (EL. 386)
2104-1	H.V.C. AIR INTAKE AREA (EL. 386)
2104-2	STAIRWAY NO. 200M (EL. 317 TO 422)
2000-AM	TURBINE BUILDING (EL. 333-404)
2103-1	UPPER SOUTH ELECTRICAL PENETRATION ROOM (EL. 386)
2101-00	LAR STORAGE AND H.V. MECHANICAL EQUIPMENT AREA (EL. 374 TO 386)
2104-F	STAIR NO. 200S (EL. 335 TO 404)
2103-00	CHEMISTRY LAB (EL. 386-6)
FIRE AREA G	
2109-C	CONTROL ROOM (EL. 386)
2107-1	UPPER SOUTH ELECTRICAL PENETRATION ROOM, HOT INSTRUMENT SHOP
2105-H	RECORDS STORAGE (EL. 386)
2138-1	HEALTH PHYSICS CORRIDOR
FIRE AREA K	
2105-1	BORIC ACID MAKEUP TANK ROOM (EL. 386)
FIRE AREA H	
2051-B	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 424-B)
2051-A	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 424-A)



FIRE PROTECTION
INFORMATION SYMBOLS

FLOOR SYMBOLS

TECH. SPEC. - (NRC)

OTHER - (ANSI)

WALL SYMBOLS

TECH. SPEC. - (NRC)

OTHER - (ANSI)

FIRE ZONE BOUNDARY

UL CLASS A FIRE DOOR

HOSE REEL

AUTOMATIC SPRINKLER WITH SHUTOFF VALVE LOCATION

CO₂ EXTINGUISHER

HALON 1301 EXTINGUISHER

DRY CHEMICAL EXTINGUISHER

FLOOR DRAIN

EQUIPMENT DRAIN

EMERGENCY LIGHTING FIXTURE WITH PANEL No.

HEAT DETECTOR

SMOKE DETECTOR

FLAME DETECTOR

BATTERY POWERED EMERGENCY LIGHT

FIRE ZONE NUMBER

FIRE AREA

ROOM NUMBER (SHOWN IF DIFFERENT FROM ZONE PREFIX)

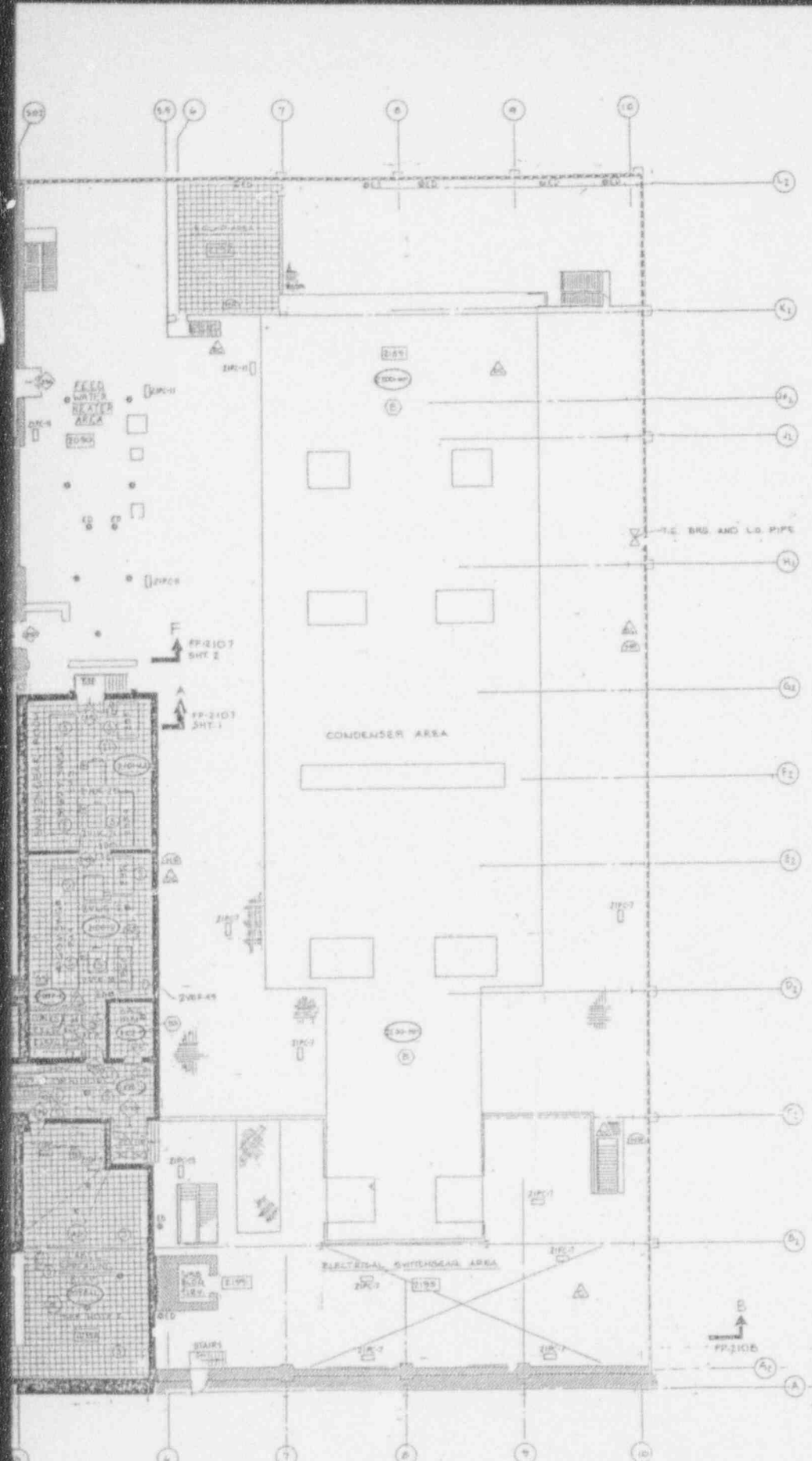
NOTES:

1. THIS DRAWING SHOWS 2 HR. FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
2. ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 2 HR. FIRE RATED, UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 2 HR. FIRE RATED REQUIREMENT.
3. REFER TO FB-00-1003 FOR FIRE BARRIER KEY PLAN.
4. THE CEILING AT THE SHIFT SUPERVISION OFFICE IS A 1 HR. FIRE BARRIED. SEE FP-2108 FOR A SECTIONAL VIEW.
5. CRITICAL FIRE DOOR.

SAF Figure 1-10. Use only when the drawing shows a Licensing Technical Specification (LTS) Licensee. Licensee when modifying this drawing if the drawing contains SAF Figure 1-10. This drawing is an SAF number equipped. See Appendix B for the SAF number. SAF Figure 1-10. Use only when the drawing shows a Licensing Technical Specification (LTS) Licensee. Licensee when modifying this drawing if the drawing contains SAF Figure 1-10. This drawing is an SAF number equipped. See Appendix B for the SAF number.

27	REV	AS BUILT (DN RD-1841)	OF TR	SEL
26	REV	AS BUILT (DN RD-1841)	APPROXIMATE	SEE OPERATING FLOOR
REV	DATE	REVISION DESCRIPTION	BY	CHK
REV	DATE	REVISION DESCRIPTION	BY	CHK
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS				
FIRE ZONE OPERATING FLOOR PLAN EL. 386'-0"				
DRAWING NO.		SHEET	REVISION	
ENTERGY FP-2102		1	27	

9307280079 -12



FIRE AREA B	
2242-00	LAB. STORAGE & H.V. EQUIPMENT AREA (EL. 374 & 386)
2104-F	STAIR NO. 2015 (EL. 335 TO 404)
2102-98	LOWER NORTH ELECTRICAL PENETRATION ROOM (EL. 374)
2098-88	NORTH ELECTRICAL EQUIPMENT ROOM (EL. 368)
2092-PP	CHILLER EQUIPMENT ROOM (EL. 368)
2149-E	STAIRWAY NO. 2008 (EL. 317 TO 422)
2200-MM	TURBINE BUILDING (EL. 335 TO 404)
FIRE AREA C	
2096-L	CABLE SPREADING ROOM (EL. 372)
FIRE AREA MH	
2032-R	UPPER VOLUME CONTROL TANK ROOM (EL. 372) AND LOWER TANK AND PUMP ROOM (EL. 364)
2046-R	DEGASIFIER WAZELAN PUMP ROOM (EL. 372)
2007-H	CORRIDOR NORTH OF STAIRWAY NO. 2008 (EL. 372)
2094-M	MOTOR CONTROL CENTER (EL. 372)
FIRE AREA H	
2034-A	NORTH SWITCHGEAR ROOM (EL. 372)
FIRE AREA G	
2009-U	CORRIDOR AND MOTOR CONTROL CENTER (EL. 372 & 374-8)
2094-Q	NORTH DIESEL GENERATOR ROOM (EL. 368)
FIRE AREA EX	
2063-F	SOUTH DIESEL GENERATOR ROOM (EL. 368)
FIRE AREA MM	
2003-V	WEST BATTERY ROOM (EL. 372)
2049-W	WEST D.C. EQUIPMENT ROOM (EL. 372)
FIRE AREA EE	
2001-T	LOWER SOUTH ELECTRICAL PENETRATION ROOM (EL. 374-8)
FIRE AREA HN	
2032-K	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 428-8)
2033-K	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 428-8)
FIRE AREA ES	
2007-Y	EAST DC EQUIPMENT ROOM (EL. 372)
2100-Z	SOUTH SWITCHGEAR ROOM (EL. 372)
2002-Y	EAST BATTERY ROOM (EL. 372)
FIRE AREA TT	
2104-S	ELECTRICAL EQUIP. ROOM (EL. 372)
FIRE AREA S	
2094-C-0	CVI ROOM (EL. 372'-0")

SI APERTURE CARD

Also Available On Aperture Card

NOTES:

- THIS DRAWING SHOWS SHR FIRE BARRIERS (WALLS/FLOORS) ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- FOR DRAWING SYMBOLS SEE PP-2101.
- CABLE TRAYS IN THIS ZONE ARE MONITORED BY LINE TYPE HEAT DETECTORS.
- ALL FLOORS & CEILING FINISH ARE LOCATED WITHIN BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 2 HR FIRE RATED UNLESS INDICATED OTHERWISE. CORRIDORS AND ELEVATORS ARE EXEMPTED FROM THE 2 HR FIRE RATED REQUIREMENT.
- REFER TO FS-00-2004 FOR FIRE BARRIER KEY PLAN.
- MANUAL VALVE FOR CORRIDOR 2109 (EL. 364).
- PRACTION VALVE FOR USE#18.
- ROOM COVERAGE IS BY HALON 1801. THERE ARE (B) FA, (C) SMOKE DETECTORS, (A) LOCATED IN FALSE FLOOR, (D) AT CEILING LEVEL.
- THE NORTH END OF DIESEL ACCESS CORRIDOR 2109 IS AN UNCLASSIFIED AREA UP TO EL. 374-8.
- SEE DRAWING FS-00-2004.

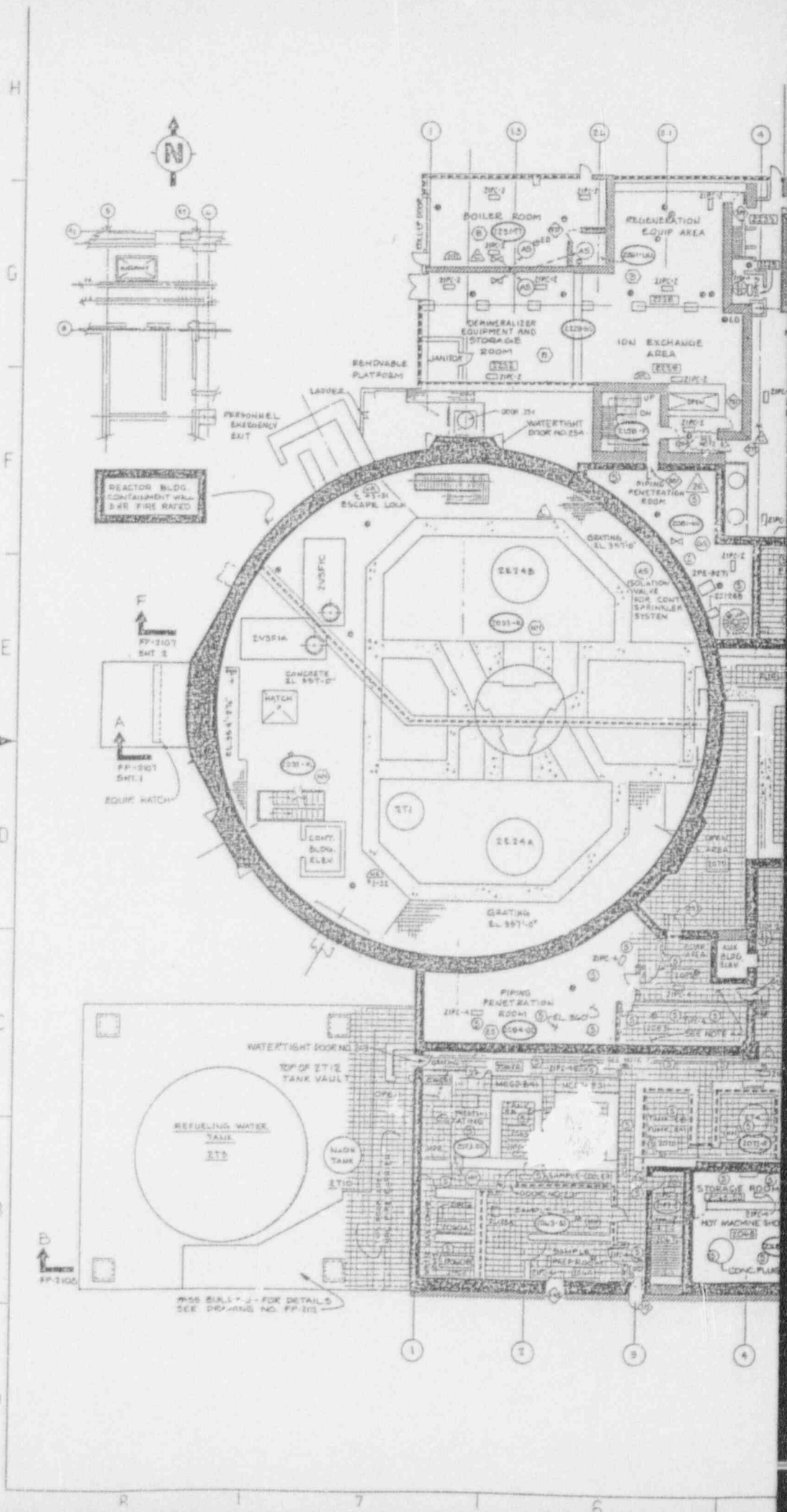
9307280079 -13

SAI Figure 2 is based upon this drawing. Provide a Licensing Document Change Request to licensing when modifying this drawing if the corresponding SAI figure is updated. This drawing has no SAI number assigned see Appendix 16 For Fire Hazards Analysis.

NO.	DATE	REVISION DESCRIPTION	BY	CHKD
21	04/17/81	AS BUILT, SHR NO. 2015 (EL. 335 TO 404)	W. J. HAYES	
22	04/17/81	AS BUILT, SHR NO. 2008 (EL. 317 TO 422)	W. J. HAYES	
23	04/17/81	AS BUILT, SHR NO. 2008 (EL. 317 TO 422)	W. J. HAYES	

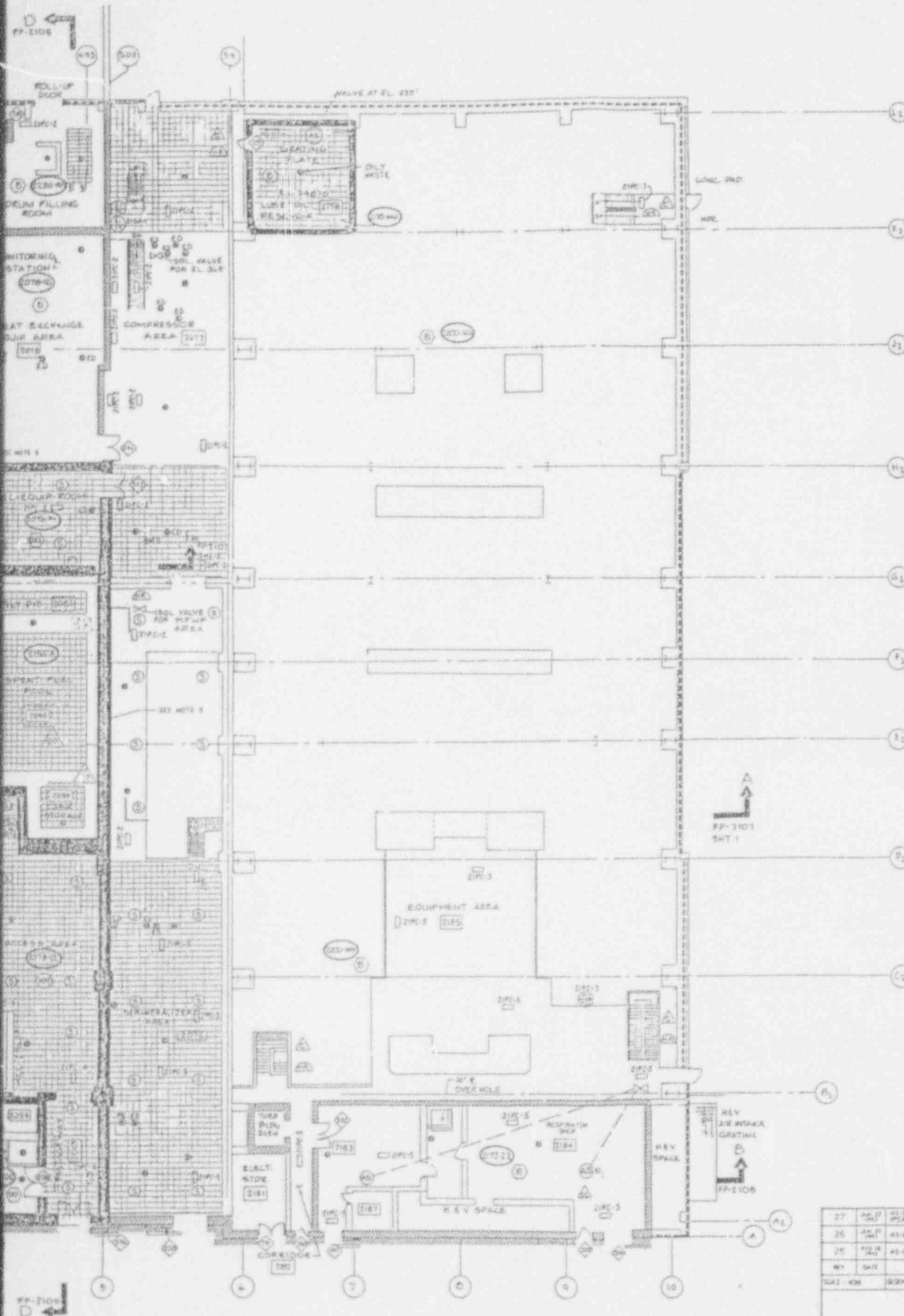
SCALE	DESIGNER	CHECKER	DATE	BY
AS SHOWN	W. J. HAYES	W. J. HAYES	04/17/81	W. J. HAYES

ARKANSAS NUCLEAR ONE	
UNIT 2	
RUSSELLVILLE, ARKANSAS	
FIRE ZONES	
INTERMEDIATE FLOOR PLAN	
EL. 368'-0" AND 372'-0"	
ISSUING NO.	SHEET
ENTERGY	1
PP-2103	21



SI APERTURE CARD

Also Available On Aperture Card



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2078-00	COMPONENT COOLING WATER HEAT EXCHANGER EQUIPMENT AREA (EL. 354)
2078-4AA	LUBE OIL RESERVOIR (EL. 354)
2000-MN	TURBINE BUILDING (EL. 335 TO 404)
2149-8	STAIRWAY NO. 2008 (EL. 317 TO 422)
2172-23	LAUNDRY STORAGE & BOTTLED AIR REFILL ROOMS (EL. 354) & LOWER STORAGE AREA (EL. 335)
2108-7	STAIR NO. 2055 (EL. 335 TO 404)
2229-50	DEMINERALIZING EQUIPMENT & LUNCH ROOM AREA (EL. 354)
2251-04	PLANT HEATING BOILER DAY TANK (EL. 354)
2251-TT	PLANT HEATING BOILER ROOM (EL. 354)
2230-01	DRUM FILLING ROOM (EL. 354)
FIRE AREA DD	
2094-00	M/T MACHINE SHOP
FIRE AREA EE	
2084-00	UPPER SOUTH PIPING PENETRATION ROOM (EL. 354)
FIRE AREA GG	
2076-MH	ELECTRICAL EQUIPMENT ROOM (EL. 354)
2081-MH	UPPER NORTH PIPING PENETRATION AREA (EL. 354) & LOWER NORTH PIPING PENETRATION AREA (EL. 335)
FIRE AREA HH	
2073-00	ACCESS AREA, PUMP AREA, TANK AREA, WASTE GAS EQUIPMENT AREA & PASSAGEWAY (EL. 354)
2072-K	UPPER VOLUME CONTROL TANK ROOM (EL. 372) & LOWER TANK & PUMP ROOM (EL. 354)
2063-01	SAMPLE ROOM (EL. 354)
FIRE AREA NN	
2042-K	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 405-6)
2033-K	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 405-6)

NOTES:

- FOR DRAWING SYMBOLS SEE PP-2102
- ALL ROOMS AND CORRIDORS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE UNFURNISHED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPT FROM THIS CASE. UNFURNISHED ROOMS:
- THIS DRAWING SHOWS 2-HR. FIRE BARRIERS WALLS & FLOORS. ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- REFER TO PLAN 2000 FOR FIRE BARRIERS KEY PLAN.
- THIS BARRIER IS AN UN-TESTED FIRE BARRIER FROM EL. 354 TO EL. 356-2.
- THIS BARRIER IS AN UN-TESTED FIRE BARRIER FROM EL. 354 TO EL. 314-4.
- THIS BARRIER IS AN UN-TESTED FIRE BARRIER FROM EL. 354 TO EL. 317-2.
- CRITICAL FIRE DOOR.

WARNING - STACKED REISSUES DO NOT REMOVE REVISION BLOCKS OR TRIANGLES

27	REV. 1	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
26	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
25	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
24	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
23	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
22	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
21	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
20	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
19	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
18	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
17	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
16	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
15	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
14	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
13	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
12	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
11	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
10	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
9	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
8	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
7	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
6	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
5	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
4	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
3	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
2	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2
1	REV. 0	AS-BUILT, QM 73-97245	PP-2104	1/2	1/2

ARKANSAS NUCLEAR ONE
SHT 3
RUSSELLVILLE, ARKANSAS

FIRE ZONE
GROUND FLOOR PLAN
EL. 354'-8"

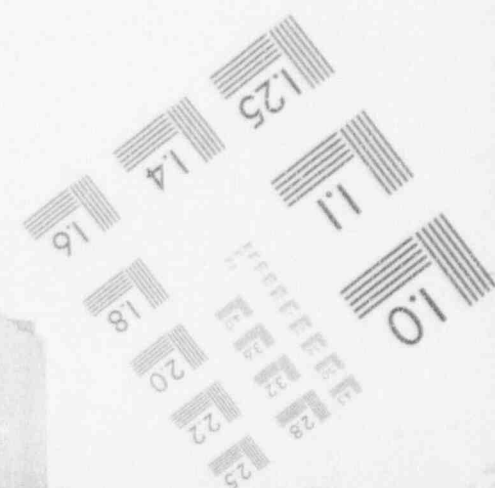
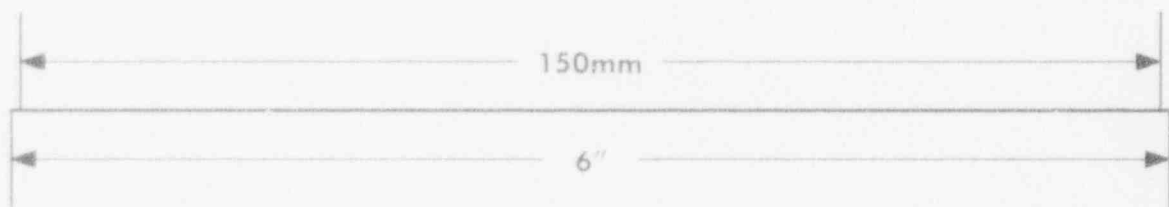
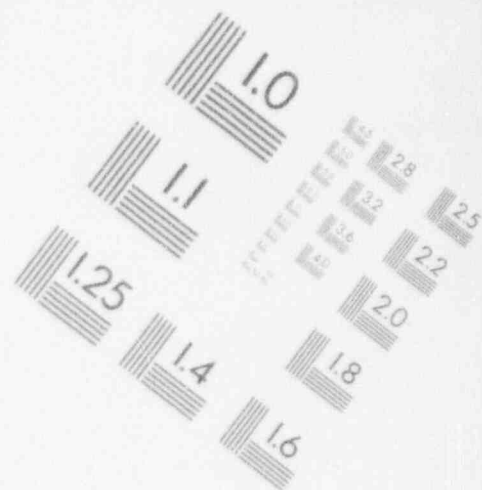
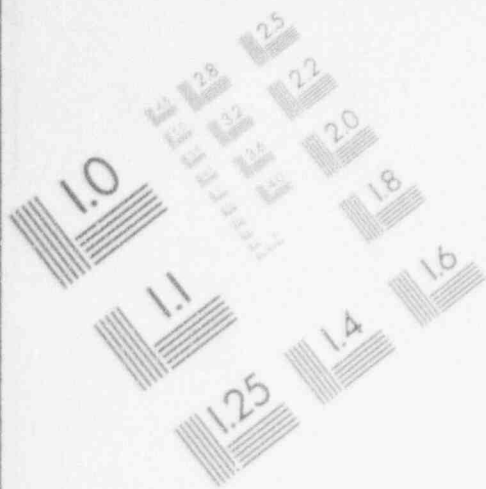
ENTERGY	PP-2104	3	27
---------	---------	---	----

9307280079-14

SI Figure 14 is based upon this drawing. Provide a Learning Document Change Request to LTR when modifying this drawing if the corresponding SI Figure is impacted. This drawing has no SI number assigned see Appendix B for Fire Hazards Analysis.

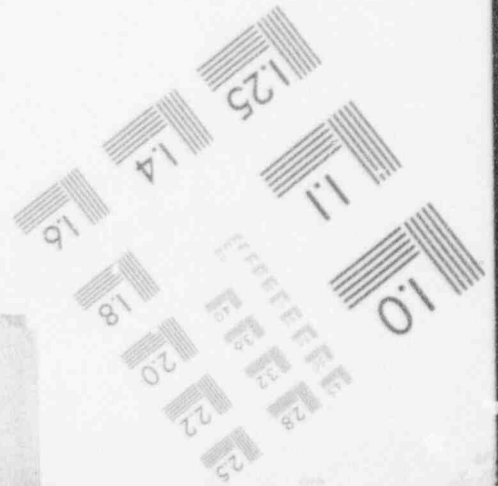
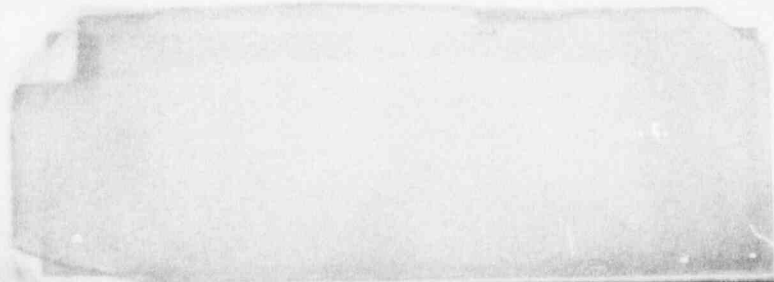
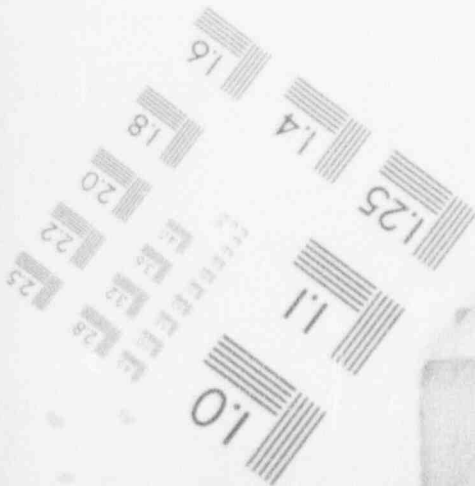
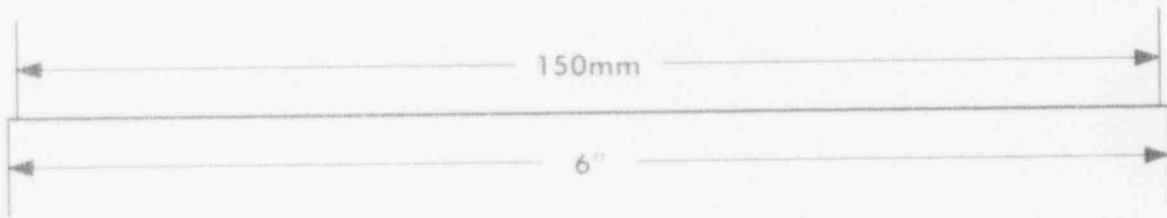
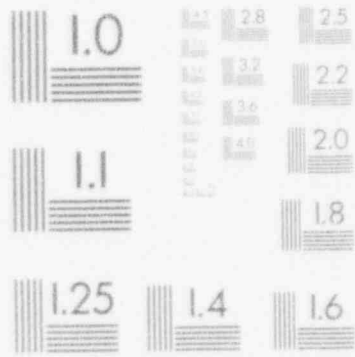
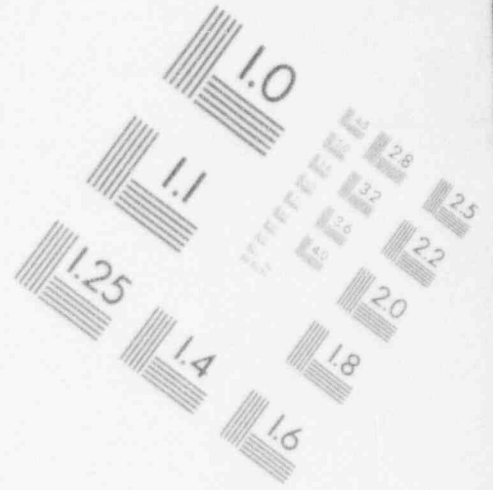
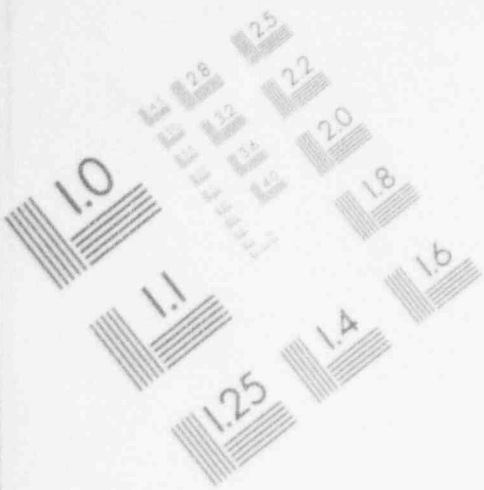
1

IMAGE EVALUATION TEST TARGET (MT-3)



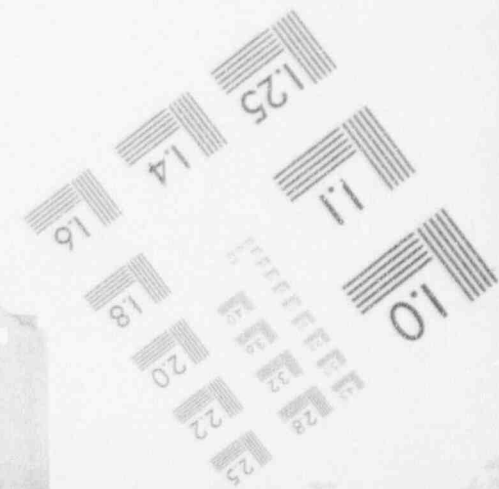
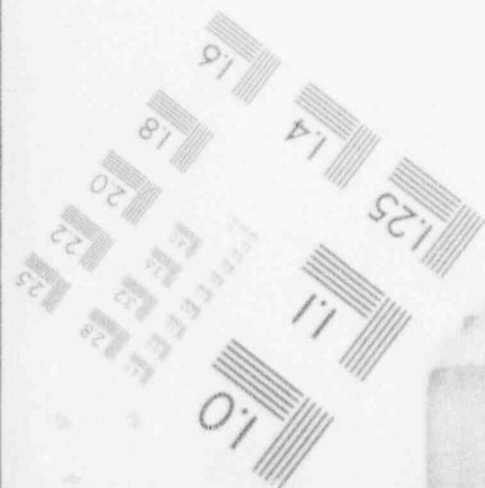
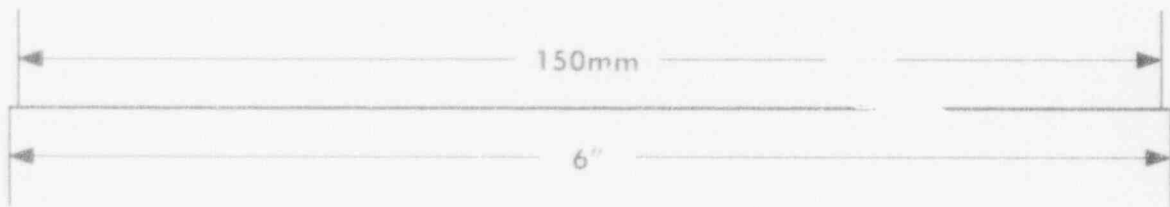
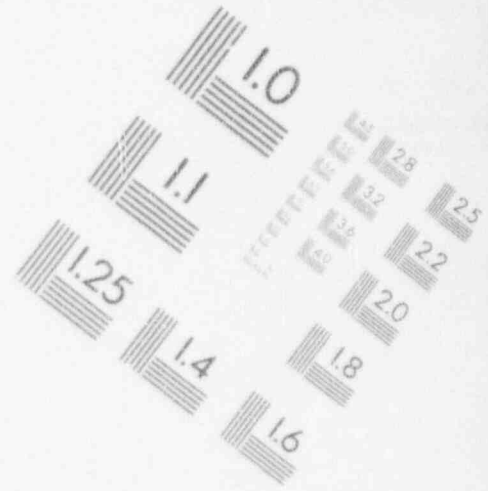
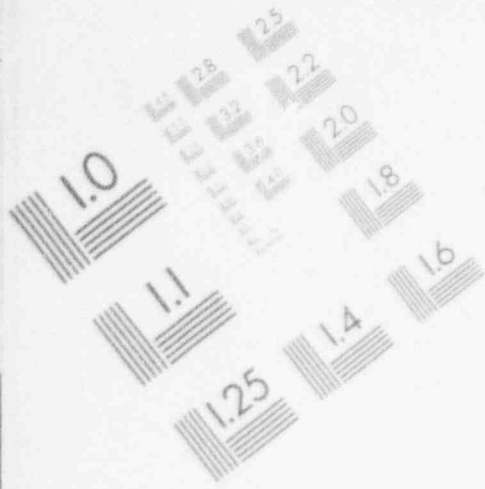
1

IMAGE EVALUATION TEST TARGET (MT-3)

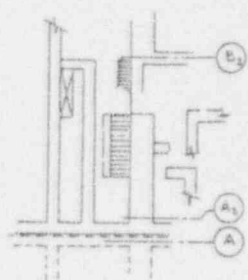


1

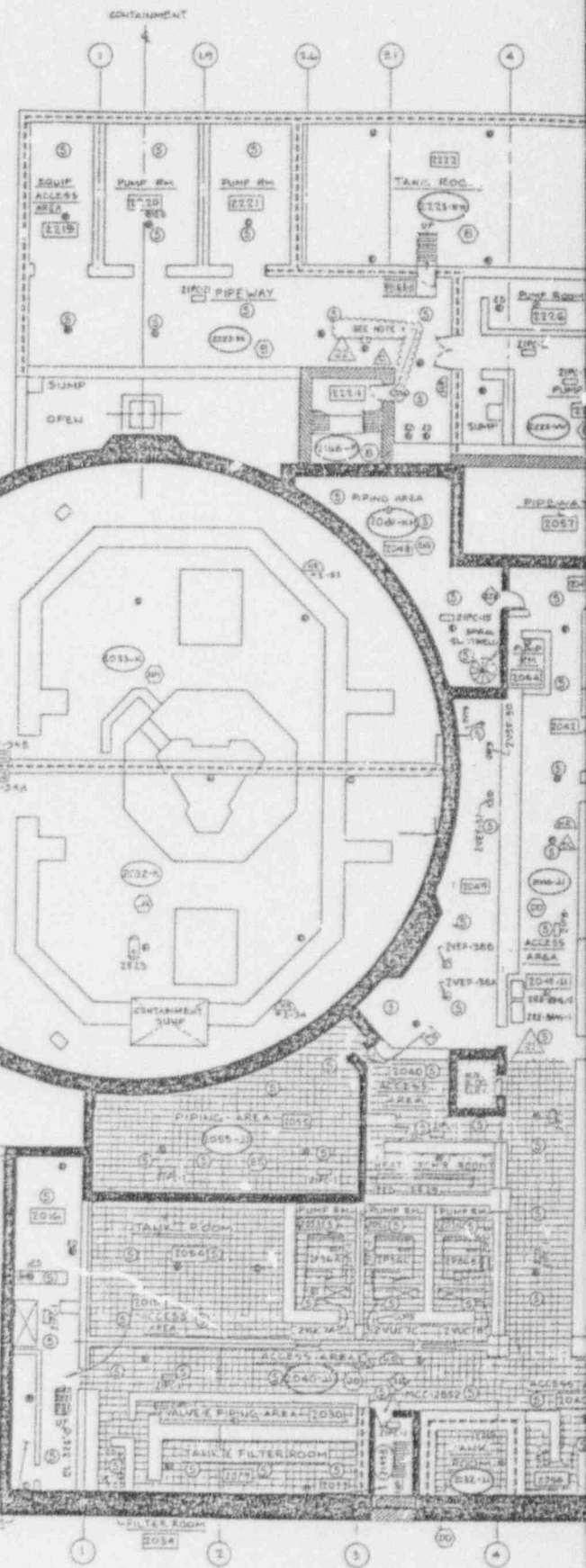
IMAGE EVALUATION TEST TARGET (MT-3)



H
G
F
E
D
C
B
A



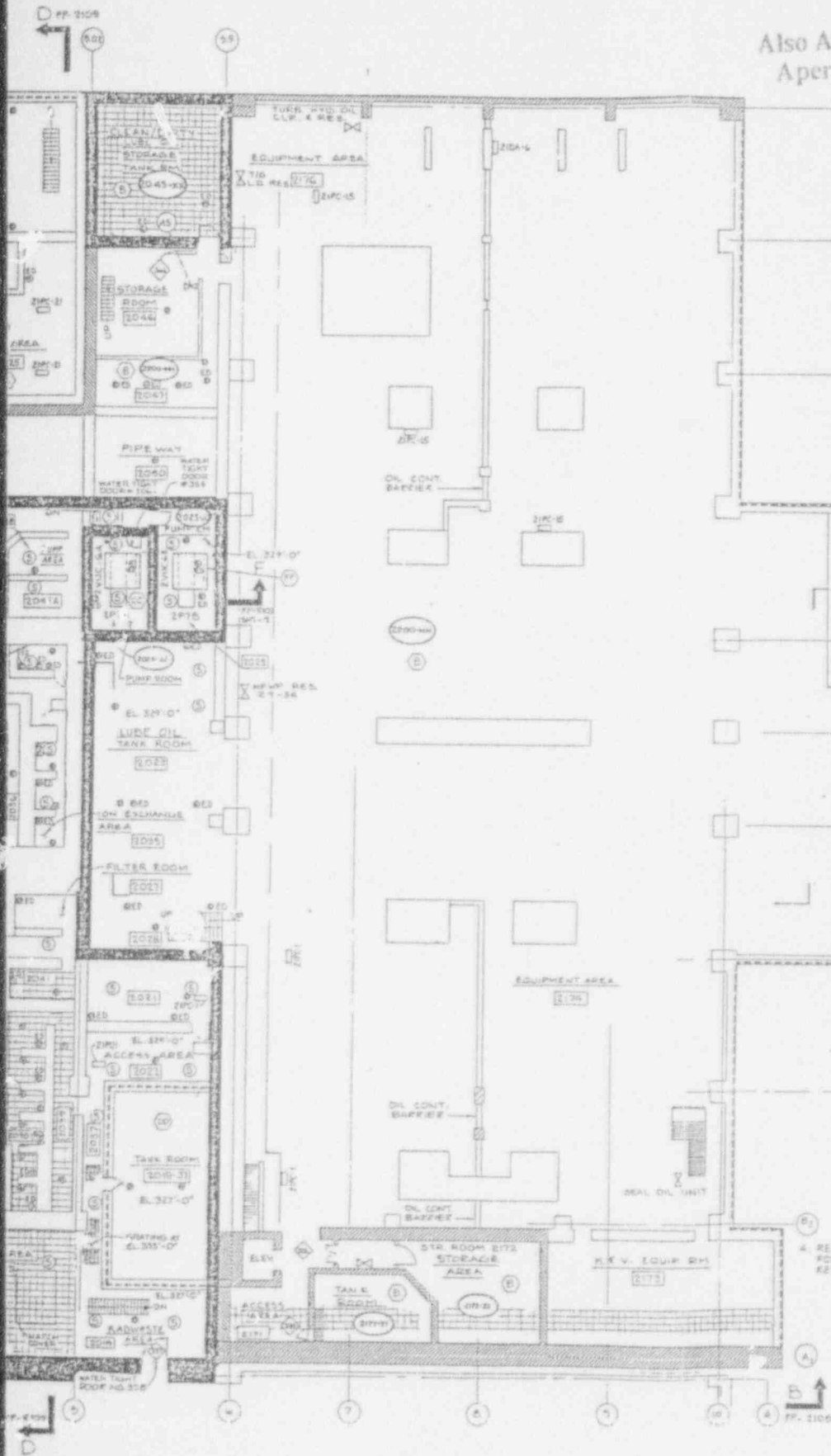
REACTOR BLDG.
CONTAINMENT HALL
3 HR FIRE RATED



A

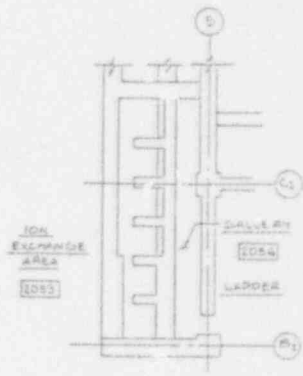
SI APERTURE CARD

Also Available On Aperture Card



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2023-WR	PIPEWAY EQUIPMENT ACCESS AREA (EL. 335)
2045-XE	TURBINE LUBE OIL STORAGE TANK ROOM (EL. 335)
2000-MM	TURBINE BUILDING (EL. 335 TO 404)
2049-B	STAIRWAY NO. 200 (EL. 337 TO 423)
2177-YT	NEUTRALIZER TANK ROOM (EL. 334)
2172-ZZ	LAUNDRY STORAGE & BOTTLED AIR REFILL ROOMS (EL. 334) & LOWER STORAGE AREA (EL. 335)
2156-P	STAIR NO. 2055 (EL. 330 TO 404)
2025-WW	REGENERATIVE WASTE PUMP & TANK AREA (EL. 335)
FIRE AREA CC	
2024-AJ	TURBINE DRIVER EMERGENCY FEEDWATER PUMP ROOM (EL. 339)
FIRE AREA DD	
2040-WJ	TANK ROOMS, PUMP ROOMS & CORRIDORS (EL. 335)
2032-AI	SPENT RESIN STORAGE TANK ROOM (EL. 335)
2048-AJ	BORNE ACID CONDENSATE TANK ROOM (EL. 335)
FIRE AREA EE	
2033-WI	LOWER SOUTH PUMP PENETRATION AREA (EL. 335)
FIRE AREA FF	
2022-AI	MOTOR DRIVER EMERGENCY FEEDWATER PUMP ROOM (EL. 335)
FIRE AREA GG	
2061-WH	UPPER NORTH PUMP PENETRATION AREA (EL. 334) & LOWER NORTH PUMP PENETRATION AREA (EL. 335)
FIRE AREA NN	
2032-B	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 426-B)
2033-B	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 426-B)

FP-2105
SHT. - 1



PARTIAL PLAN
EL. 342 TO 374

NOTES:

1. FOR DRAWING SYMBOLS SEE FP-2102.
2. ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3/8" FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3/8" FIRE RATED REQUIREMENT.
3. THIS DRAWING SHOWS SBR FIRE BARRIERS (WALLS / FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
4. CRITICAL FIRE MODE.

SBR Figure 2 is based upon this drawing. For more information, please refer to the Licensee's Design Change Request or Licensee's Safety Analysis Report. This drawing has no SBR number assigned; see Appendix B for Fire Hazard Analysis.

NO.	DATE	BY	DESCRIPTION	APPROVED BY
22	10/17	AS	BUILT, DRN 92-81924	AS
21	10/18	AS	BUILT, DRN 92-86537	AS
20	08/18	AS	BUILT, DRN 92-77423	AS
19	08/18	AS	REVISED DESCRIPTION	AS
18	08/18	AS	REVISED DESCRIPTION	AS
17	08/18	AS	REVISED DESCRIPTION	AS

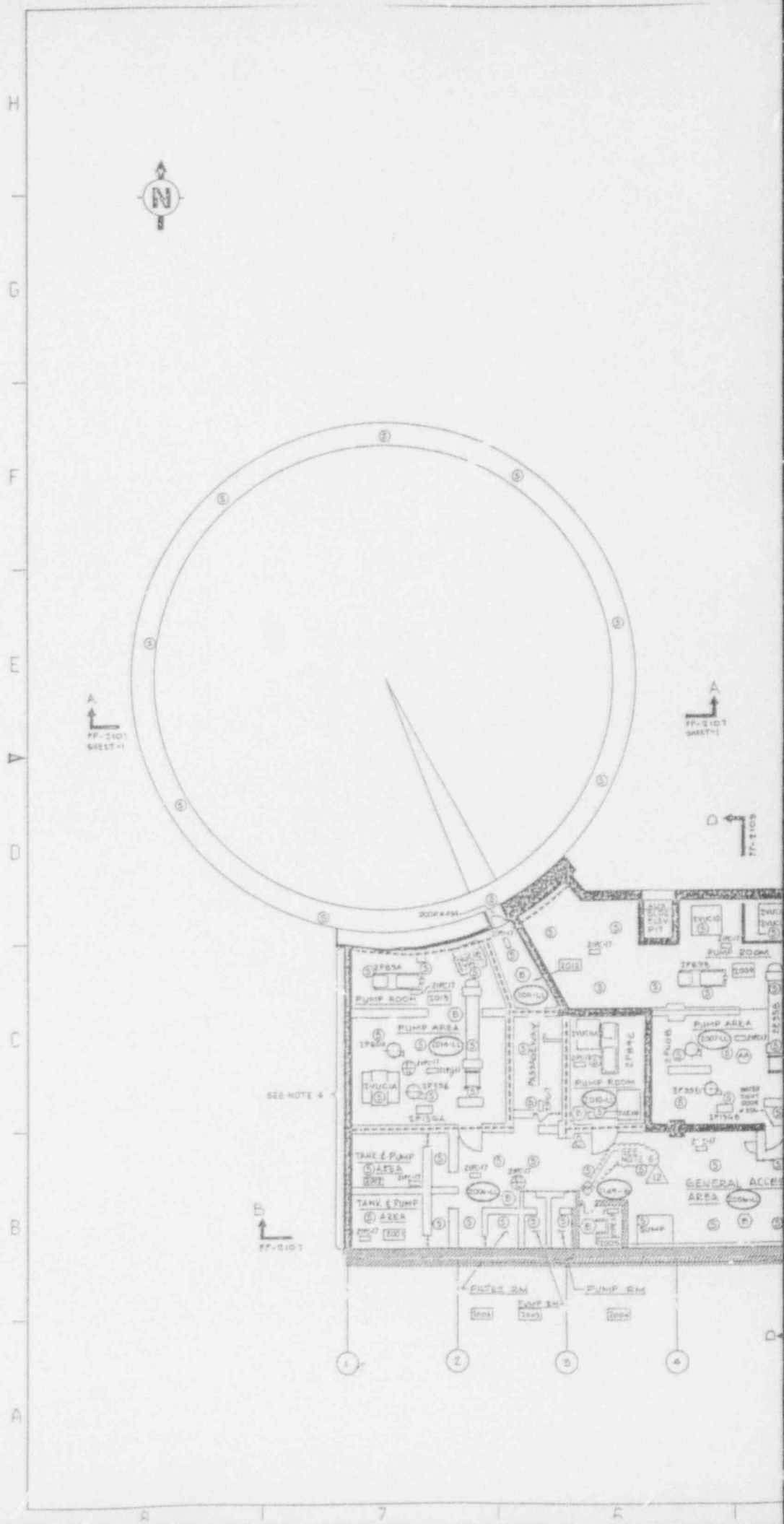
ARKANSAS NUCLEAR ONE
UNIT 2
RUSSELLVILLE, ARKANSAS

FIRE ZONE
PLAN BELOW GRADE
EL. 335-B

DATE	NO.	ISSUE	BY
10/17/84	1	1	AS

9307280079-15

DATE: 10/17/84
DRAWN BY: AS



SI APERTURE CARD

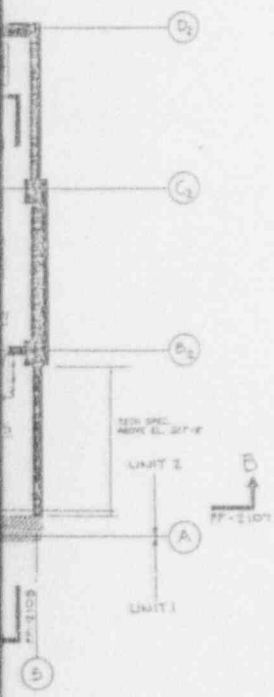
Also Available On
Aperture Card

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA 2 B	
200H-LL	GENERAL ACCESS AREA (EL. 317)
200H-LL	"C" WPE PUMP AREA (EL. 317)
200H-LL	TENDON GALLERY ACCESS (EL. 317)
200H-LL	WEST WPE LPS & CONTAINMENT SPRAY PUMP AREA (EL. 317)
214S-B	STAIRWAY NO. 200H (EL. 317 TO 422)
FIRE AREA 2A	
200T-LL	EAST WPE LPS & CONTAINMENT SPRAY PUMP AREA AND GALLERY (EL. 317)

NOTES:

- FOR DRAWING SYMBOLS SEE FP-2102.
- ALL ROOMS AND DECKS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE TO BE FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 2 HR. FIRE RATED REQUIREMENT.
- DOOR DECKS WITHIN A FIRE BARRIER (WALL & FLOOR) ALL OTHER INFORMATION PER 1017 BE APPLICABLE.
- WALLS FB-200H-S, FB-200T-S, FB-201S-S AND FB-201A-S ARE TECH. SPEC. FIRE BARRIERS ABOVE EL. 314'-0".
- REFER TO FB-00-2007 FOR FIRE BARRIER KEY PLAN.

CRITICAL FIRE DECK



9307280079 -16

SAR Figure 2 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR Figure is impacted. This drawing has no SAR number assigned see Appendix A6 for Fire Hazard Analysis.

12	AS-B	AS-BUILD, DRN NO. 00180	TR	APPROVED REVISION
11	AS-B	AS-BUILD, DRN NO. 00480	TR	APPROVED REVISION
10	AS-B	AS-BUILD, DRN NO. 00000	TR	APPROVED REVISION
09	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
08	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
07	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
06	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
05	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
04	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
03	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
02	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
01	AS-B	REVISION DESCRIPTION	TR	APPROVED REVISION
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS				
FIRE ZONE PLAN AT ELEV. 317'-0"				
DRAWING NO.		REVISION		
ENERGY		1		
FP-2106				

H
G
F
E
D
C
B
A

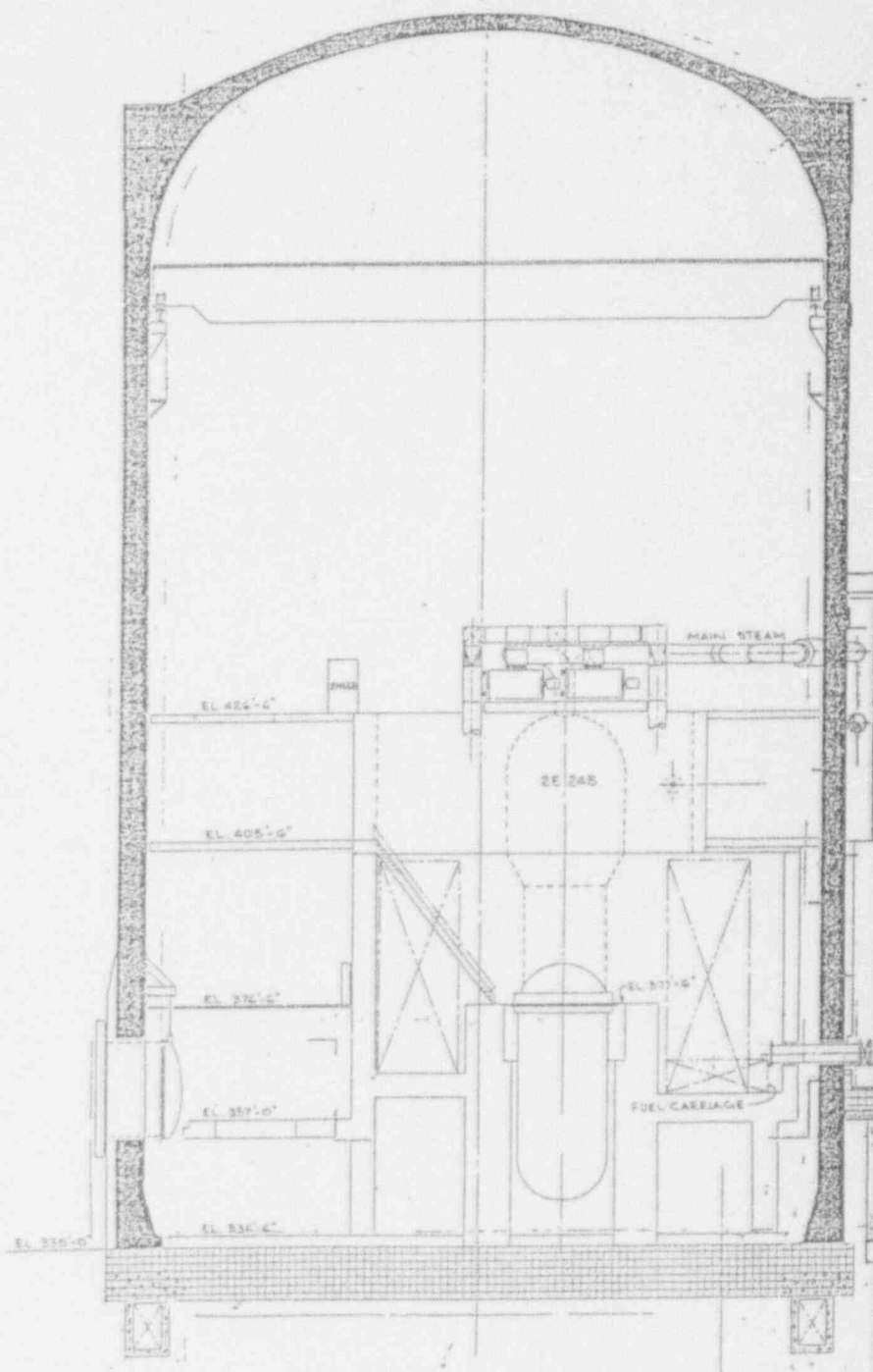
FP-2101

FP-2102

FP-2103

FP-2104

FP-2105



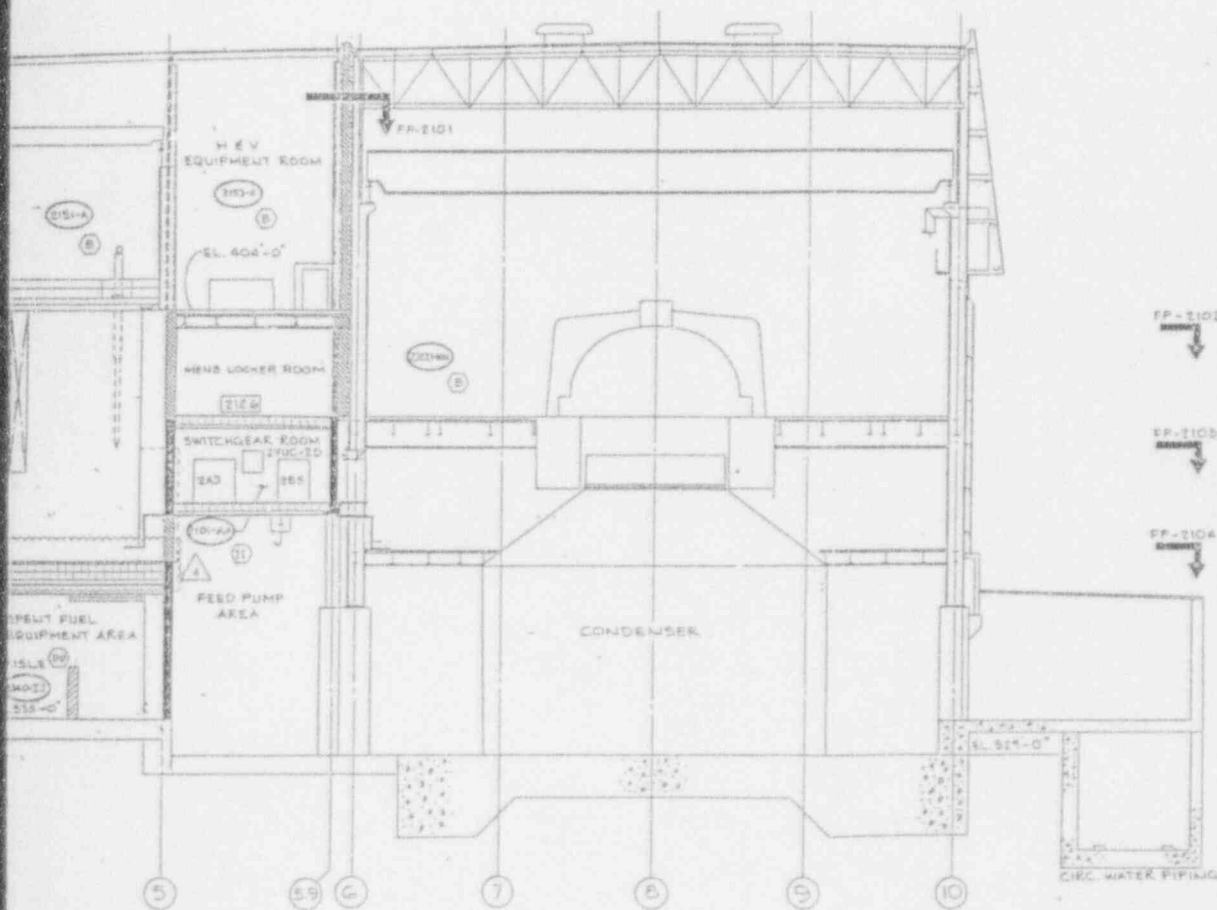
3

4

6 7 1 C 1

SI APERTURE CARD

Also Available On Aperture Card



SECTION A-A

SAR Figure 4.1 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figure is impacted.
 * This drawing has no SAR number assigned see Appendix 1B for Fire Hazards Analysis.

NOTES:

1. FOR DRAWING SYMBOLS SEE FP-2102
2. ALL FLOORS AND CEILING WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3/4" HE FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3/4" HE FIRE RATED REQUIREMENT.
3. THIS DRAWING SHOWS SHAFT FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.

REV	DATE	DESCRIPTION	BY	CHKD
1	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
2	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
3	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
4	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
5	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
6	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
7	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
8	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
9	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
10	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
11	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
12	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
13	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
14	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
15	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
16	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
17	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
18	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
19	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
20	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
21	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
22	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
23	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
24	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
25	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
26	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
27	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
28	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
29	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
30	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
31	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
32	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
33	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
34	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
35	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
36	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
37	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
38	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
39	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
40	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
41	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
42	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
43	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
44	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
45	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
46	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
47	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
48	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
49	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
50	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
51	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
52	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
53	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
54	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
55	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
56	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
57	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
58	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
59	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
60	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
61	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
62	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
63	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
64	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
65	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
66	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
67	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
68	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
69	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
70	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
71	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
72	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
73	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
74	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
75	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
76	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
77	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
78	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
79	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
80	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
81	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
82	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
83	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
84	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
85	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
86	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
87	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
88	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
89	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
90	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
91	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
92	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
93	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
94	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
95	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
96	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
97	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
98	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
99	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	
100	08/11/81	ISSUE FOR CONSTRUCTION	W. J. JONES	

9307280079 -17

ENTERGY FP-2187 1 4

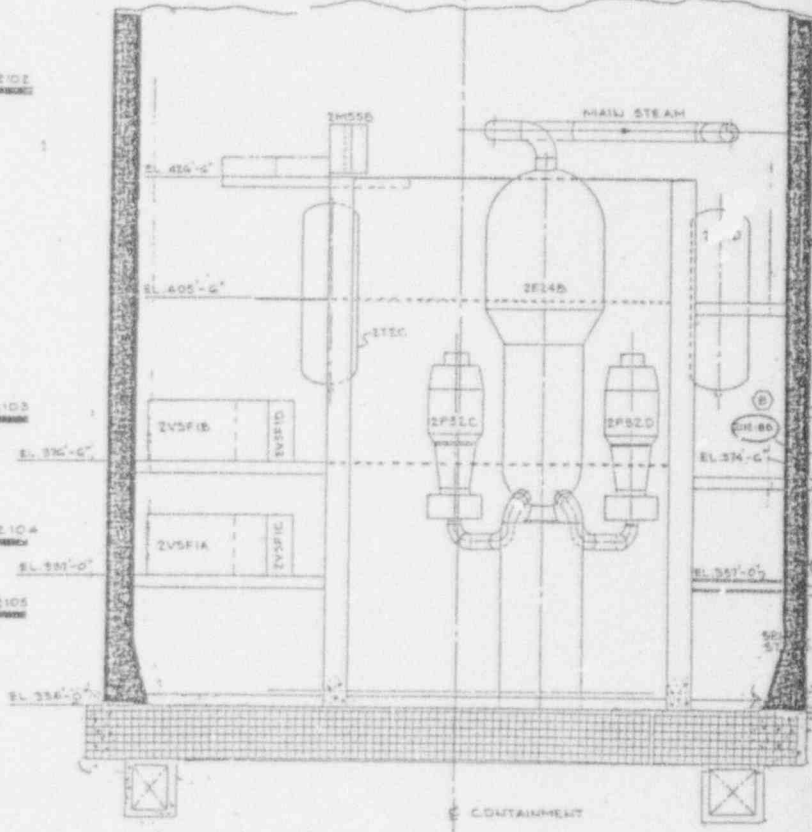
H
G
F
E
D
C
B
A

FP-2102
↓

FP-2103
↓
EL. 396'-0"

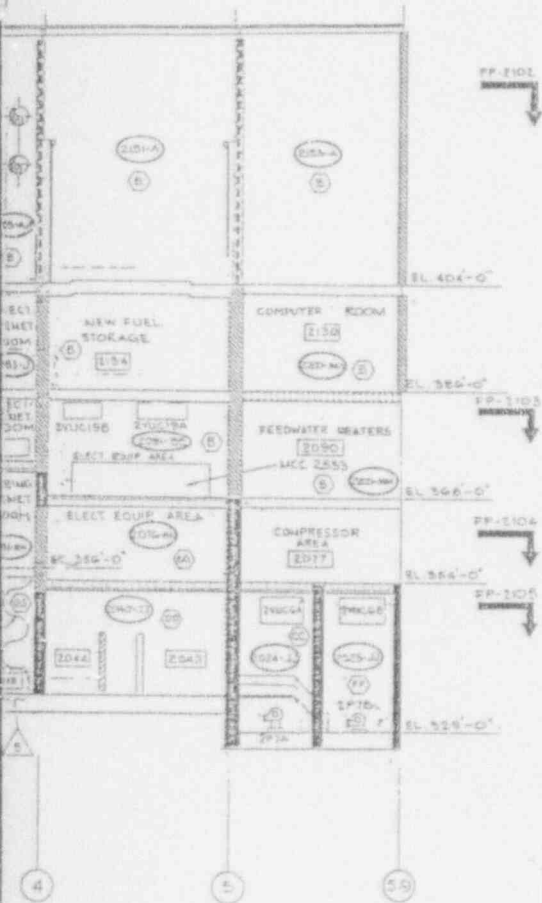
FP-2104
↓
EL. 387'-0"

FP-2105
↓
EL. 354'-0"



SECTION FF

R 1 7 1 2



SI APERTURE CARD

Also Available On
Aperture Card

NOTES:

1. FOR DRAWING SYMBOLS SEE FP-2101.
2. ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3 HR. FIRE RATED UNLESS INDICATED OTHERWISE. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR. FIRE RATED REQUIREMENT.
3. THIS DRAWING SHOWS 3 HR. FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.

SAR Figure 2 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figure is impacted.
* This drawing has no SAR number assigned see Appendix 9B for Fire Hazards Analysis.

9307280079-18

NO.	DATE	BY	DESCRIPTION	APPROVED
1	AS BUILT, CAN BE BUILT			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				
91				
92				
93				
94				
95				
96				
97				
98				
99				
100				

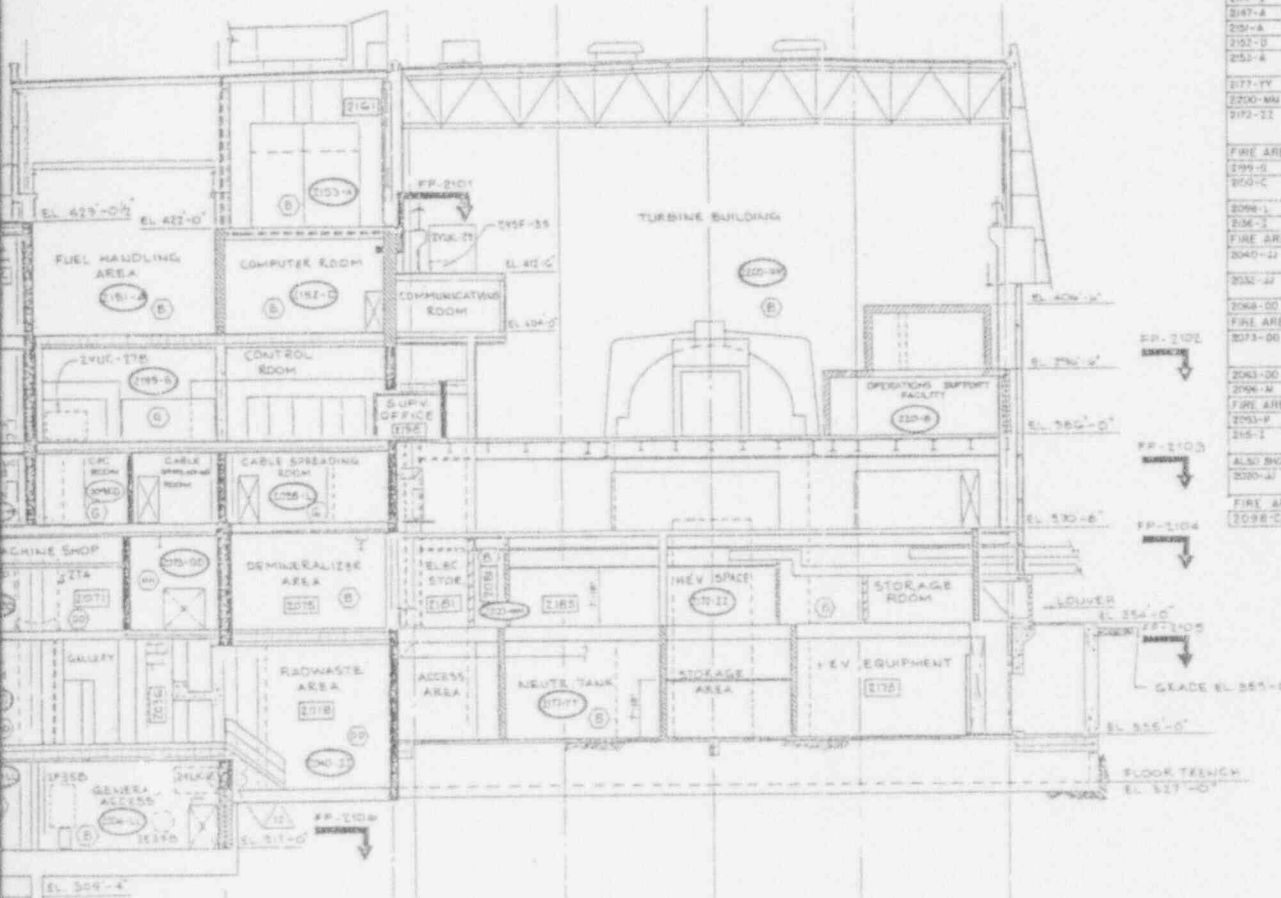
ARKANSAS NUCLEAR ONE
UNIT 2
RUSSELLVILLE, ARKANSAS

FIRE ZONE
SECTION F-F

ENERGY	FP-2107	2	
--------	---------	---	--

SI APERTURE CARD

Also Available On Aperture Card



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2201-B	OPERATIONS SUPPORT FACILITY (EL. 386)
2006-LL	GENERAL ACCESS AREA (EL. 377)
2007-LL	7" WPS PUMP AREA (EL. 377)
2049-B	STAIRWAY NO. 2049 (EL. 337 TO 422)
2047-B	H.B.V. AIR INTAKE AREA (EL. 348)
2047-B	CHEMICAL STORAGE AREA (EL. 404)
2057-A	FUEL HANDLING AREA (EL. 404)
2102-B	COMPUTER ROOM (EL. 404)
2102-B	VENTILATION EQUIPMENT AREA (EL. 404 & 422)
2177-TY	NEUTRALIZER TANK ROOM (EL. 336)
2200-WH	TURBINE BUILDING (EL. 335 TO 404)
2192-ZZ	LAUNDRY STORAGE AND BOTTLED AIR REFL. ROOMS (EL. 354) LOWER STORAGE AREA (EL. 355)
FIRE AREA D	
2199-C	CONTROL ROOM (EL. 386)
2100-C	CORE PROTECTION CALCULATOR ROOM (ELECTRICAL EQUIPMENT ROOM (EL. 386))
2086-L	CABLE SPREADING ROOM (EL. 372)
2106-T	HEALTH PHYSICS AREA (EL. 386)
FIRE AREA G	
2042-ZZ	TANK ROOMS, PUMP ROOMS & CORRIDORS (EL. 335)
2052-ZZ	SPENT RESIN STORAGE TANK ROOM (EL. 335)
2068-00	HOT MACHINE SHOP (EL. 354)
FIRE AREA HH	
2073-00	ACCESS AREA, PUMP AREA, TANK AREA, WASTE GAS EQUIPMENT AREA AND WASHDOWN (EL. 354)
2063-00	SAMPLE ROOM (EL. 354)
2066-M	MOTOR CONTROL CENTER (EL. 372)
FIRE AREA KK	
2053-P	SOUTH DIESEL GENERATOR RM (EL. 348)
2145-T	BANK ACID MAKEUP TANK ROOM (EL. 386)
ALSO SHOWN BUT NOT INCLUDED IN FIRE AREA	
2020-W	BORON MANAGEMENT HOLDUP TANK VAULT (EL. 327)
FIRE AREA S	
2098-CG	CPC ROOM (EL. 372 0')



NOTES
 1. FOR DRAWING SYMBOLS, SEE FP-2101
 2. ALL FLOOR SYMBOLS WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WOULD ARE 3 HR. FIRE RATED UNLESS INDICATED OTHERWISE. CORRIDORS AND ELEVATORS ARE EXEMPTED FROM THE 3 HR. FIRE RATED REQUIREMENT.
 3. THIS DRAWING SHOWS 3 HR. FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.

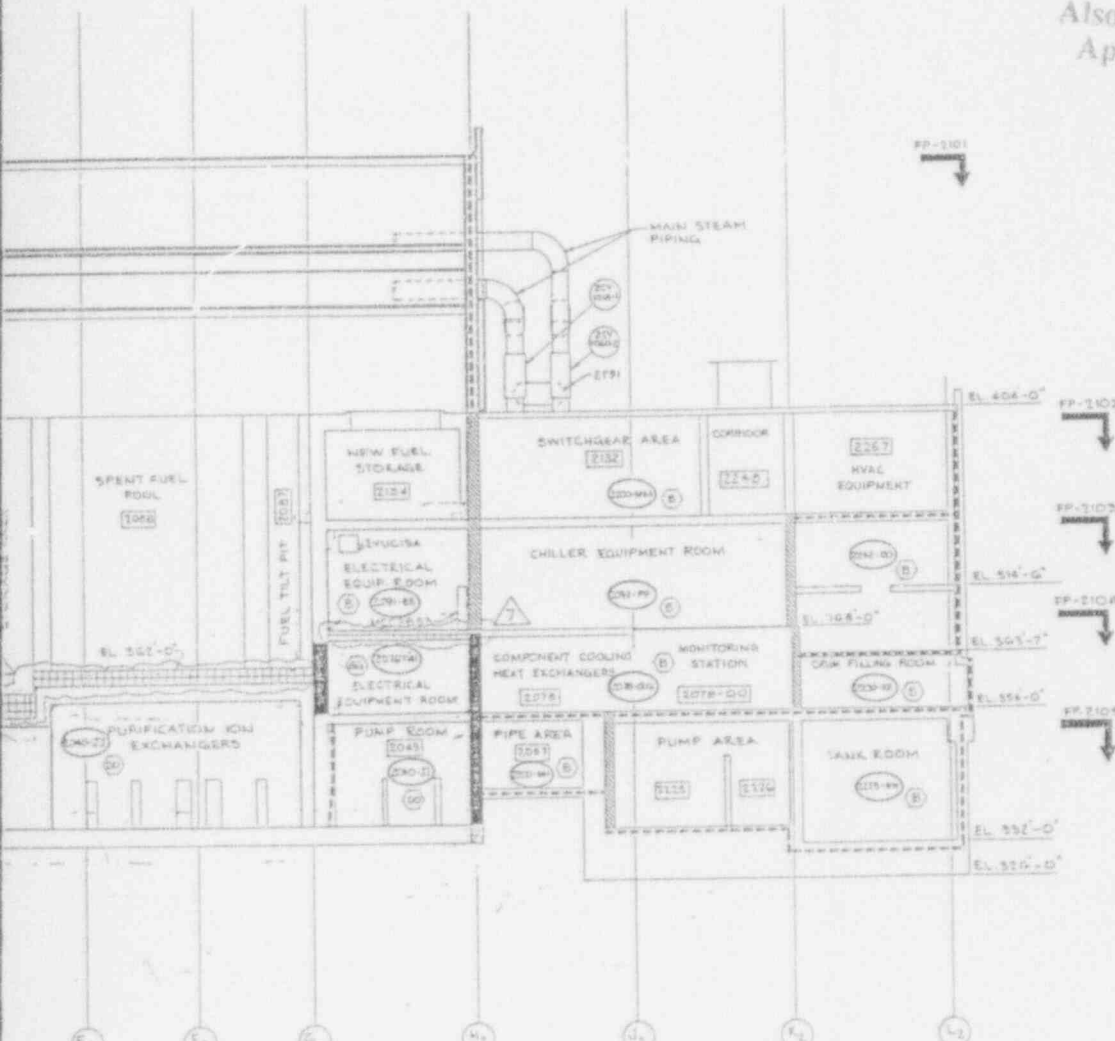
9307280079 -19

SAP Figure _____ is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAP figure is updated. * This drawing has no SAP number assigned see Appendix 19 to Fuel History Analysis.

NO.	DATE	BY	DESCRIPTION	CHK'D
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS				
FIRE ZONE SECTION B-B				
ENERGY	FP-2108	1	12	

SI APERTURE CARD

Also Available On Aperture Card



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2101-B	FUEL HANDLING AREA (EL. 404)
2106-LL	GENERAL ACCESS AREA (EL. 371)
2206-BB	NORTH ELECTRICAL EQUIPMENT ROOM (EL. 348)
2200-MM	TURBINE BUILDING (EL. 335 TO 404)
2106-PP	CHILLER EQUIPMENT ROOM (EL. 366)
2078-00	COMPONENT COOLING WATER HEAT EXCHANGER EQUIPMENT AREA (EL. 384)
2242-00	LAR STORAGE & VIB MECHANICAL EQUIPMENT AREA (EL. 374 & 384)
2225-BW	REGENERATIVE WASTE PUMP AND TANK AREA (EL. 335)
2230-RF	DRUM FILLING ROOM (EL. 324)
FIRE AREA G	
2149-S	CONTROL ROOM (EL. 386)
2136-1	HEALTH PHYSICS AREA (EL. 386)
2098-L	CABLE SPREADING ROOM (EL. 372)
FIRE AREA AA	
2007-LL	TEST AREA, LPS AND CONTAINMENT SPRAY PUMP AREA & GALLERY (EL. 371)
FIRE AREA DD	
2040-JJ	TANK ROOMS, PUMP ROOMS AND CORRIDORS (EL. 331)
FIRE AREA GG	
2076-WH	ELECTRICAL EQUIPMENT ROOM (EL. 354)
FIRE AREA HH	
2073-DD	ACCESS AREA, PUMP AREA, TANK AREA, WASTE GAS EQUIPMENT AREA, AND PASSAGEWAY (EL. 324)
FIRE AREA JJ	
2009-U	CORRIDOR & MOTOR CONTROL CENTER (EL. 372 & 374-8)
FIRE AREA MM	
2009-W	WEST D.C. EQUIPMENT ROOM (EL. 372)
FIRE AREA TT	
2104-S	ELECTRICAL EQUIPMENT ROOM (EL. 372)

NOTES:

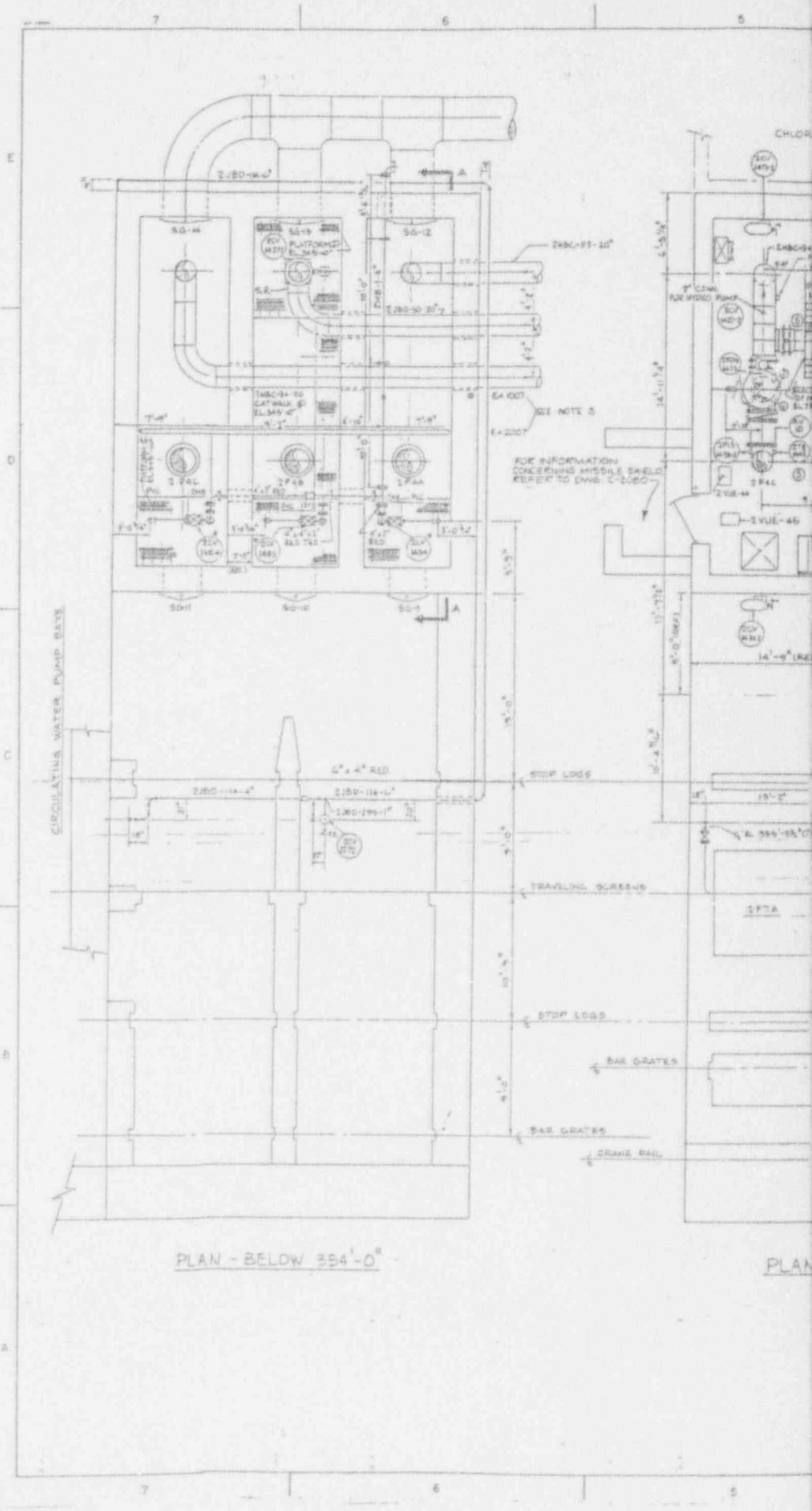
- FOR DRAWING SYMBOLS SEE FP-2102.
- THIS DRAWING SHOWS 3HR FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
- ALL FLOORS AND CEILING'S WHICH ARE LOCATED WITHIN THE BOUNDARIES OF THE REACTOR BUILDING CONTAINMENT WALLS ARE 3HR FIRE RATED UNLESS INDICATED OTHERWISE. EQUIPMENTS AND ELECTRICS ARE EQUIPPED FROM THE 3HR FIRE RATED REQUIREMENT.

WARNING: STAY AWAY FROM HIGH RADIATION AREAS

7	REV	10	DATE	08/11/84	BY	SK	CHK	APP
6	REV	01	DATE	08/11/84	BY	SK	CHK	APP
5	REV	01	DATE	08/11/84	BY	SK	CHK	APP
4	REV	01	DATE	08/11/84	BY	SK	CHK	APP
3	REV	01	DATE	08/11/84	BY	SK	CHK	APP
2	REV	01	DATE	08/11/84	BY	SK	CHK	APP
1	REV	01	DATE	08/11/84	BY	SK	CHK	APP
ARKANSAS POWER AND LIGHT COMPANY ARKANSAS NUCLEAR ONE UNIT 2 FIRE ZONE SECTION D-D DRAWING NO. FP-2109 REV.								

9307280079-20

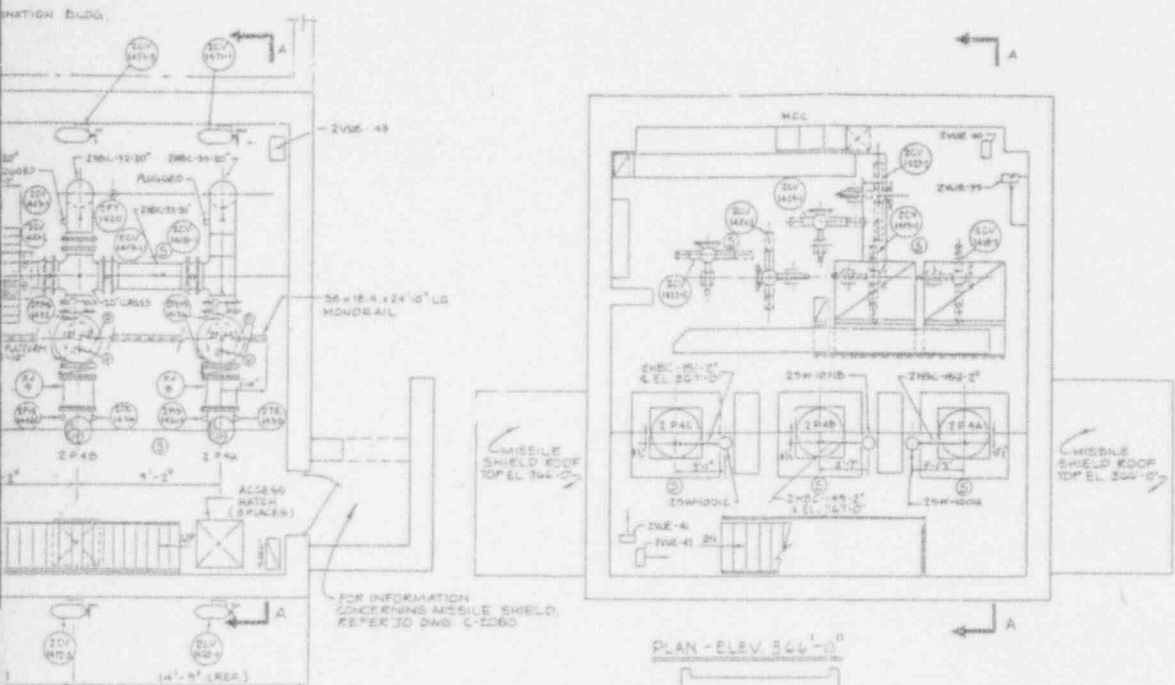
Scale: As Shown
 Project: Arkansas Nuclear One, Unit 2
 Drawing No.: FP-2109
 Revision: 01
 Date: 08/11/84
 By: SK
 Check: SK
 App: SK



PLAN - BELOW 354'-0"

FOR INFORMATION CONCERNING MISSILE SHIELD REFER TO DWG. C-2000

PLAN



SI APERTURE CARD

Also Available On Aperture Card

- NOTES**
- FOR DRAWING SYMBOLS SEE FP-2110.
 - THIS DRAWING SHOWS 3 HR. FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.
 - ALL FLOORS AND CEILINGS WHICH ARE LOCATED WITHIN THE BOUNDARIES BETWEEN THE REACTOR BUILDING CONTAINMENT WALL AND PERIMETER MRC REQUIRED FIREWALLS, EXCEPT AS INDICATE OTHERWISE, ARE 3 HR. FIRE RATED. ROOFS ARE NOT CONSIDERED FIRE BARRIERS UNLESS INDICATED AS SUCH. STAIRWAYS AND ELEVATORS ARE EXEMPTED FROM THE 3HR FIRE RATED REQUIREMENT.
 - THIS STRUCTURE IS DESIGNATED AS FIRE AREA "00".
 - CONDUITS EA-1001 AND EA-1001 LOCATED IN THE SERVICE WATER PUMP PDS, ARE WELDED WITH THREE HOUR RATED FIRE BRASS IF THE FIRE MAP IS REMOVED A FIRE WATCH MUST BE POSTED.

See Figure 1 in Section 1 of this drawing. Plans & Utility Diagrams Change Source to Location after studying the drawing & the corresponding SAP Figure is required. This drawing has to SAP number 244200. See Appendix to the Fire Hazard Manual.

3	AS BUILT DCP 82-2170	NO	CH	TR	AS
2	AS BUILT DCP 82-2171	NO	W	FR	AS
4	AS BUILT DCP 82-2172	NO	W	FR	AS
1	AS BUILT PEAK 84-1240	NO	W	FR	AS

AR

ARKANSAS POWER AND LIGHT COMPANY
ARKANSAS NUCLEAR ONE
UNIT 2

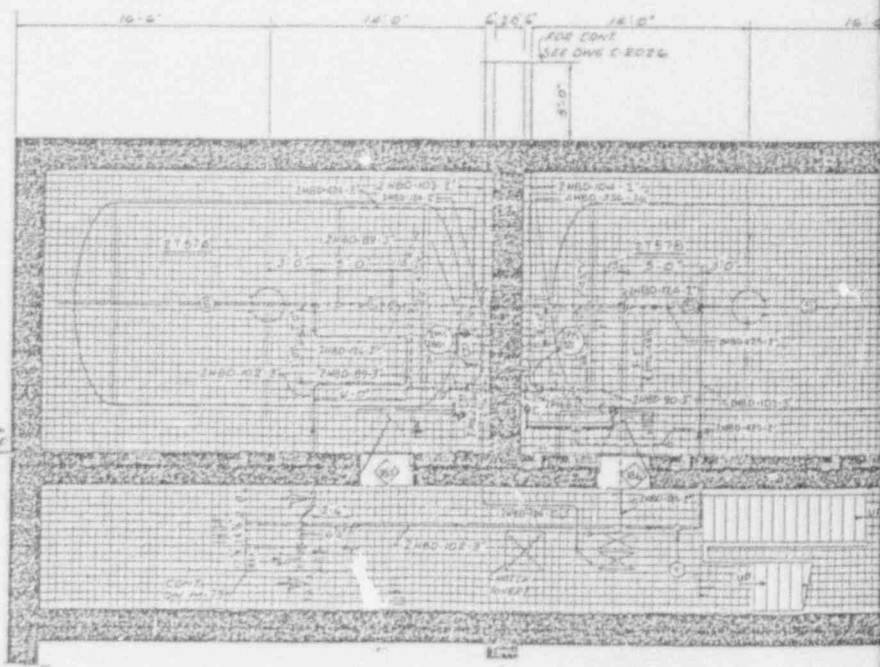
FIRE ZONE
INTAKE PUMP HOUSE

FP-2110 4

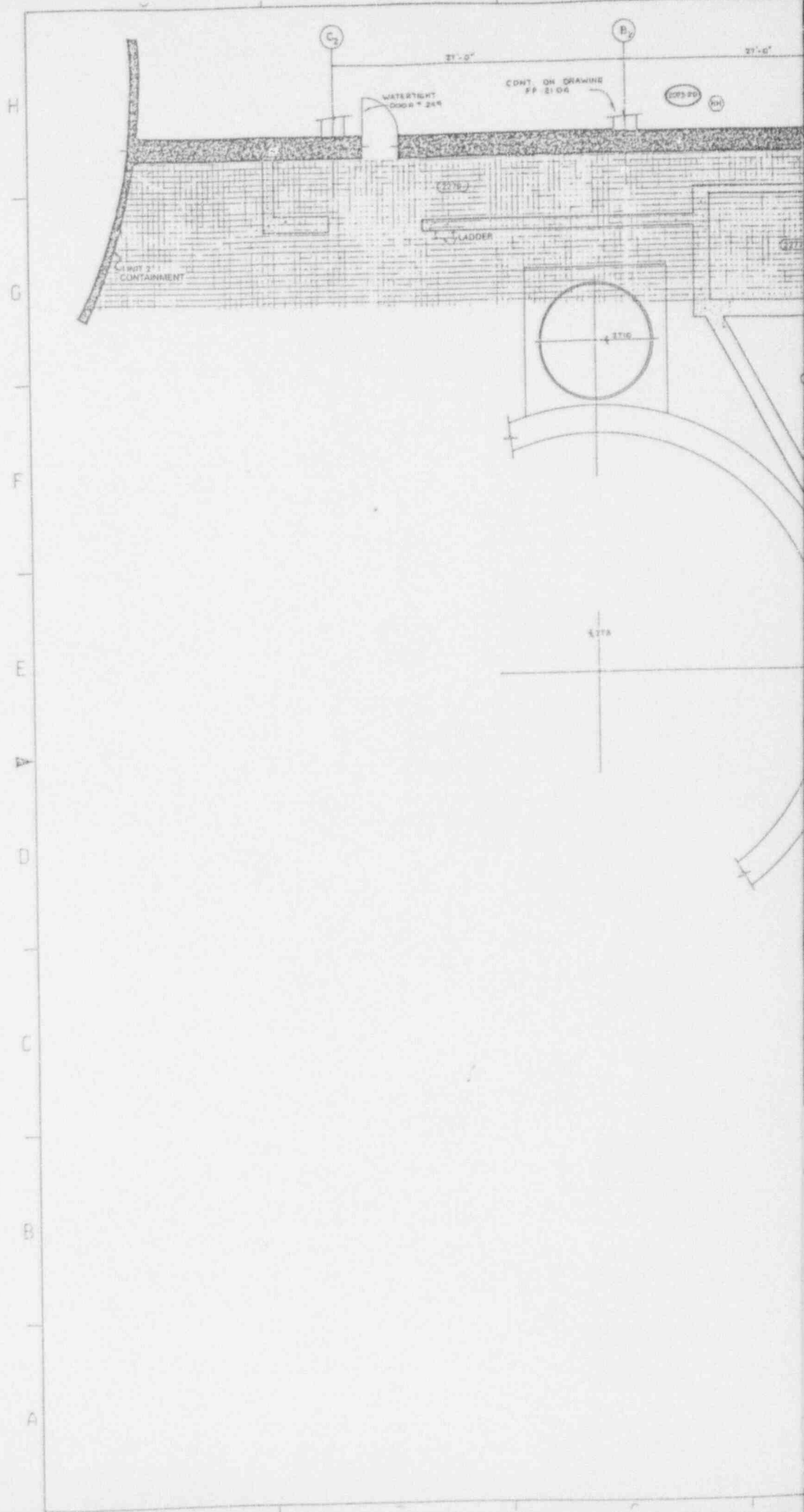
H
G
F
E
D
C
B
A

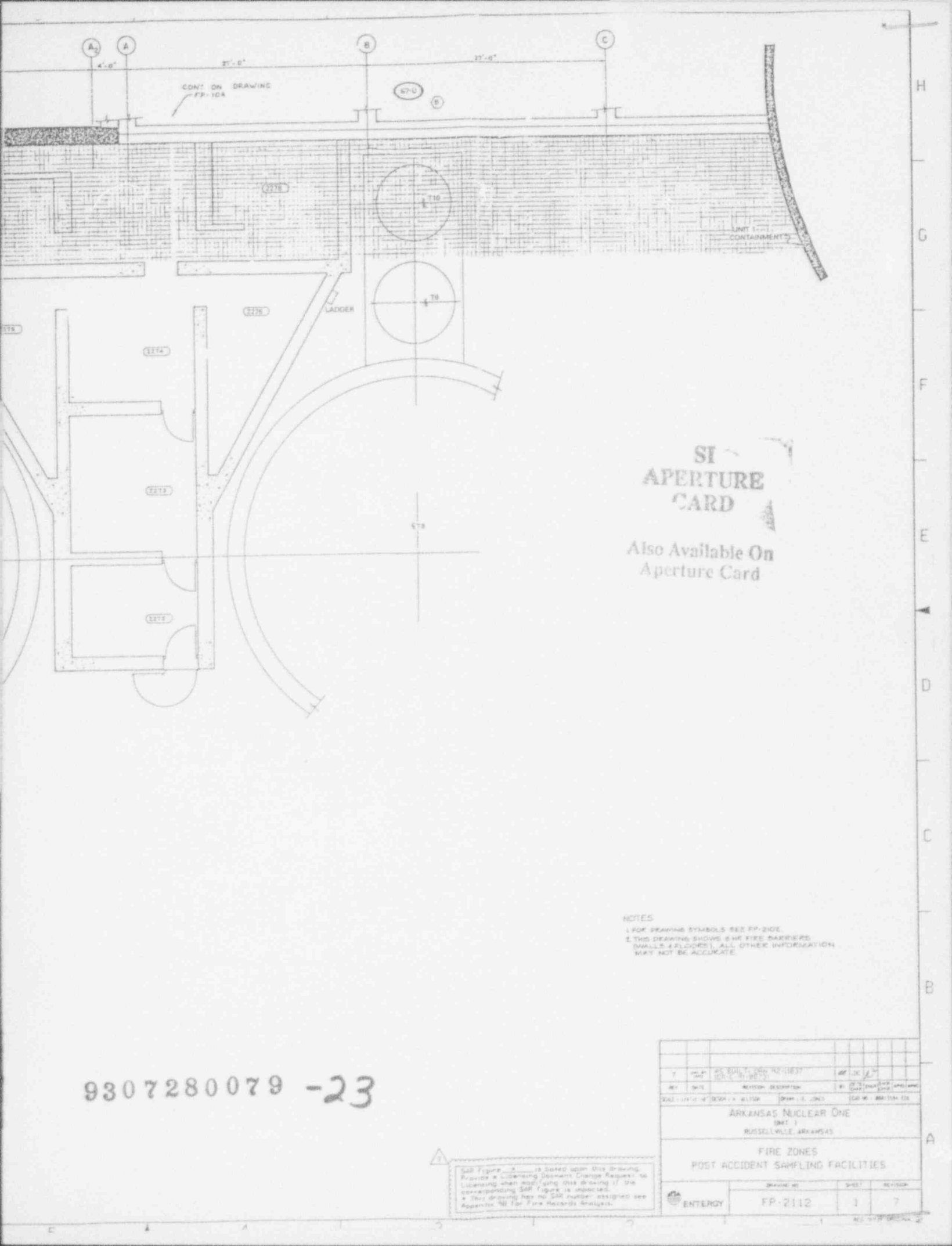


PLAN ABOVE GRADE
SCALE 1/4" = 1'-0"



PLAN BELOW GRADE
SCALE 1/4" = 1'-0"





CONT. ON DRAWING
FP-104

**SI
APERTURE
CARD**

Also Available On
Aperture Card

NOTES

- 1. FOR DRAWING SYMBOLS SEE FP-2102.
- 2. THIS DRAWING SHOWS SOME FIRE BARRIERS (WALLS & FLOORS). ALL OTHER INFORMATION MAY NOT BE ACCURATE.

9307280079 -23

⚠
 See Figure 1 is based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figure is impacted. * This drawing has no SAR number assigned see Appendix 3B for Fire Records Analysis.

ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS	
FIRE ZONES POST ACCIDENT SAMPLING FACILITIES	
DRAWING NO. FP-2112	SHEET 1
REVISION 7	ENERGY

H

G

F

E

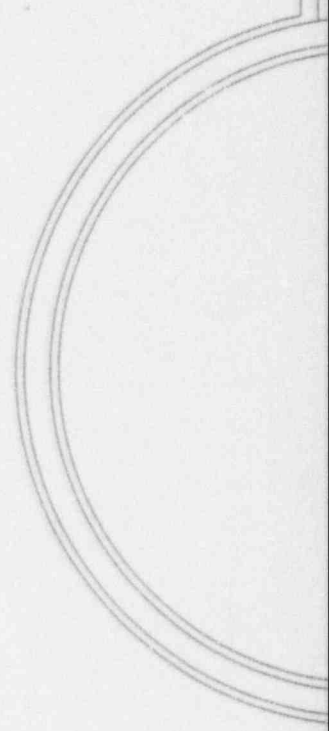
D

C

B

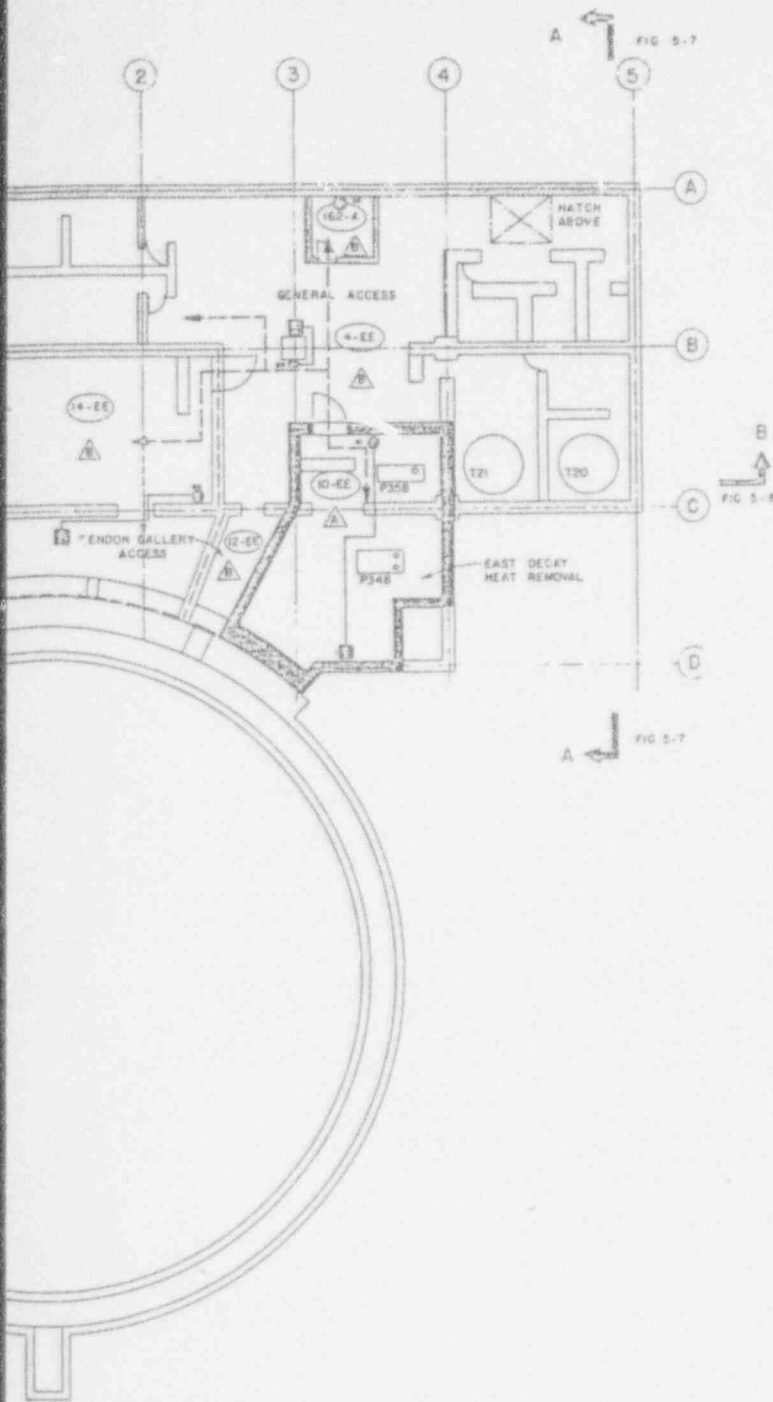
A

WEST
DECAY
HEAT
REMOVAL
B
FIG. 2-8



SI APERTURE CARD

Also Available On Aperture Card



LEGEND

- ⊙ E-8 LIGHT AND UNIT NUMBER
- ⊠ E7/REMOTE
- E-10 LIGHT
- ACCESS/EGRESS PATH
- ▬ TECH SPEC FIREWALLS
- ▬ NON-TECH SPEC FIREWALLS
- ▬ TECH SPEC FIRE-RATED FLOORS
- ▬ NON-TECH SPEC FIRE-RATED FLOORS
- ⊙ FIRE ZONE
- △ FIRE AREA
- - - DENOTES FIRE ZONE BOUNDARY

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA A	
10-EE	EAST DECAY HEAT REMOVAL PUMP ROOM (EL 317)
FIRE AREA B	
12-EE	TENDON GALLERY ACCESS AREA (EL 317)
14-EE	WEST DECAY HEAT REMOVAL PUMP ROOM (EL 317)
4-EE	GENERAL ACCESS AREA (EL 317)
162-A	STAIRWELL NO. 1 (EL 317 TO 404)

NOTES
THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAR Figure(s) 5-17 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR Figure(s) are indicated.

9307280079 -24

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 317'-0"					
DRAWING NO.		SHEET		REVISION	
ENERGY		FP-369		1	

NOT TO SCALE

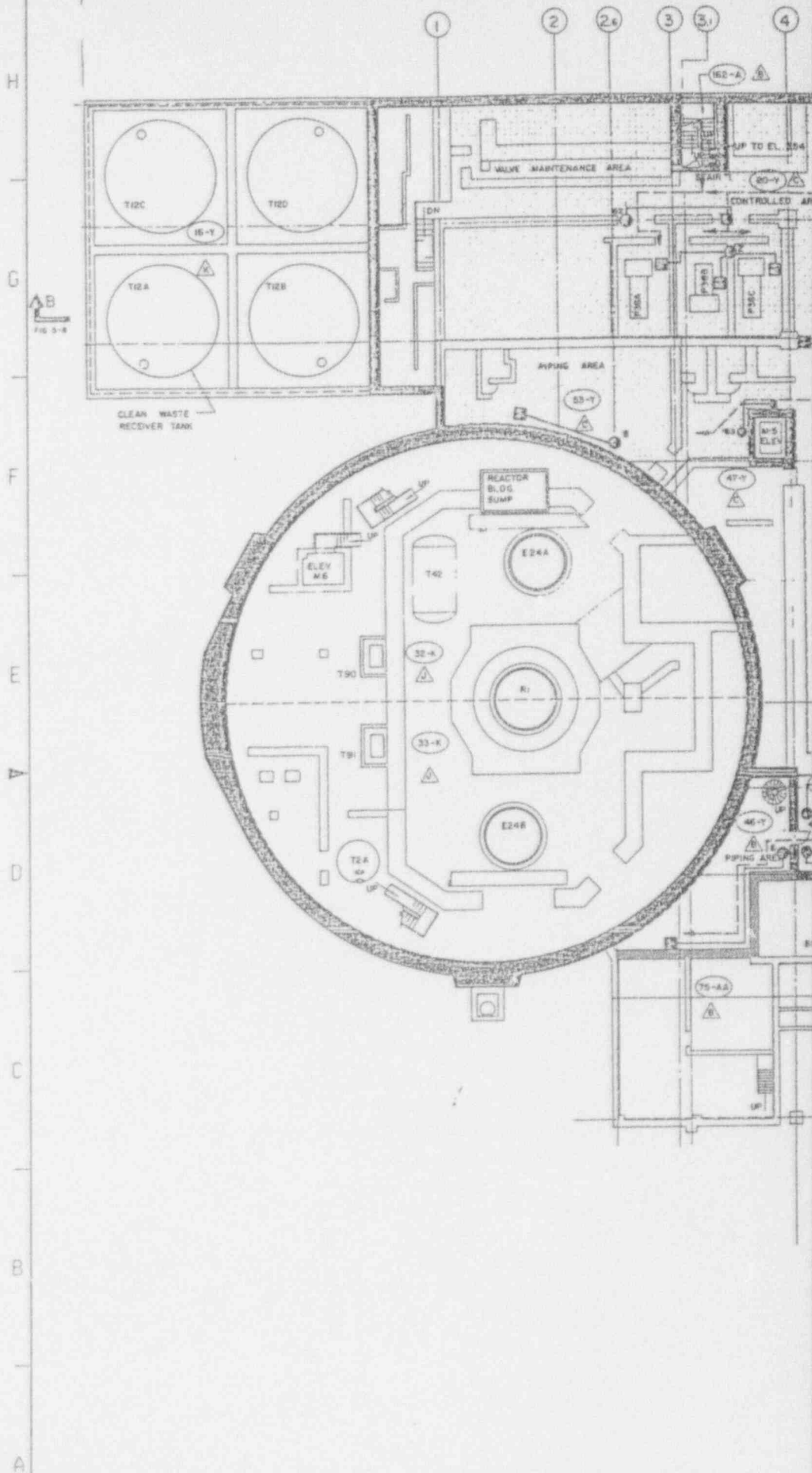
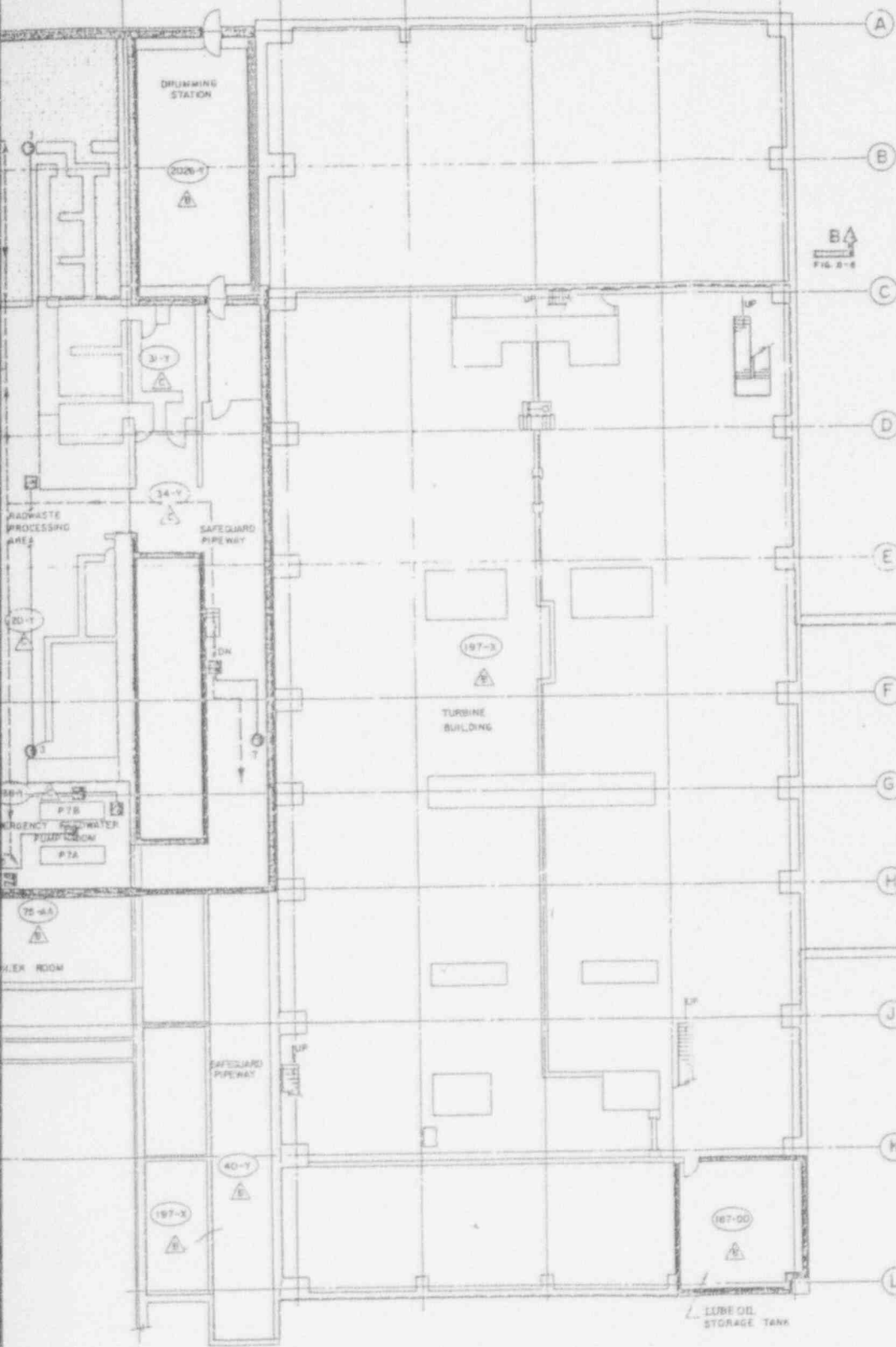


FIG 3-7
A

SI APERTURE CARD

Also Available On Aperture Card



LEGEND

- 7 (C) T AND UNIT NUMBER
- (S) LIGHT
- (R) ACCESS ROUTE
- (W) RE WALLS
- (F) FIRE WALLS
- (FR) FIRE-RATED FLOORS
- (FR) FIRE-RATED FLOORS
- (2026-Y) FIRE ZONE BOUNDARY

FIRE ZONE	LINE DESCRIPTION
FIRE AREA B	
197-0	STAIRWELL NO. 1 (EL. 315 TO 320)
2026-Y	DRUMMING STATION (UNIT 1 - EL. 335)
46-Y	LOWER SOUTH PIPING PENETRATION AREA (EL. 335)
73-WA	BOILER ROOM (EL. 340)
97-Y	TURBINE BUILDING (EL. 335 TO 400)
40-Y	PIPE AREA (EL. 340)
197-00	DIRTY & CLEAN LUBE OIL STORAGE TANK ROOM (EL. 335)
FIRE AREA C	
21-Y	RADWASTE PROCESSING AREA (EL. 335)
53-Y	LOWER NORTH PIPING PENETRATION AREA (EL. 335)
47-Y	PENETRATION VENTILATION AREA (EL. 335)
34-Y	PIPE AREA (EL. 340)
31-Y	MUNICIPALION DEMINERALIZER AREA (EL. 335)
38-Y	EMERGENCY FEEDWATER PUMP AREA (EL. 335)
FIRE AREA E	
16-Y	CLEAN WASTE RECEIVER TANK AREA (EL. 325)
FIRE AREA J	
32-W	NORTH SIDE CONTAINMENT BUILDING
33-W	SOUTH SIDE CONTAINMENT BUILDING

NOTE:
THIS SHEET IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

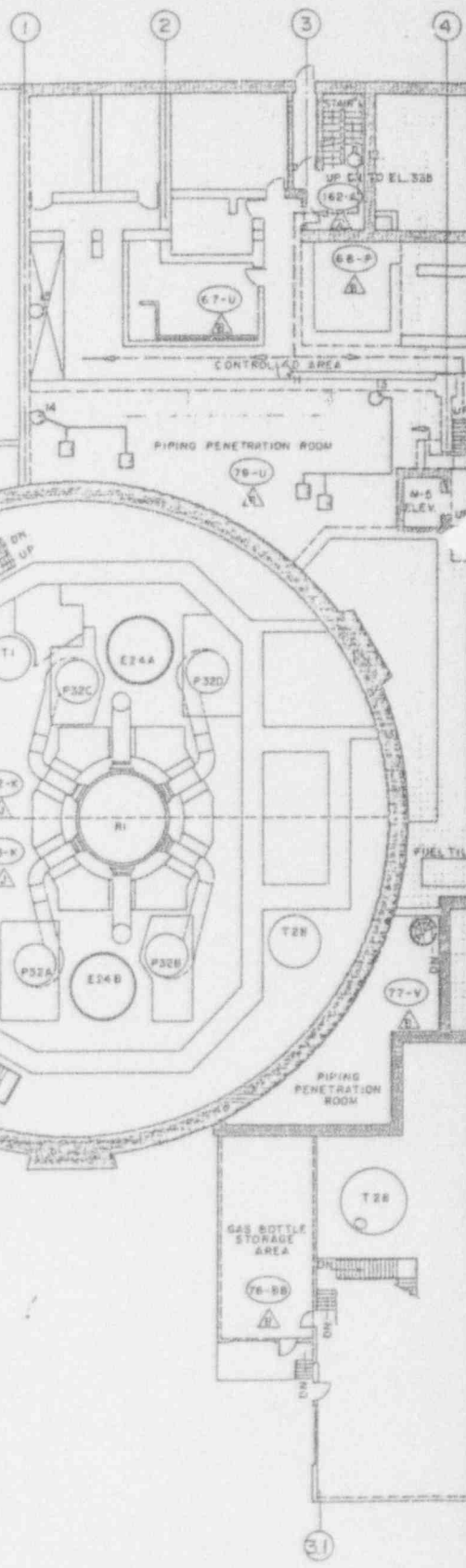
SIAP Figures 1-5, 10 were based upon this drawing. Provide a Licensing Agreement Change Request to Licensing when modifying this drawing if the corresponding SIAP Figures are impacted.

FIG 3-7
A

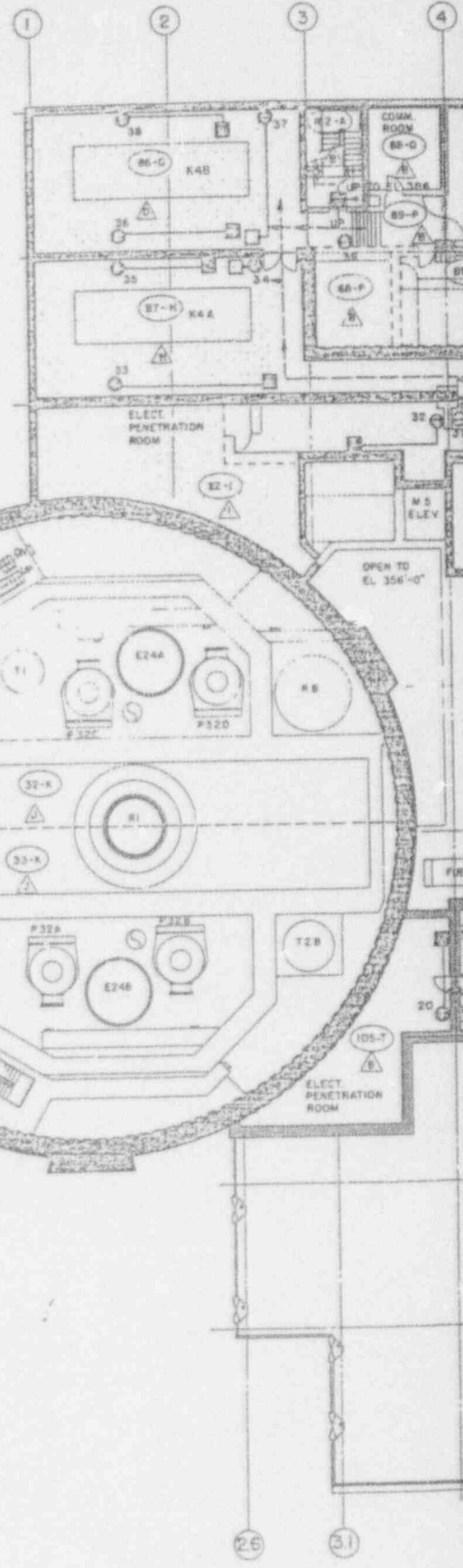
9307280079-25

NO.	DATE	DESCRIPTION	BY	CHKD.	APPRVD.
1	02/17/74	ORIGINAL ISSUE	J. J. [Signature]		
2	03/14/74	REVISION DESCRIPTION			
3	04/11/74	REVISION DESCRIPTION			
4	05/08/74	REVISION DESCRIPTION			
5	06/05/74	REVISION DESCRIPTION			
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 335'-0"					
		DRAWING NO. FP-31B	SHEET 1	REVISION N	REV. 1 OF ORIGINAL

H
G
F
E
D
C
B
A



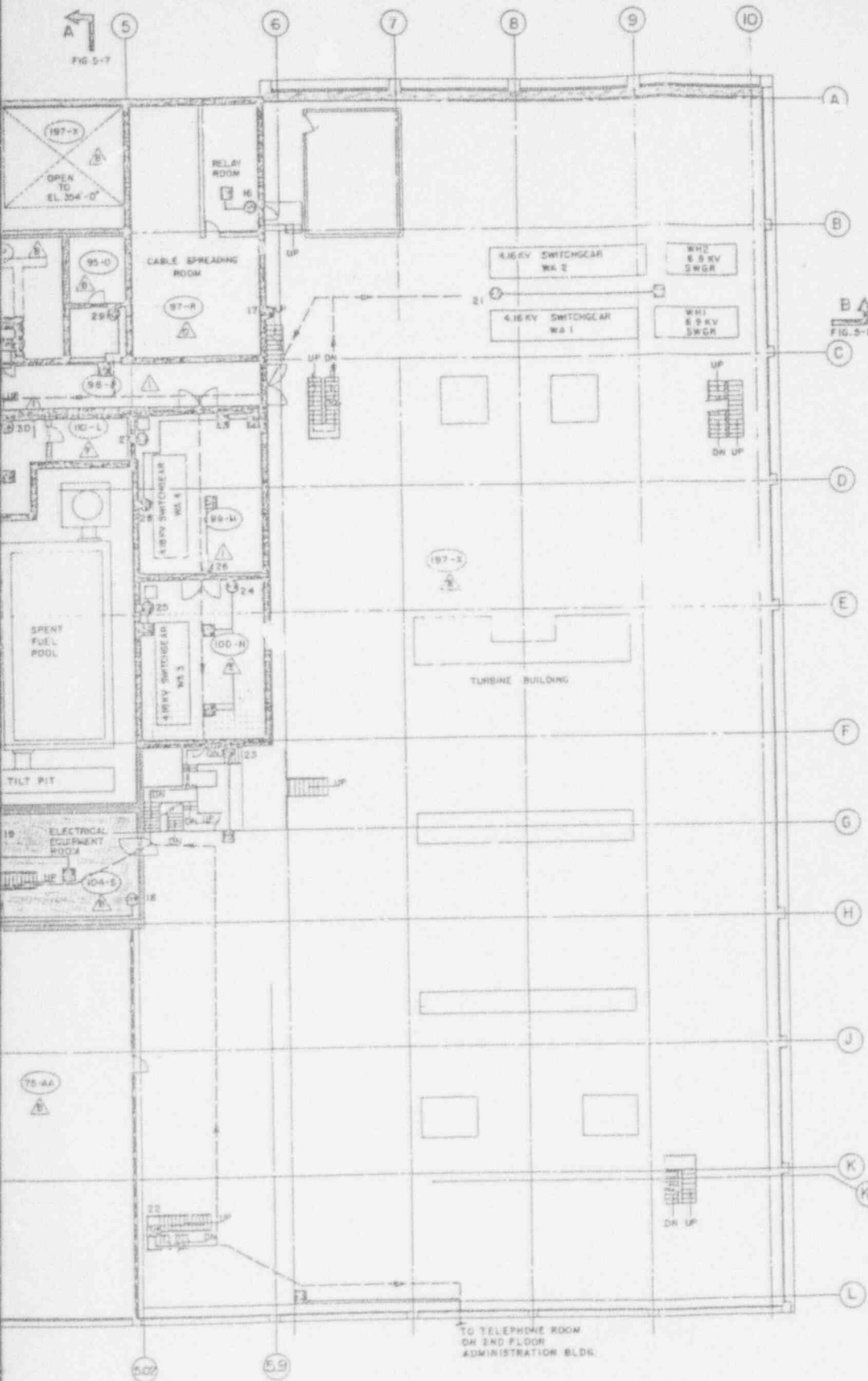
H
G
F
E
D
C
B
A



AB
FIG 0-8

SI APERTURE CARD

Also Available On Aperture Card



LEGEND

- 32 ○ E6 LIGHT AND UNIT NUMBER
- E7/REMOTE LIGHT
- E10 LIGHT
- ACCESS/EGRESS ROUTE
- ▬ TECH SPEC FIRE WALLS
- ▬▬▬▬▬ NON-TECH SPEC FIRE WALLS
- ▬▬▬▬▬ TECH SPEC FIRE-RATED FLOORS
- ▬▬▬▬▬ NON-TECH SPEC FIRE-RATED FLOORS
- (104-1) FIRE ZONE
- △ FIRE AREA
- DENOTES FIRE ZONE BOUNDARY

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
195-T	LOWER SOUTH ELECTRICAL PENETRATION ROOM (EL 37'-6")
104-S	ELECTRICAL EQUIPMENT ROOM (EL 368)
75-BA	BOILER ROOM (EL 354)
197-X	TURBINE BUILDING (EL 333 TO 404)
95-D	NORTH BATTERY ROOM (EL 372)
88-F	REACTOR COOLANT MAKEUP TANK ROOM (EL 354 & 368)
88-P	CONTROLLED ACCESS (EL 374)
88-D	COMMUNICATIONS ROOM (EL 374)
182-A	STAIRWELL NO. 1 (EL 317 TO 404)
FIRE AREA D	
84-S	NORTH DIESEL GENERATOR ROOM (EL 388)
FIRE AREA E	
100-A	SOUTH SWITCHGEAR ROOM (EL 372)
FIRE AREA F	
100-L	SOUTH BATTERY ROOM (EL 372)
FIRE AREA G	
97-R	CABLE SPREADING ROOM AND RELAY ROOM (EL 372)
FIRE AREA H	
87-M	SOUTH DIESEL GENERATOR ROOM (EL 368)
FIRE AREA I	
101-M	NORTH SWITCHGEAR ROOM (EL 372)
98-M	UNCONTROLLED ACCESS (EL 372)
112-T	LOWER NORTH ELECTRICAL PENETRATION ROOM (EL 372-6")
FIRE AREA J	
32-K	NORTH SIDE CONTAINMENT BUILDING
33-K	SOUTH SIDE CONTAINMENT BUILDING

NOTE: THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAR Figures 1, 2, 32 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR Figures are impacted.

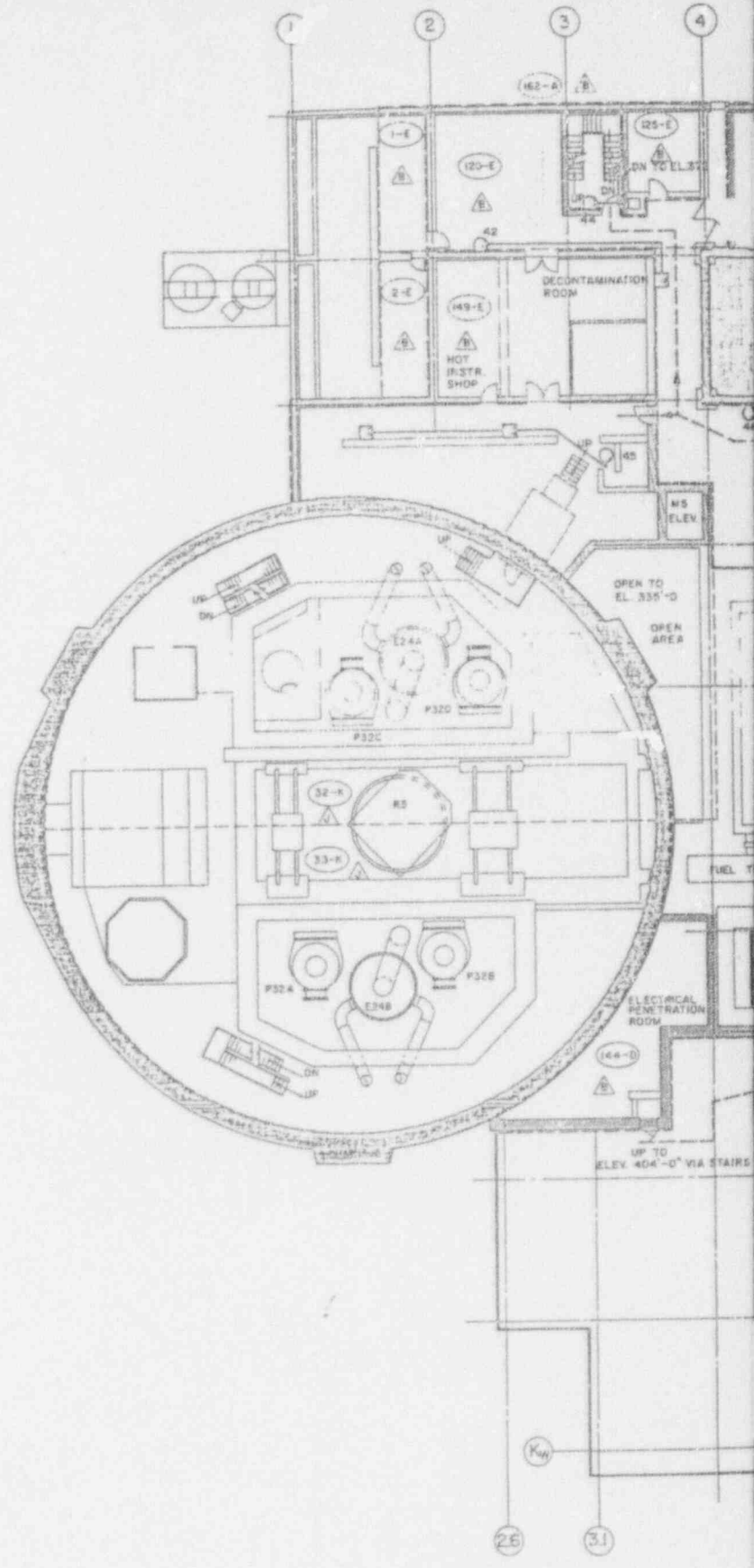
NO.	DATE	DESCRIPTION	BY	CHKD
1	11/17/79	ORIGINAL ISSUE	J. J. JONES	
2				
3				
4				
5				
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS				
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 368'-0" TO 374'-6"				
DRAWING NO.		SHEET		REVISED
ENERGY FP-312		T		N

9307280079 -27

H
G
F
E
D
C
B
A

1 2 3 4

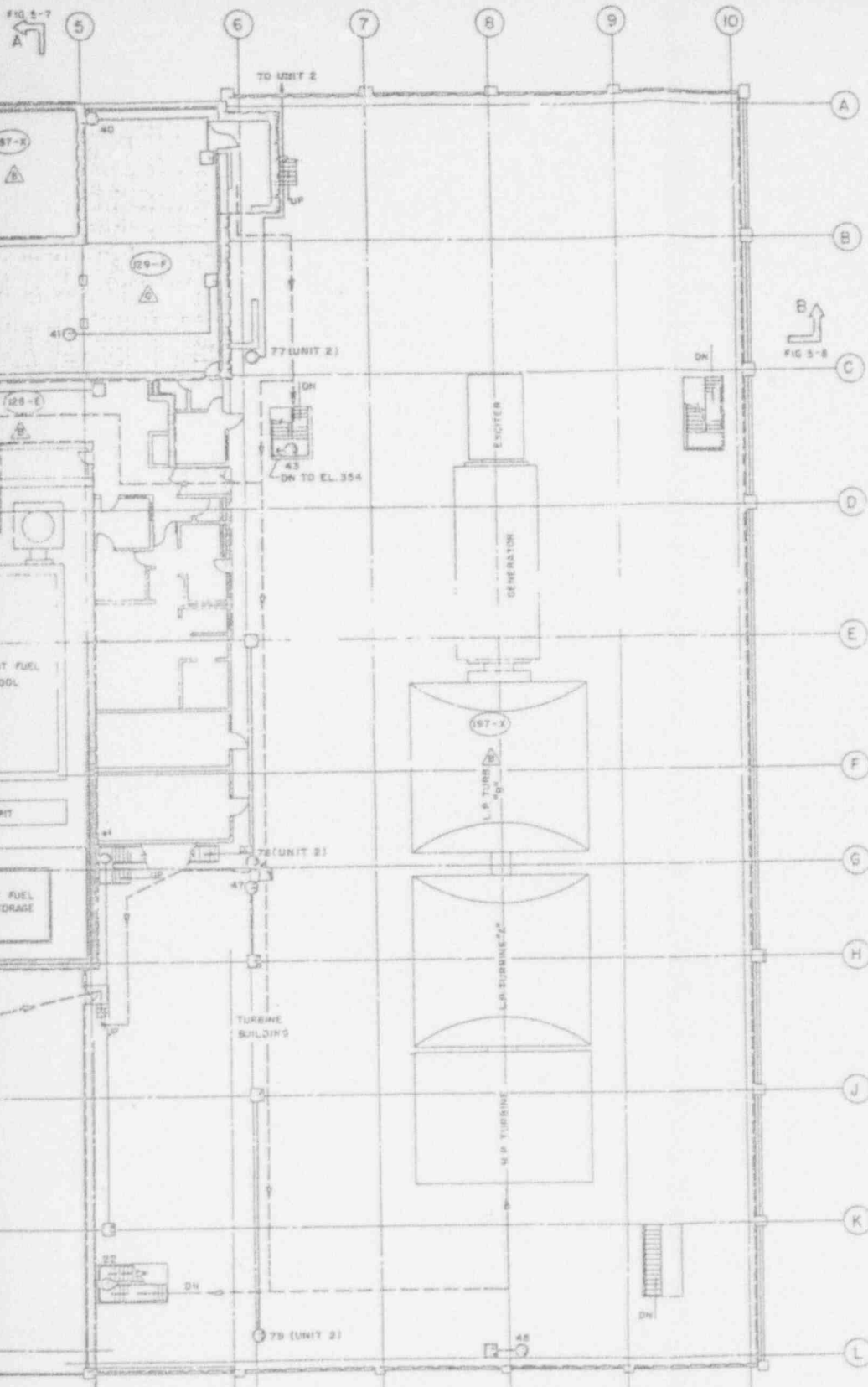
FIG 5-8



K_w

26

31



- LEGEND**
- 45 ○ E6 LIGHT AND UNIT NUMBER
 - E7/REMOTE LIGHT
 - E10 LIGHT
 - ACCESS/EGRESS ROUTE
 - TECH SPEC FIRE WALLS
 - - - - NON-TECH SPEC FIRE WALLS
 - TECH SPEC FIRE-RATED FLOORS
 - - - - NON-TECH SPEC FIRE-RATED FLOORS
 - E6-ZONE FIRE ZONE
 - △ FIRE AREA
 - - - - DENOTES FIRE ZONE BOUNDARY

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
25-E	RESPIRATOR STORAGE ROOM (EL. 386)
26-E	ACID ADDITION TANK AND PUMP ROOM (EL. 386)
27-X	TURBINE BUILDING (EL. 330 TO 400)
42-A	STAIRWELL (EL. 330 TO 400)
FIRE AREA C	
28-E	UPPER NORTH ELECTRICAL HEATING ROOM HOT TOOL ROOM DECONTAMINATION ROOM (EL. 386)
29-E	CONTROL ACCESS (EL. 386)
30-E	UPPER SOUTH ELECTRICAL (EL. 386)
31-E	UPPER EMERGENCY DIESEL GENERATOR EXHAUST TANK (EL. 386)
32-E	SOUTH EMERGENCY DIESEL GENERATOR EXHAUST TANK (EL. 386)
FIRE AREA D	
33-E	CONTROL ROOM (EL. 386)
FIRE AREA J	
32-X	NORTH SIDE CONTAINMENT BUILDING
33-X	SOUTH SIDE CONTAINMENT BUILDING

**SI
APERTURE
CARD**

Also Available On
Aperture Card

NOTE:
THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

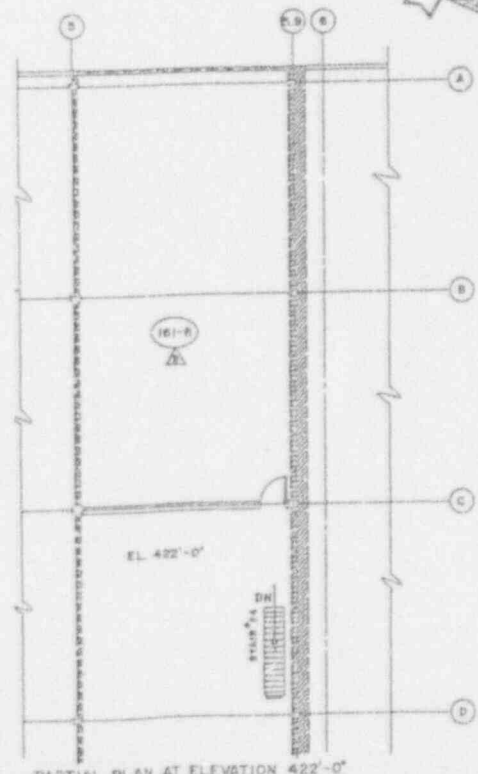
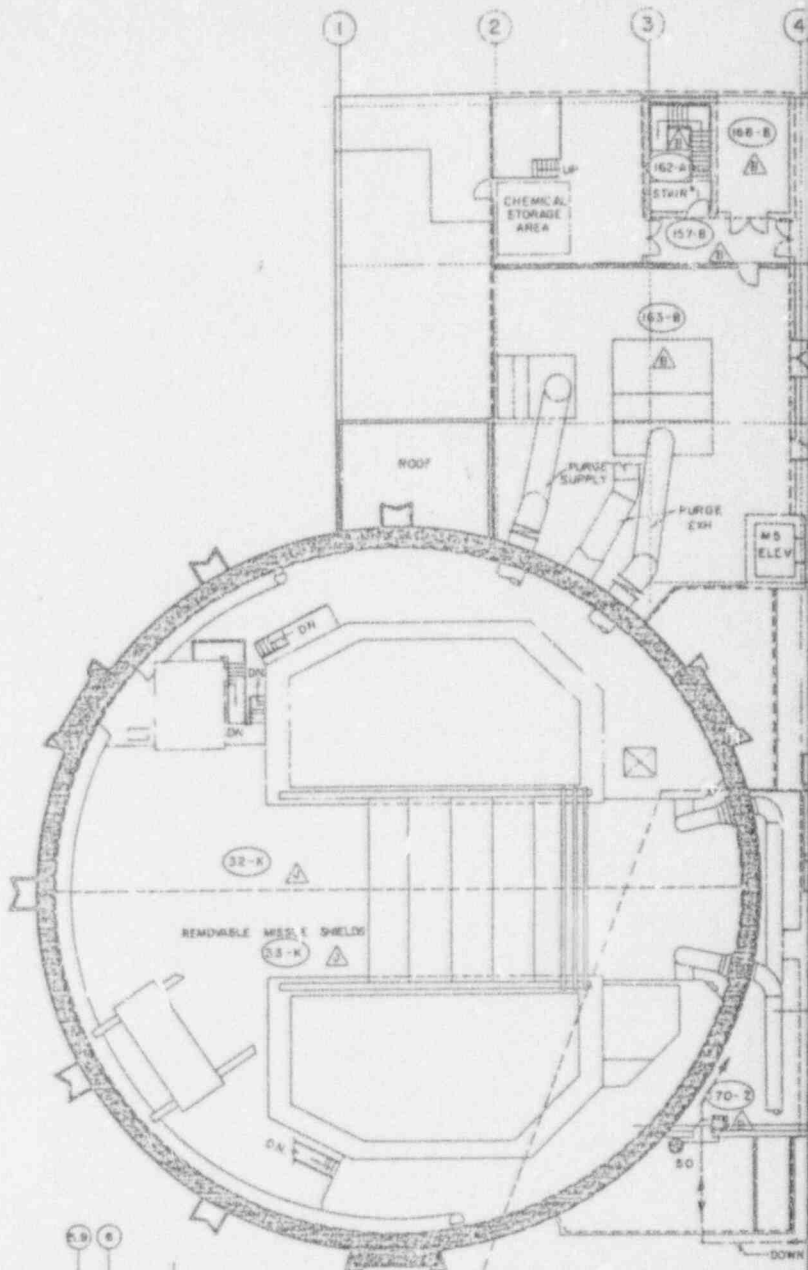
SIAR Figures 1, 2, 3 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SIAR Figures are updated.

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP'D
ARKANSAS NUCLEAR ONE UNIT 1 MUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 386'-0"					
DRAWING NO.		SHEET		REVISION	
ENERGY		FP-313		N	

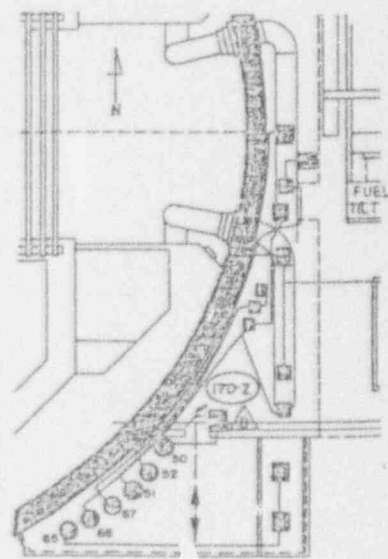
9307280079-28

H
G
F
E
D
C
B
A

B
FIG 5-B

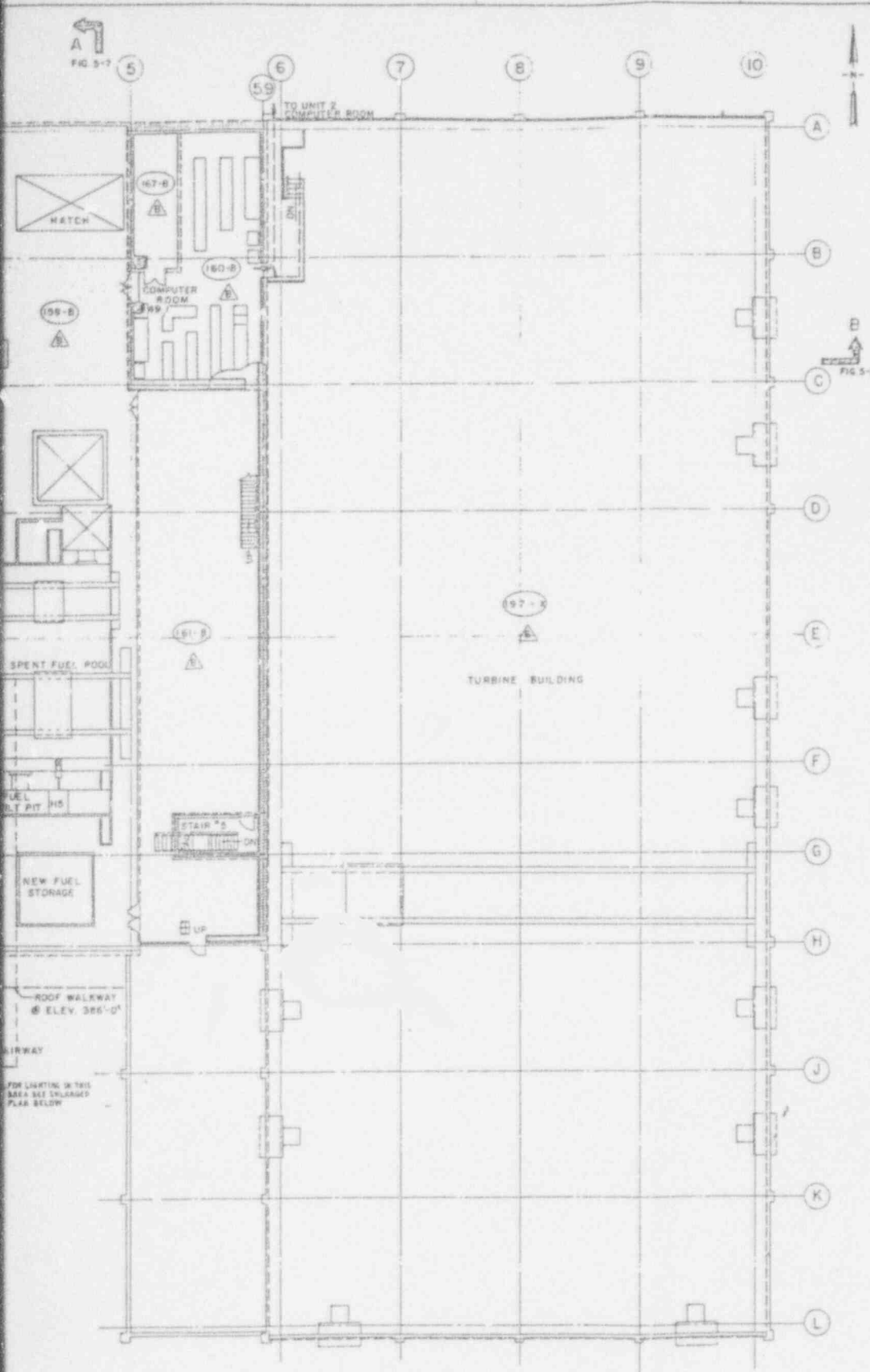


PARTIAL PLAN AT ELEVATION 422'-0"



ENLARGED PLAN OF ZONE 170-Z

0 1 7 C I



- LEGEND**
- ⊙ E7 LIGHT AND UNIT NUMBER
 - ⊠ E7/REMOTE LIGHT
 - E10 LIGHT
 - ACCESS/EGRESS ROUTE
 - TECH SPEC FIRE WALLS
 - - - - - NON-TECH SPEC FIRE WALLS
 - TECH SPEC FIRE-RATED FLOORS
 - - - - - NON-TECH SPEC FIRE-RATED FLOORS
 - ⊙-ST-V FIRE ZONE
 - ⚠ FIRE AREA A
 - - - - - DENOTES FIRE ZONE BOUNDARY

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
157-B	CHEMICAL ADDITION AREA (EL. 404)
160-B	STEAM DRUM AREA (EL. 404)
163-B	RECTOR BUILDING PURGE ROOM (EL. 404)
167-C	TURBINE BUILDING (EL. 335 TO 404)
167-D	STAIRWELL NO. 1 (EL. 317 TO 404)
159-B	SPENT FUEL AREA (EL. 404)
160-B	COMPUTER ROOM (EL. 404)
161-B	VENTILATION EQUIPMENT AREA (EL. 404 TO 422)
161-C	COMP. 12 TRANSFORMER ROOM (EL. 404)
161-D	TRANSFORMER ROOM (EL. 404)
FIRE AREA J	
161-J	NORTH SIDE CONTAINMENT BUILDING
161-K	SOUTH SIDE CONTAINMENT BUILDING

**SI
APERTURE
CARD**

Also Available On
Aperture Card

NOTE
THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAR Figures 1-2-22 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR Figures are impacted.

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 404'-0" & 422'-0"					
ENERGY	DRAWING NO.	SHEET	REVISION		
	FP-314	1	N		

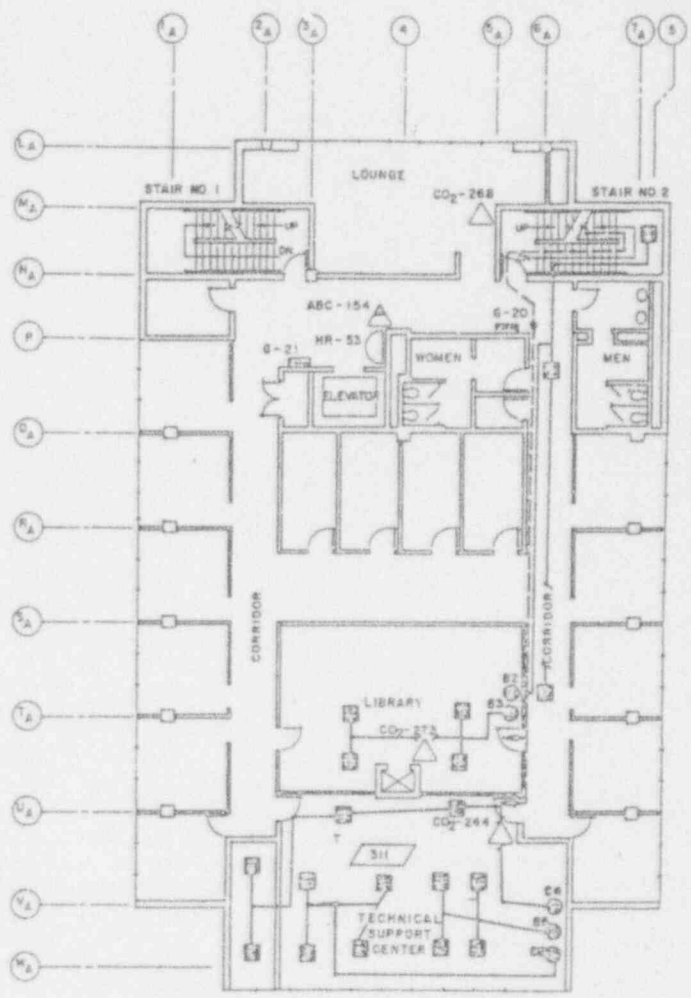
9307280079 - 29

FIG 5-7

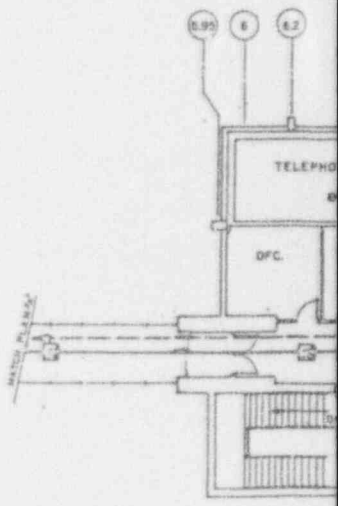
FIG 5-7

FIG 5-8

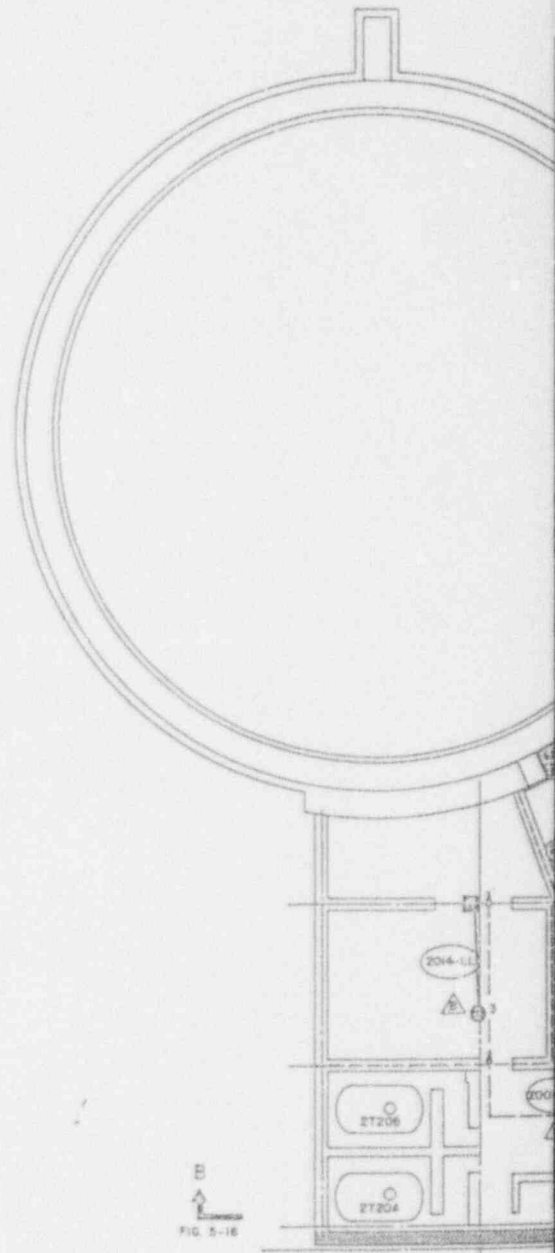
H
H
G
G
F
F
E
E
D
D
C
C
B
B
A
A



3RD FLOOR PLAN



H
G
F
E
D
C
B
A



1 2

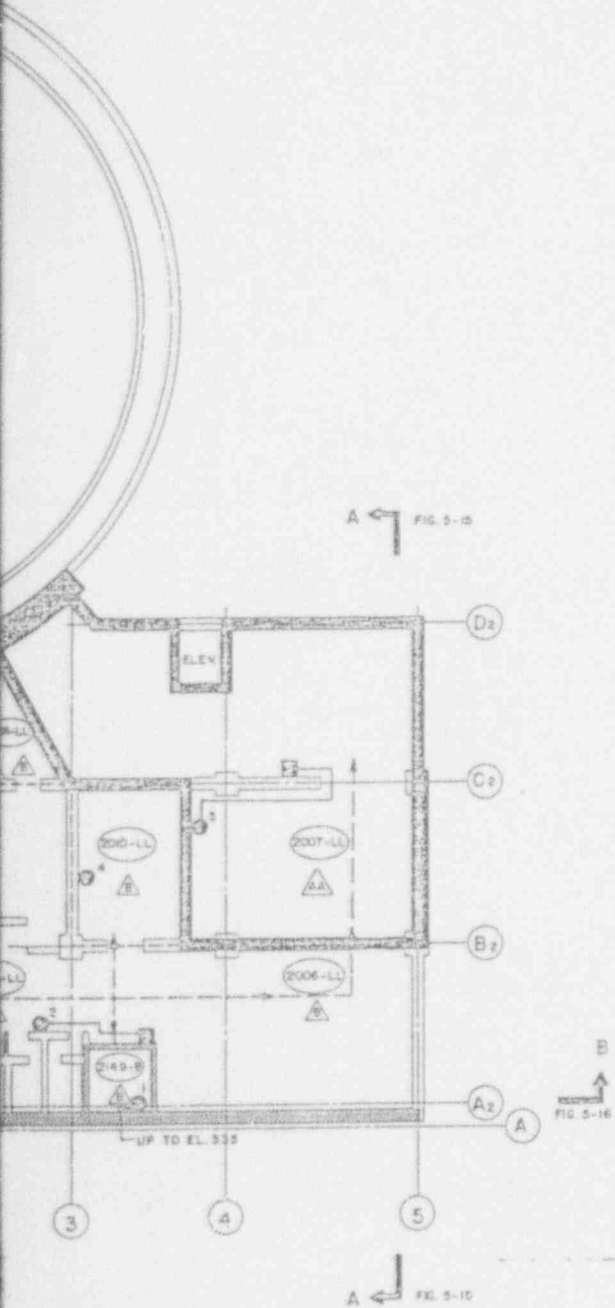
LEGEND

- ⊙ E8 LIGHT AND UNIT NUMBER
- ⊞ E7/REMOTE LIGHT
- E10 LIGHT
- ACCESS/EGRESS ROUTE
- ▬ TECH SPEC FIREWALL
- ▬ NON-TECH SPEC FIREWALL
- ▬ TECH SPEC FIRE-RATED FLOORS
- ▬ NON-TECH SPEC FIRE-RATED FLOORS
- ⊙ FIRE ZONE
- △ FIRE AREA
- DENOTES FIRE ZONE

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2006-LL	GENERAL ACCESS 4"
2002-LL	E HPSI PUMP AREA
2001-LL	TENDON GALLERY 4"
2014-LL	WEST HPSI, LPSI & PUMP AREA 18" 317'
2149-B	STAIRWAY NO. 7001
FIRE AREA 4A	
2007-LL	EAST HPSI, LPSI & PUMP AREA AND GAL.

**SI
APERTURE
CARD**

Also Available On
Aperture Card

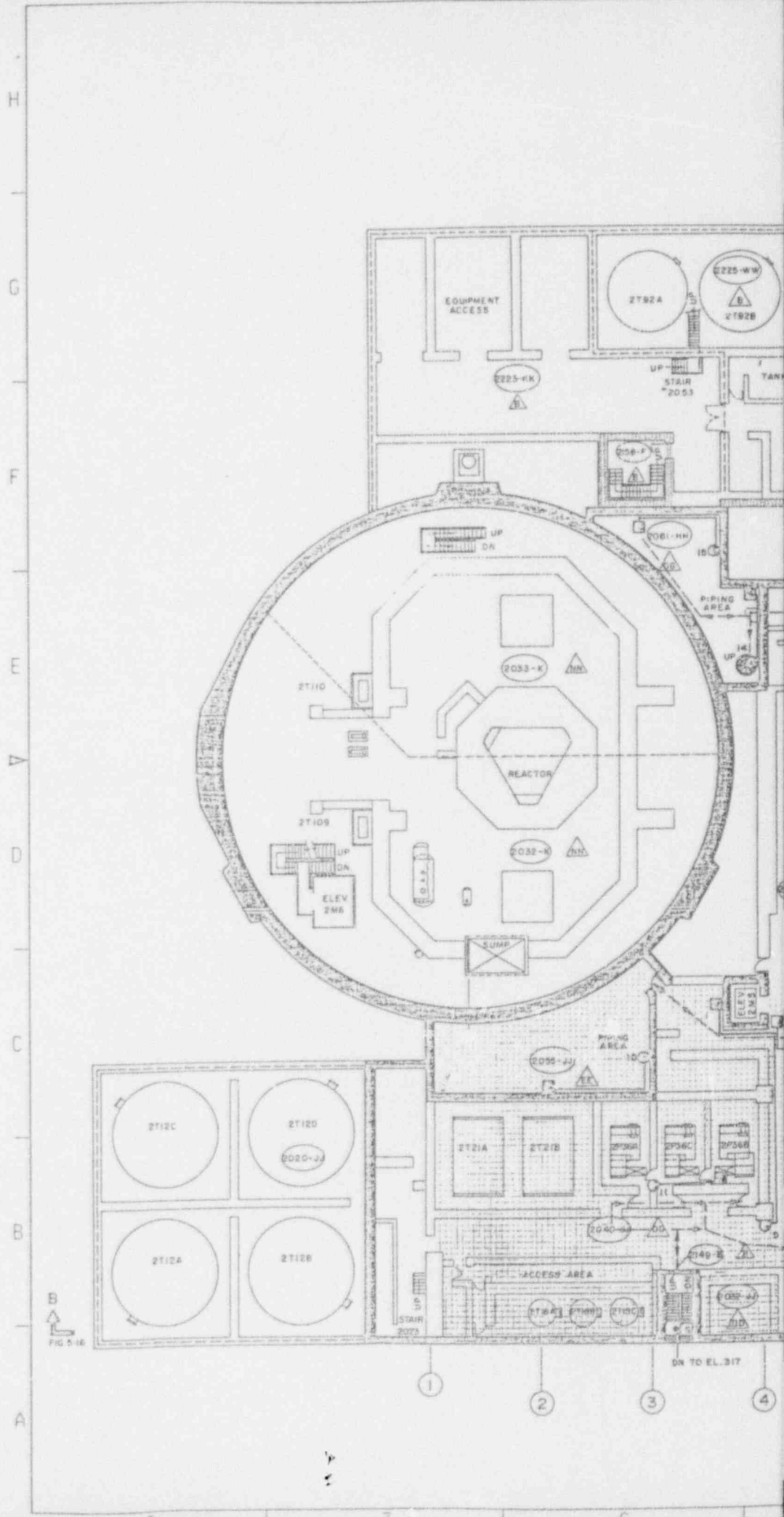


NOTE:
THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING ACCESS ROUTES ONLY.

SAR figures 5-23 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figures are impacted.

9307280079 - 31

NO.	DATE	DESCRIPTION	BY
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS			
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 317'-8"			
DRAWING NO.		SHEET	
ENERGY		FP-2309	
REVISED BY		DATE	



B
 ↑
 FIG 5-16

① ② ③ ④
 ON TO EL. 317

A 1 FIG 5-15

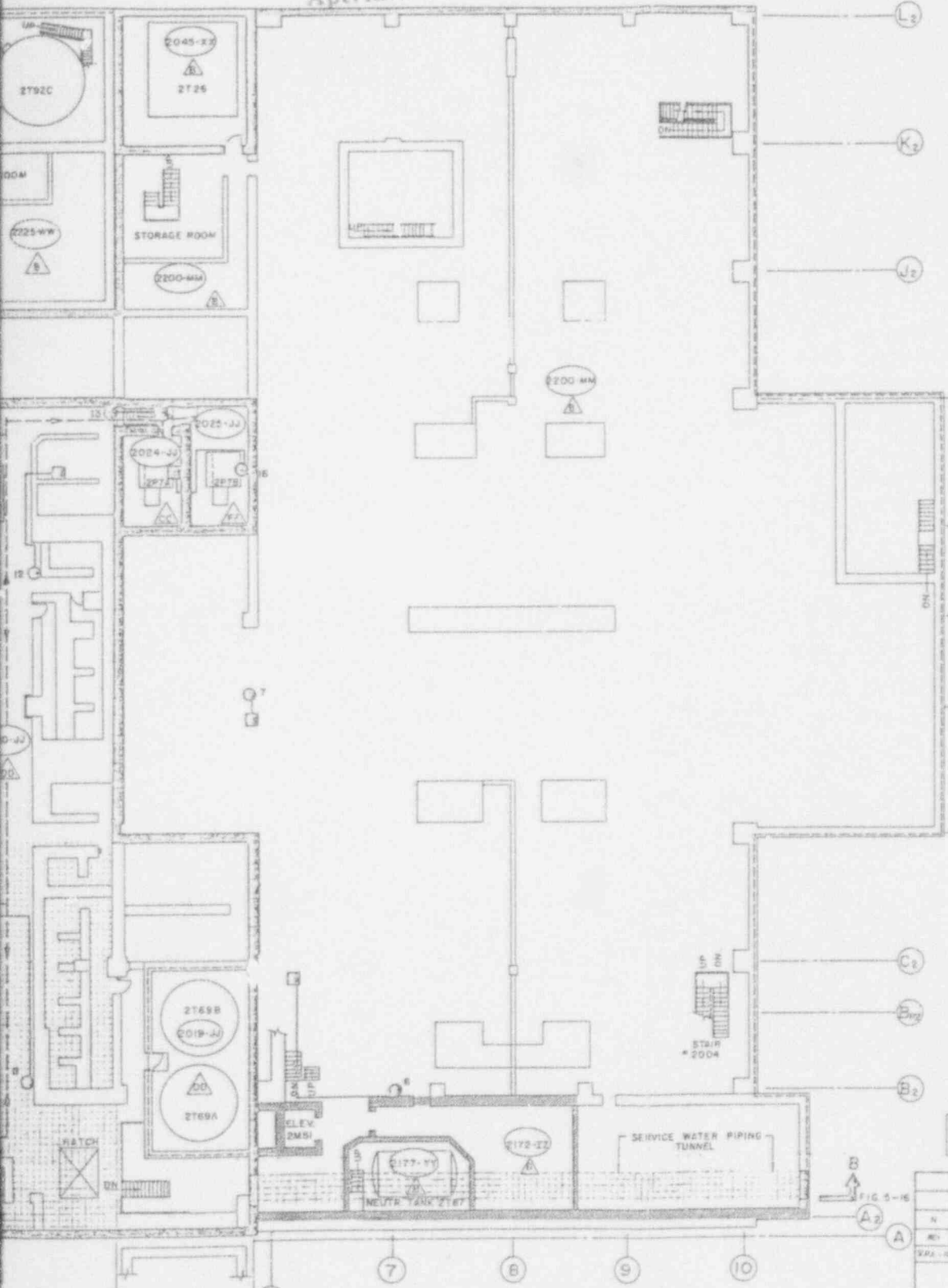
SI APERTURE CARD

Also Available On Aperture Card



LEGEND

- ⊙ E6 LIGHT AND UNIT NUMBER
- E7/REMOTE LIGHT
- E10 LIGHT
- ACCESS/EGRESS ROUTE
- TECH SPEC FIREWALLS
- - - NON-TECH SPEC FIREWALLS
- TECH SPEC FIRE-RATED FLOORS
- - - NON-TECH SPEC FIRE-RATED FLOORS
- ⊙ FIRE ZONE
- △ FIRE AREA
- - - DENOTES FIRE ZONE BOUNDARY



FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2023-KA	PIPEWELT EQUIPMENT ACCESS AREA (EL. 335)
2045-XZ	TURBINE #1 OIL STORAGE TANK ROOM (EL. 335)
2000-MM	TURBINE BUILDING (EL. 335 TO 424)
2149-B	STARWAY NO 200HE, 37 TO 422
2177-YV	NEUTRALIZER TANK ROOM (EL. 336)
2172-ZZ	LAUNDRY STORAGE & BUI-LCL AIR REFILL ROOMS (EL. 204) & POWER STORAGE AREA (EL. 335)
2058-F	STAIR NO 2055 (EL. 335 TO 424)
2025-WW	REFRACTIVE WASTE DRAIN TANK AREA (EL. 335)
FIRE AREA CC	
2024-JJ	TURBINE DRIVEN EMERGENCY FRESH WATER PUMP ROOM (EL. 325)
FIRE AREA DC	
2040-JJ	TANK ROOMS, PUMP ROOMS & CORRIDORS (EL. 335)
2032-JJ	SPENT RESIN STORAGE TANK ROOM (EL. 335)
2019-JJ	BORIC ACID CONDENSATE TANK ROOM (EL. 335)
FIRE AREA EE	
2025-JJ	LOWER SOUTH WING PENETRATOR AREA (EL. 325)
FIRE AREA FF	
2025-JJ	MOTOR DRIVEN EMERGENCY FRESH WATER PUMP ROOM (EL. 325)
FIRE AREA GG	
2009-JJ	UPPER NORTH WING PENETRATOR AREA (EL. 306) & LOWER NORTH WING PENETRATOR AREA (EL. 325)
FIRE AREA HN	
2032-H	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 424-B)
2033-H	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 424-B)

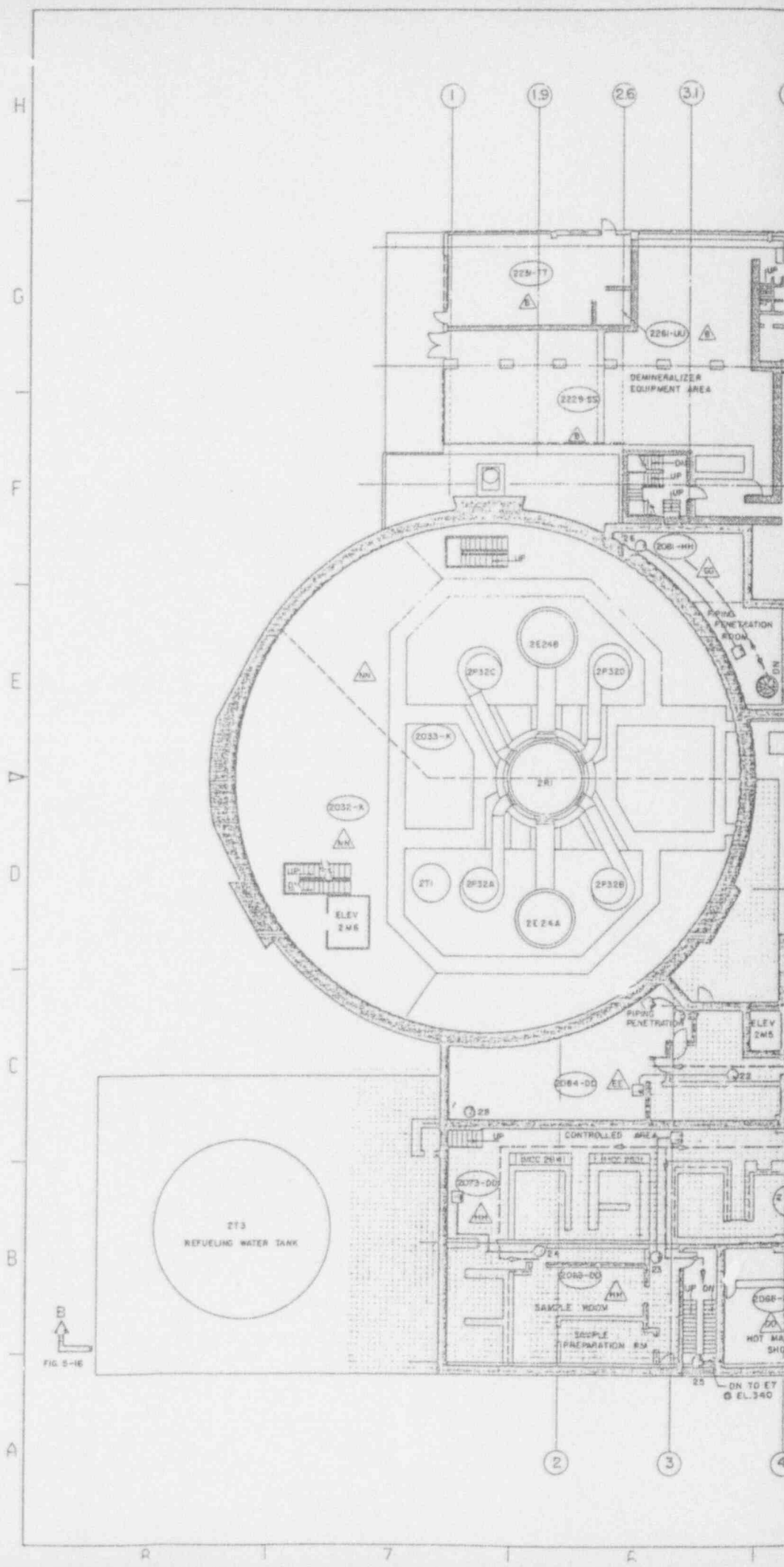
NOTE: THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAR Figures 5-24 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR Figures are affected.

NO.	DATE	ORIGINAL ISSUE	T.J.W.
REV	DATE	REVISION DESCRIPTION	BY (P/S) (R/S) (S/S) (S/S) (S/S)
002	02/01	ISSUE - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS			
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 335' BELOW GRADE			
DRAWING NO.		SHEET	REVISION
ENERGY		FP-2310	1

9307280079-32

A 1 FIG 5-15



B
 ↑
 FIG. 5-16

SI APERTURE CARD

Also Available On
Aperture Card

LEGEND

- ⊙ E6 LIGHT AND UNIT NUMBER
- ⊠ E7/REMOTE
- E10 LIGHT
- ACCESS/EGRESS ROUTE
- TECH SPEC FIRE WALLS
- NON-TECH SPEC FIRE WALLS
- TECH SPEC FIRE-RATED FLOORS
- NON-TECH SPEC FIRE-RATED FLOORS
- ⊙ 215-A FIRE ZONE
- △ FIRE AREA
- DENOTES FIRE ZONE BOUNDARY

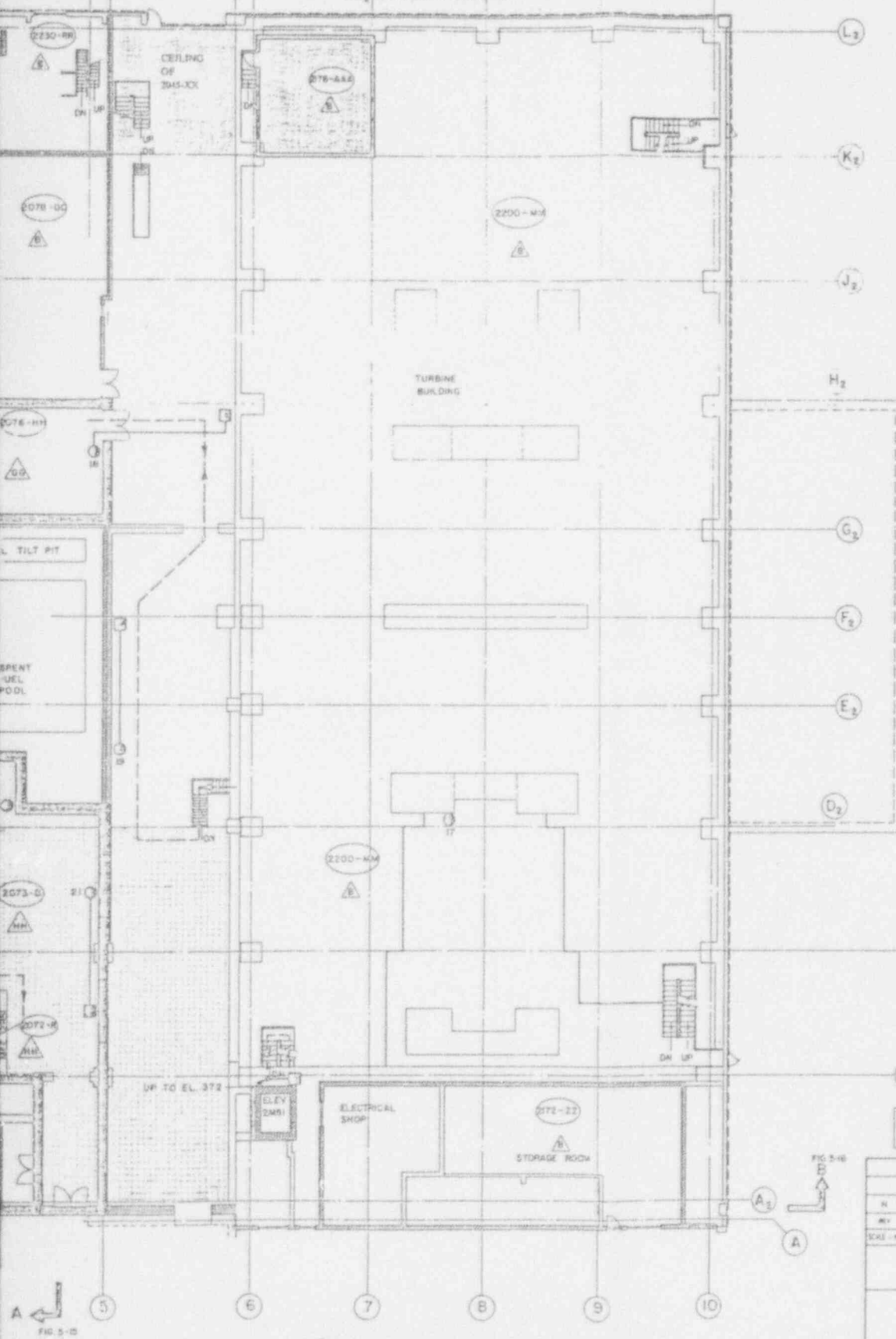
FIRE ZONE	ZONE DESCRIPTION
FIRE AREA A	
20-00	COMPONENT COOLING WATER HEAT EXCHANGER EQUIPMENT AREA (EL. 354)
2178-AAA	LUBE OIL RESERVOIR (EL. 354)
2200-MM	TURBINE BUILDING (EL. 335 TO 404)
2149-B	STAIRWAY NO. 2001 (EL. 337 TO 402)
2172-ZZ	LAUNDRY STORAGE B. BOTTLED AIR REPAIR ROOMS (EL. 354) & LOWER STORAGE AREA (EL. 335)
2136-Y	STAIR NO. 2055 (EL. 335 TO 404)
FIRE AREA B	
2229-S5	DEMNERALIZING EQUIPMENT & LUNCH ROOM AREA (EL. 354)
2281-UJ	PLANT HEATING BOILER DAY TANK (EL. 354)
2231-TT	PLANT HEATING BOILER ROOM (EL. 354)
2230-WR	DRUM FILLING ROOM (EL. 354)
FIRE AREA DD	
2045-DD	HOT MACHINE SHOP
FIRE AREA EE	
2084-DD	UPPER SOUTH PIPING PENETRATION ROOM (EL. 354)
FIRE AREA GG	
2078-MH	ELECTRICAL EQUIPMENT ROOM (EL. 354)
2086-MH	UPPER NORTH PIPING PENETRATION AREA (EL. 354) & LOWER NORTH PIPING PENETRATION AREA (EL. 335)
FIRE AREA HH	
2073-DD	ACCESS AREA, PUMP AREA, TANK AREA, WASTE GAS EQUIPMENT AREA & PASSAGEWAY (EL. 354)
2072-X	UPPER VOLUME CONTROL, TANK ROOM (EL. 372) & LOWER TANK & PUMP ROOM (EL. 354)
2063-DD	SAMPLE ROOM (EL. 354)
FIRE AREA IIR	
2032-X	CONTAINMENT BUILDING SOUTH SIDE (EL. 335 TO 426-6)
2033-X	CONTAINMENT BUILDING NORTH SIDE (EL. 335 TO 426-6)

NOTE: THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAR Figures: 5-25 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAR figures are impacted.

NO.	DATE	REVISION DESCRIPTION	BY	CHKD BY	APP'D BY
1	08/14/79	ISSUED FOR CONSTRUCTION	J. J. JONES		
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 354'-0"					
ENTRANCY	DRAWING NO.	SHEET	REVISION		
	FP-2311	1	N		

9307280079-33



8

7

6

H

G

F

E

D

C

B

A₂

A

L₂

K₂

J₂

H₂

G₂

F₂

E₂

D₂

C₂

B₂

A₂

A

1

1P

2

2P

3

3P

4

H. B. V. MECH. EQUIP. ROOM

CHEMISTRY LAB

ELECTRICAL PENETRATION ROOM

ELECTRICAL PENETRATION ROOM

2P32C

2E24B

2P32D

2R1 REACTOR

2P32A

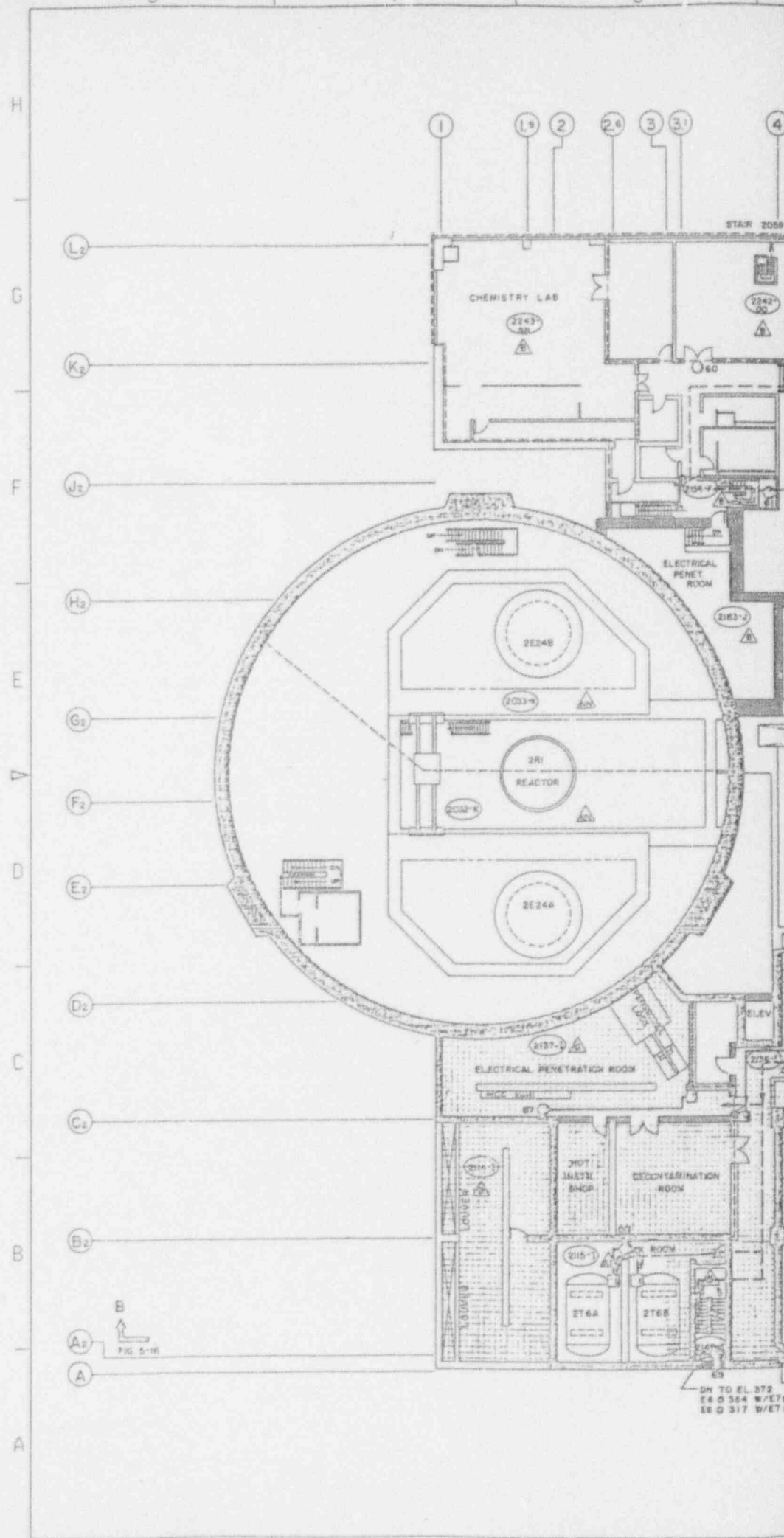
2E24A

2P32B

B

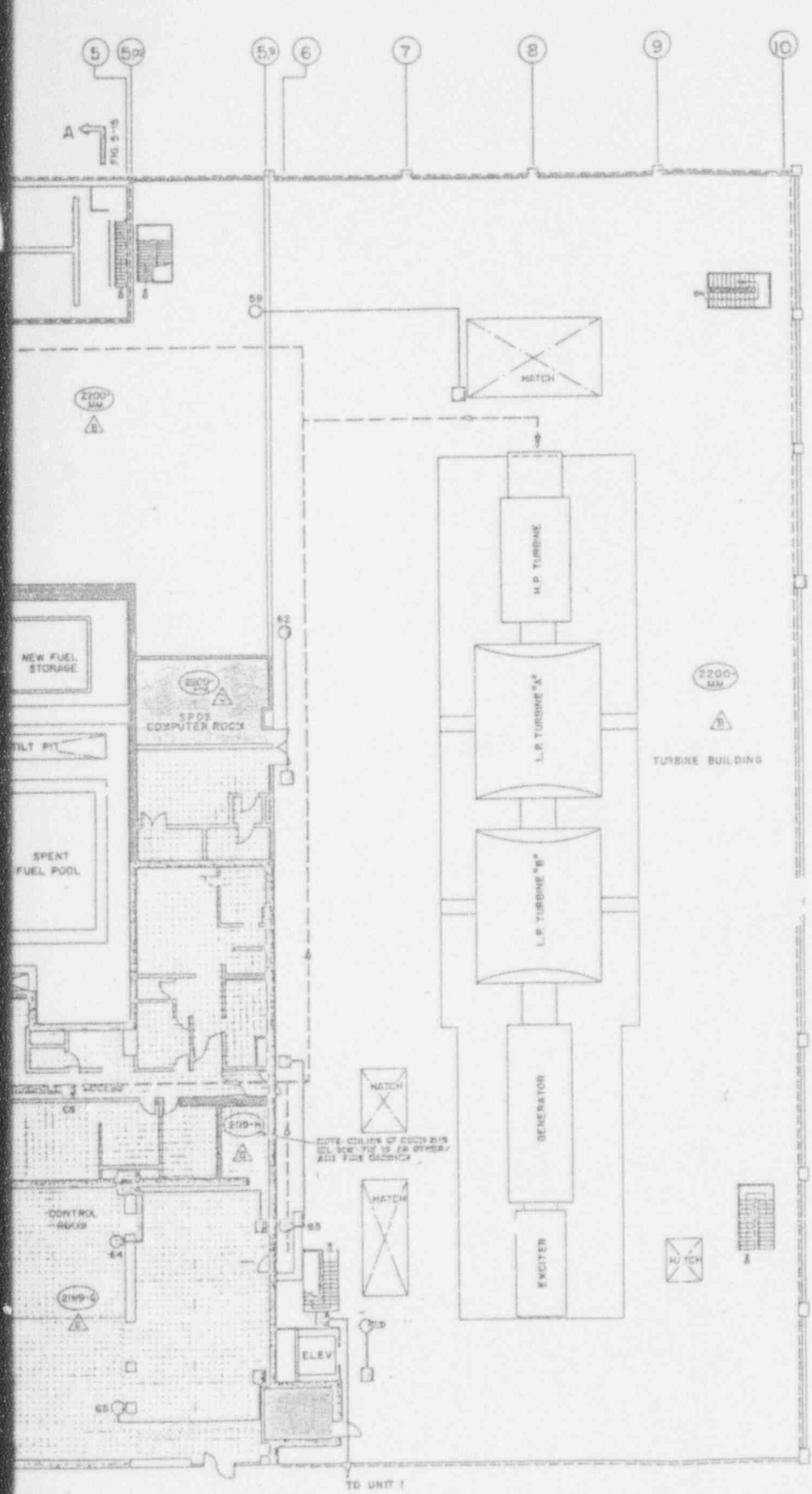
FIG. 5-16

UP TO EL. 30



B
 ↑
 FIG. 5-16

DN TO EL. 372
 EG 354 W/ET9
 EG 317 W/ET9



- LEGEND**
- 63 KE LIGHT AND UNIT NUMBER
 - E1/REMOTE
 - E10 LIGHT
 - ACCESS/EGRESS ROUTE
 - TECH SPEC FIRE WALLS
 - NON-TECH SPEC FIRE WALLS
 - TECH SPEC FIRE-RATED FLOORS
 - NON-TECH SPEC FIRE-RATED FLOORS
 - 204-1 FIRE ZONE
 - △ FIRE AREA
 - - - - DENOTES FIRE ZONE BOUNDARY

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA E	
2141	H.V. AIR INTAKE AREA (EL. 385)
2142	2-AIRWAY NO. 200 (EL. 377 TO 422)
2200-MM	FLUORINE BUILDING (EL. 355 TO 404)
FIRE AREA G	
2143-J	UPPER NORTH ELECTRICAL PENETRATION ROOM (EL. 385)
2242-00	LAB STORAGE AND P.B.V. MECHANICAL EQUIPMENT AREA (EL. 375 TO 388)
2158-F	STAIR NO. 2055 (EL. 355 TO 404)
2243-NN	CHEMISTRY LAB (EL. 355-8)
FIRE AREA G	
2150-B	CONTROL ROOM (EL. 385)
2127-I	UPPER SOUTH ELECTRICAL PENETRATION ROOM, HOT INSTRUMENT SHOP
2119-H	RECORDS STORAGE (EL. 385)
FIRE AREA N	
2115-I	SULFURIC ACID MAKEUP TANK ROOM (EL. 385)
FIRE AREA NN	
2032-N	CONTAINMENT BUILDING SOUTH SIDE (EL. 355 TO 425-6)
2032-N	CONTAINMENT BUILDING NORTH SIDE (EL. 355 TO 425-8)

SI
APERTURE
CARD

Also Available On
Aperture Card

NOTE: THIS DRAWING IS TO BE USED FOR EMERGENCY LIGHTING & ACCESS ROUTES ONLY.

SAFETY: This drawing is based upon this drawing. Provide a Licensing Documents Change Request to Licensing when modifying this drawing if the corresponding SAF Figure(s) are indicated.

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APPROVED
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS					
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 386-0"					
ENTESCOY	FP-2313				

9307280079-35

A
FIG. 3-15

FIRE ZONE	ZONE DESCRIPTION
FIRE AREA B	
2119-B	STAIRWAY NO 2001 (EL 517 TO 422)
2123-A	VENTILATION EQUIPMENT AREA (EL 404 & 422)
2124-E	CEM EQUIPMENT ROOM (EL 404)
2128-A	CONTAINMENT PURGE AIR EQUIPMENT AREA (EL 404)
2132-D	COMPUTER ROOM (EL 404)
2200-W2	TURBINE BUILDING (EL 325 TO 404)
2150-A	STEAM PIPE AREA (EL 404)
2148-A	CORRIDOR NORTH OF PANEL ROOM STAIRWAY NO 2001 (EL 404)
2121-E	FUEL HANDLING AREA (EL 404)
2128-F	STAIR NO 2005 (EL 325 TO 404)
2147-B	CHEMICAL STORAGE AREA (EL 404)
FIRE AREA G	
2150-C	CORE PROTECTION CALCULATOR ROOM (EL 404)
FIRE AREA NN	
2033-K	CONTAINMENT BUILDING SOUTH SIDE (EL 325 TO 426-6)
2033-K	CONTAINMENT BUILDING NORTH SIDE (EL 325 TO 426-6)

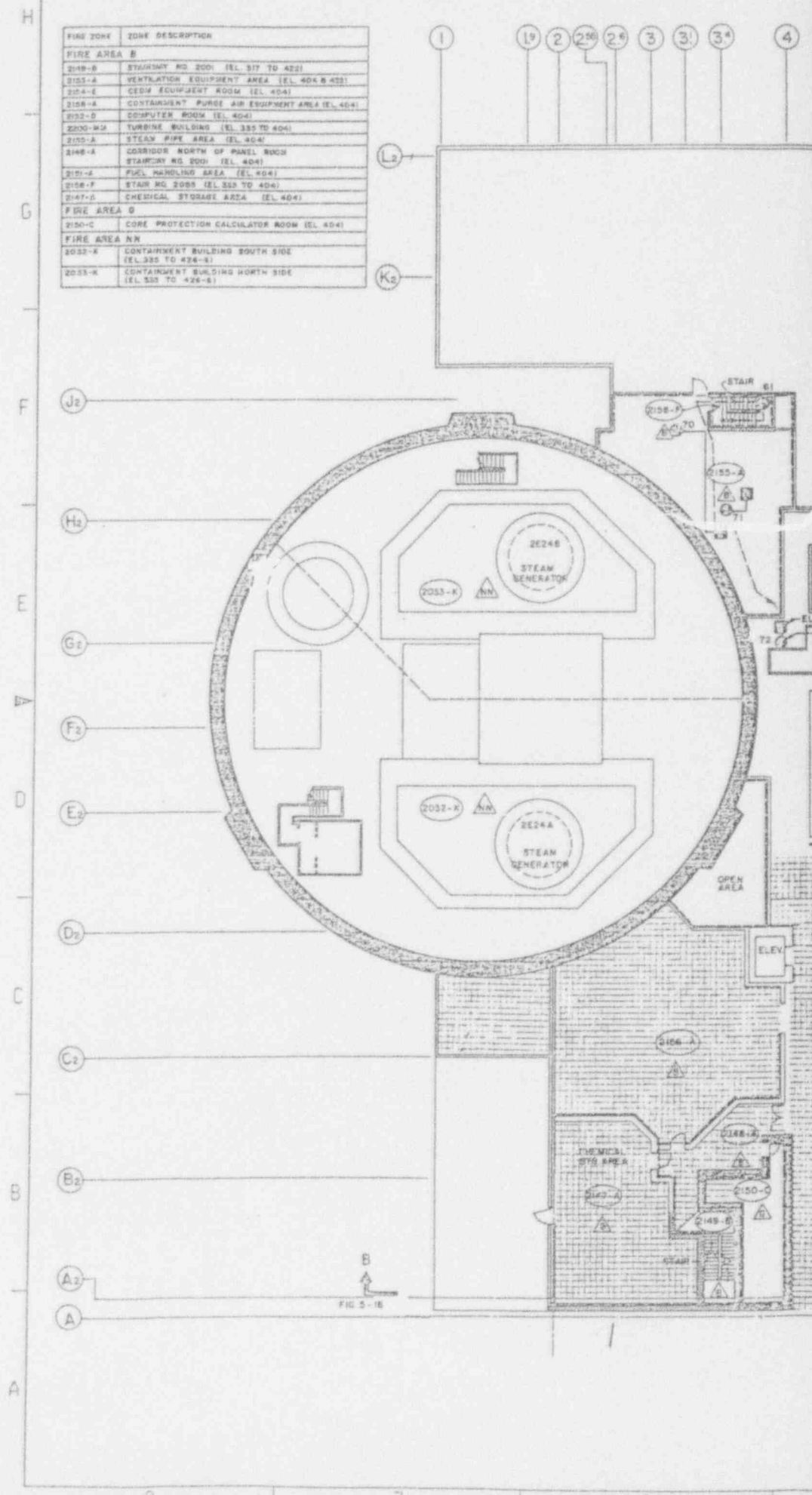
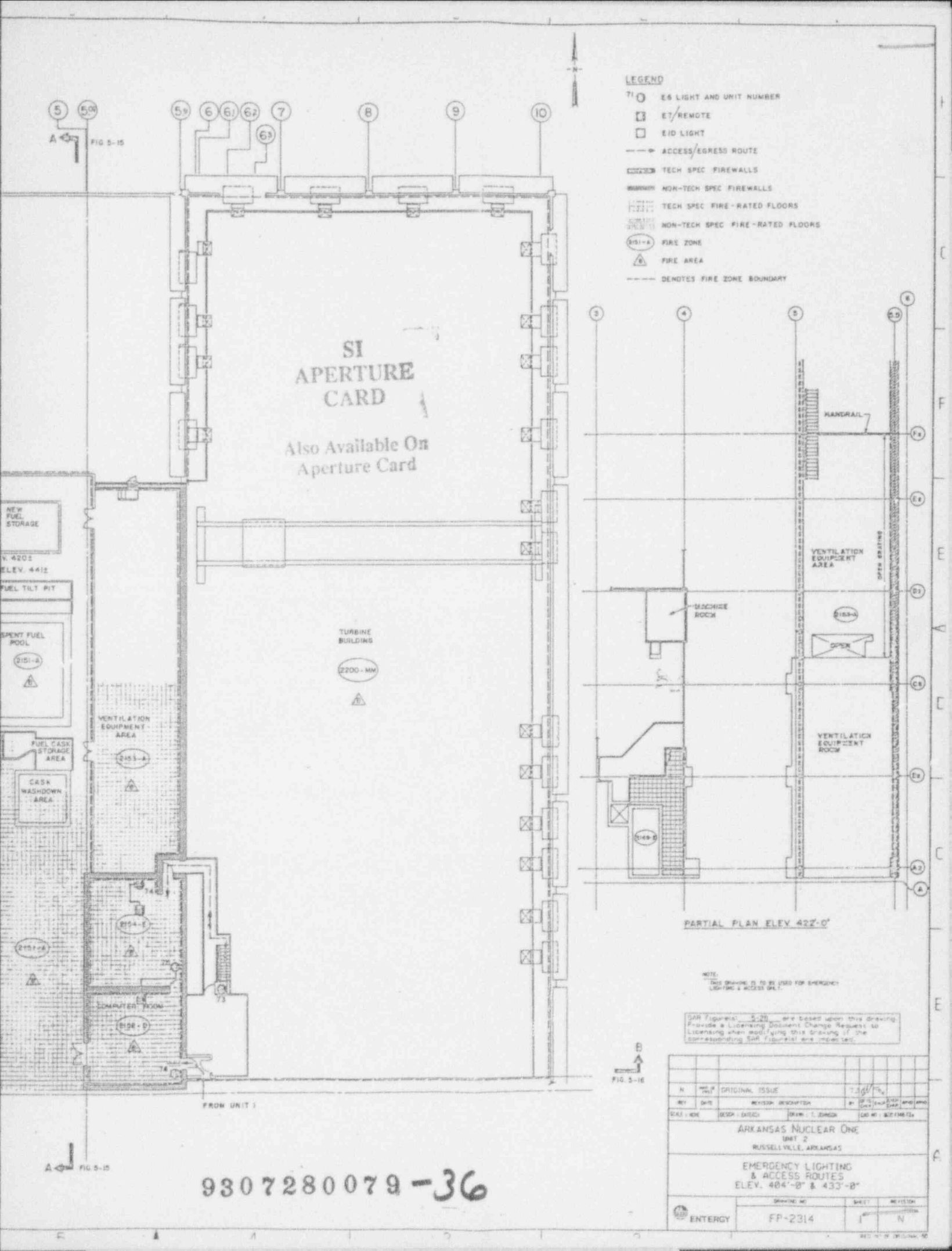


FIG 5-18



LEGEND

- ⊙ ES LIGHT AND UNIT NUMBER
- ET/REMOTE
- EID LIGHT
- ACCESS/EGRESS ROUTE
- ▬ TECH SPEC FIREWALLS
- ▬ NON-TECH SPEC FIREWALLS
- ▬ TECH SPEC FIRE-RATED FLOORS
- ▬ NON-TECH SPEC FIRE-RATED FLOORS
- ⊙ FIRE ZONE
- △ FIRE AREA
- DENOTES FIRE ZONE BOUNDARY

SI
APERTURE
CARD

Also Available On
Aperture Card

TURBINE
BUILDING

2700-MM

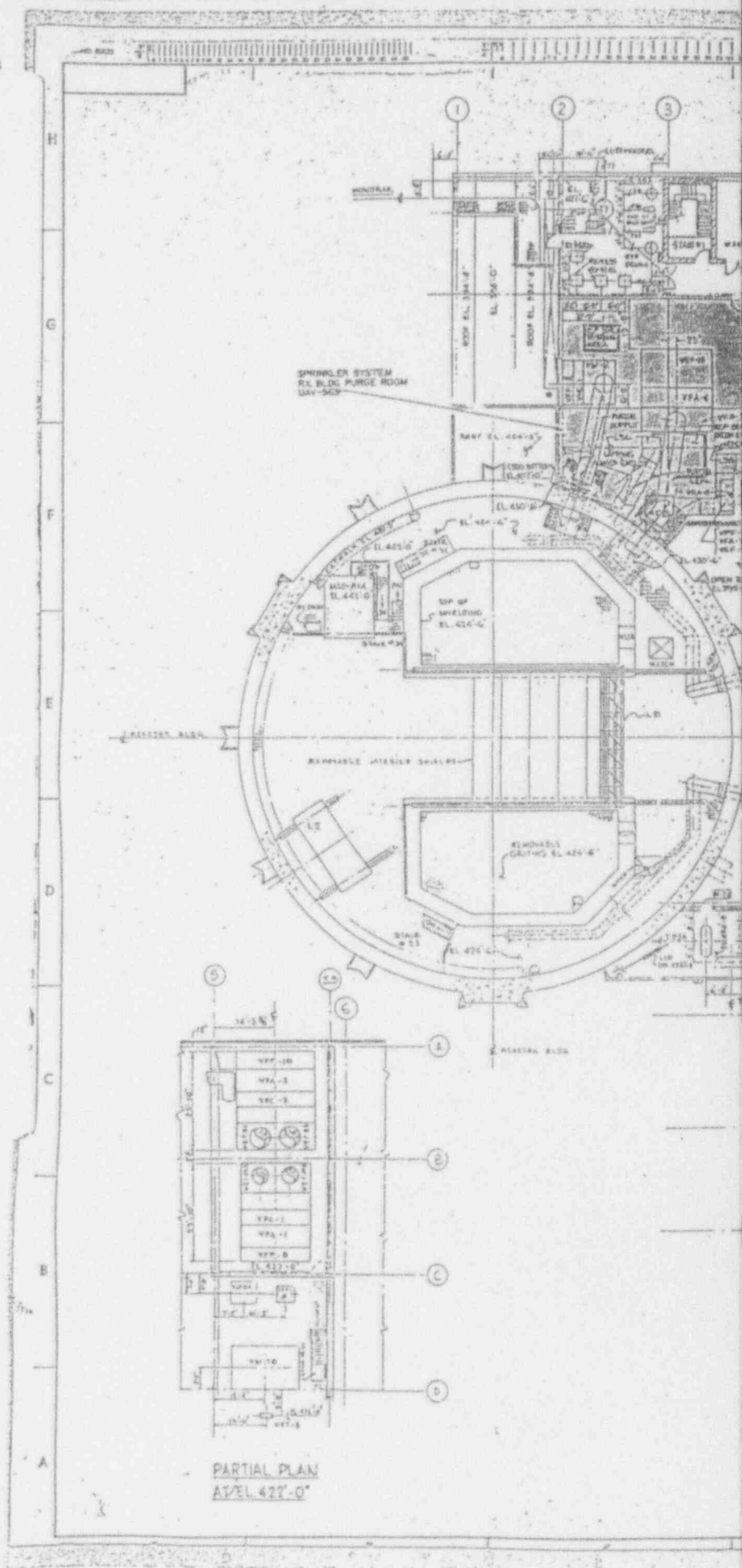
PARTIAL PLAN ELEV 422'-0"

NOTE:
THIS DRAWING IS TO BE USED FOR EMERGENCY
LIGHTING & ACCESS ONLY.

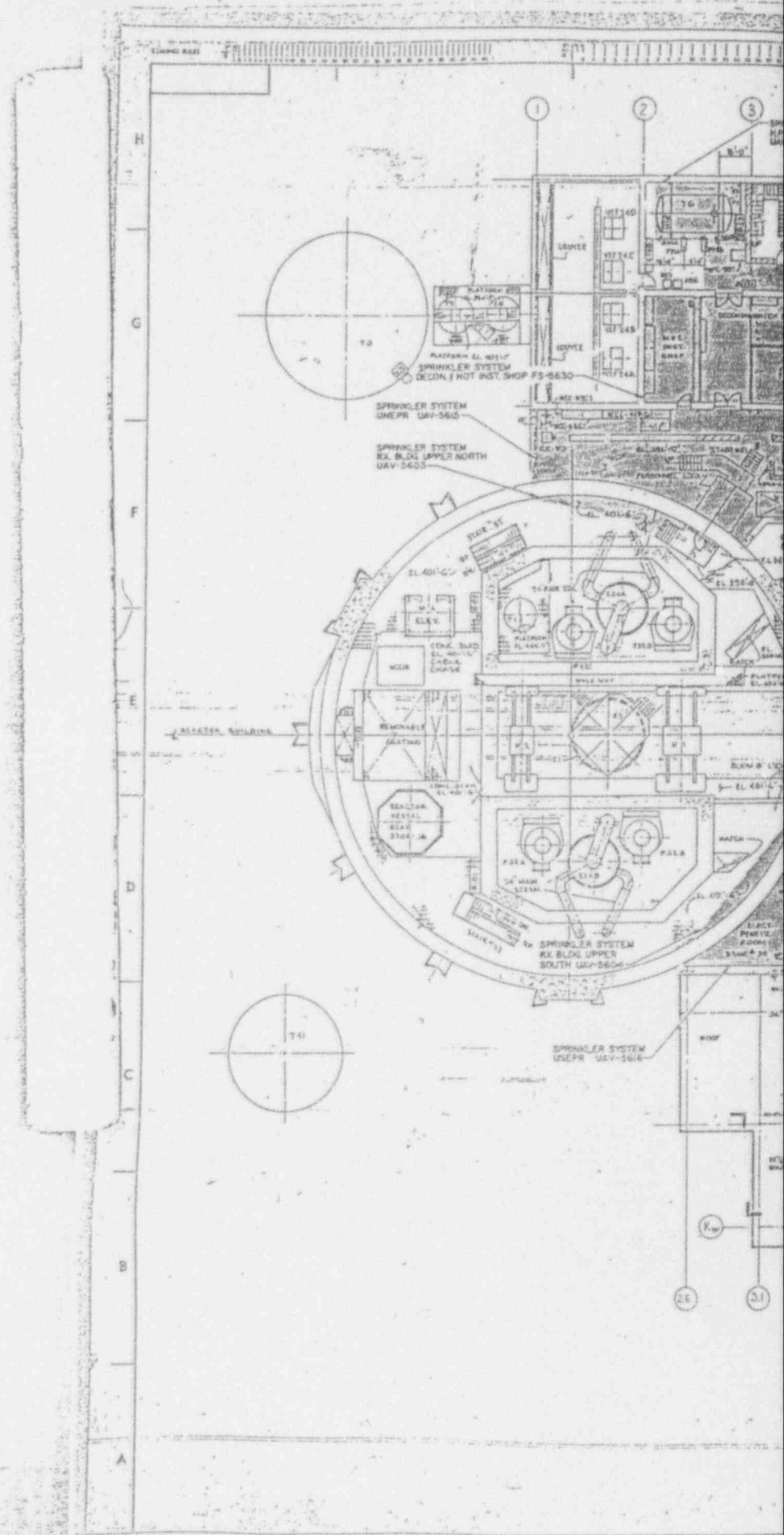
SAF Figures 5-22 are based upon this drawing. Provide a Licensing Document Change Request to Licensing when modifying this drawing if the corresponding SAF Figures are impacted.

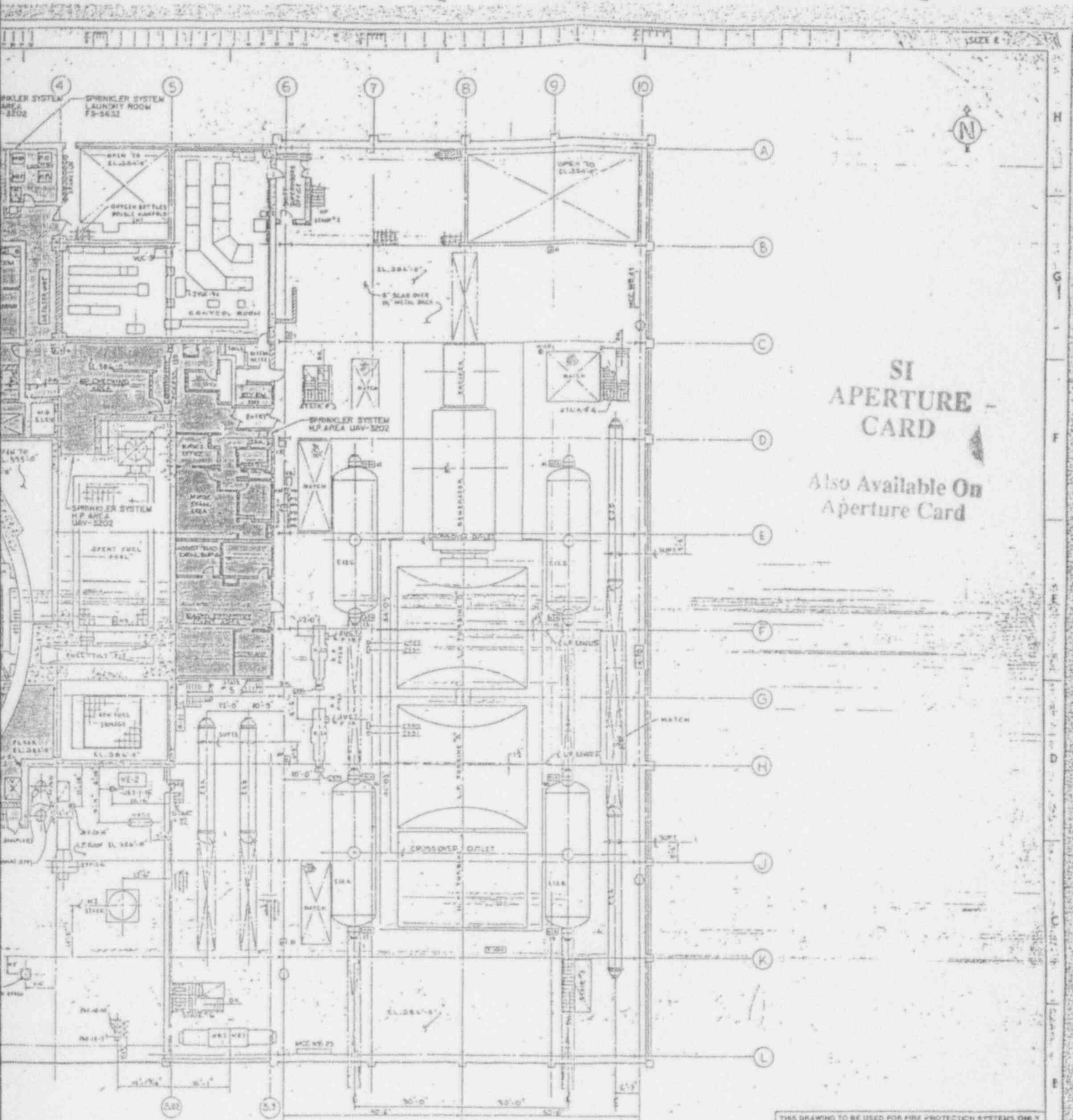
NO.	DATE	REVISION	DESCRIPTION	BY	DATE	CHKD	APPD
N	10/11/78	ORIGINAL ISSUE		T.S.			
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS							
EMERGENCY LIGHTING & ACCESS ROUTES ELEV. 404'-8" & 432'-8"							
DRAWING NO.		SHEET		REVISION			
ENTERGY		FP-2314		N			

9307280079-36



PARTIAL PLAN
AT ELEV 427'-0"





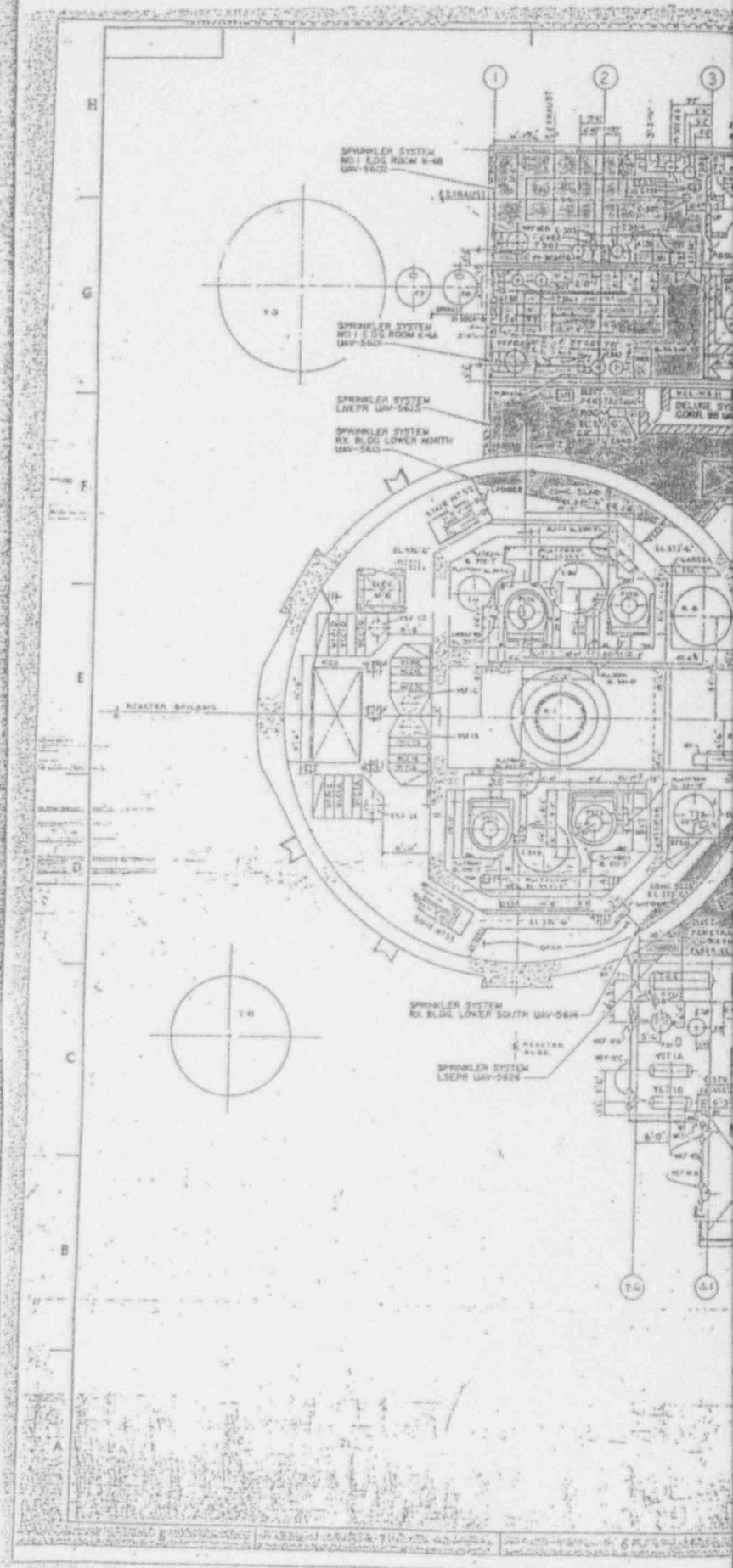
SI
APERTURE
CARD

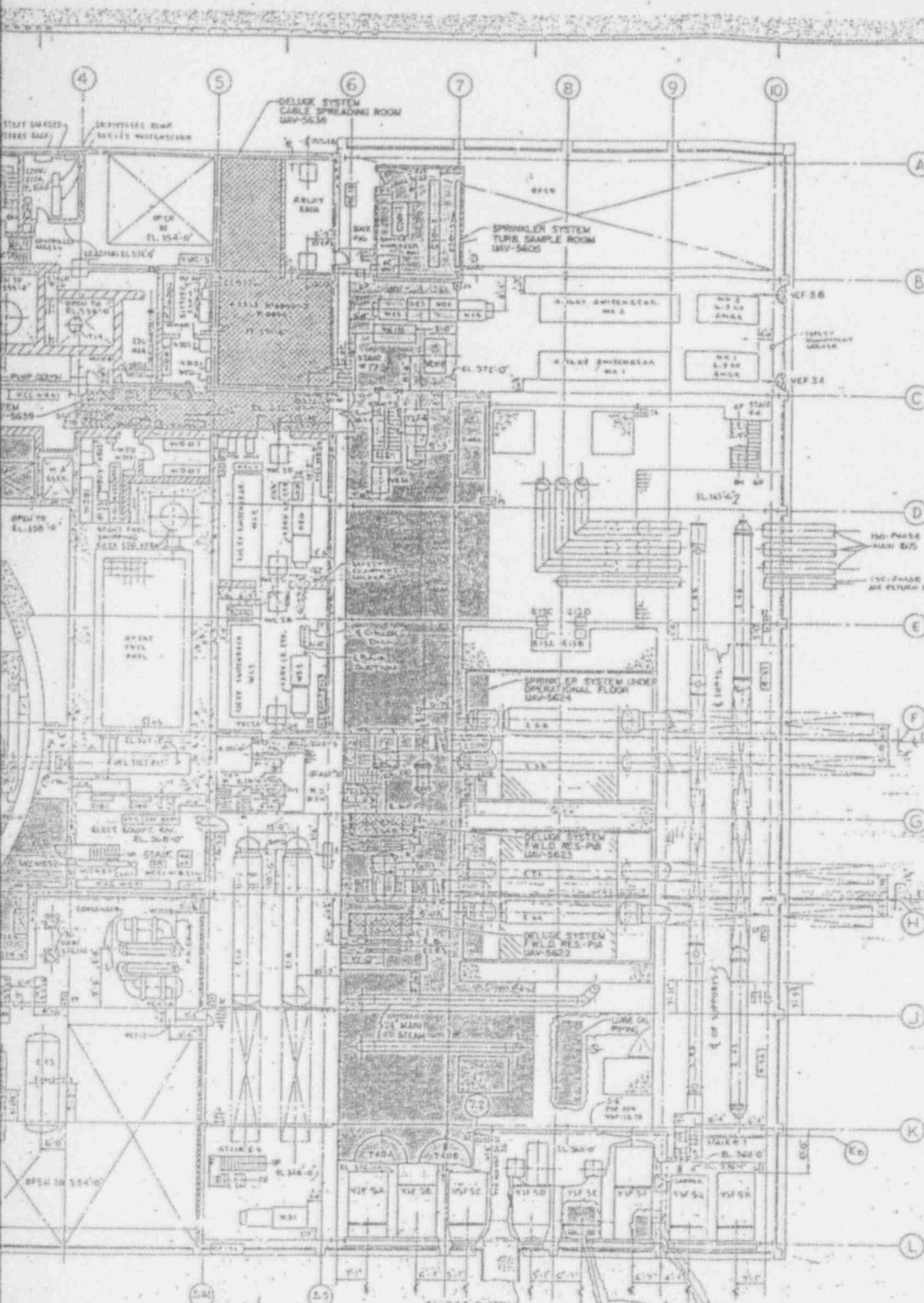
Also Available On
Aperture Card

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

NO.	REV.	ISSUED TO	REASON FOR CHANGE	DATE	BY	CHECKED
SCALE		DESIGN				
ARKANSAS NUCLEAR ONE UNIT 1 RUSSELLVILLE, ARKANSAS						
FIRE PROTECTION PLAN OPERATING FLOOR PLAN						
DRAWING NO.						
ENERGY	FS - 102	1	0			

9307280079 -38





SI
APERTURE
CARD

Also Available On
Aperture Card

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

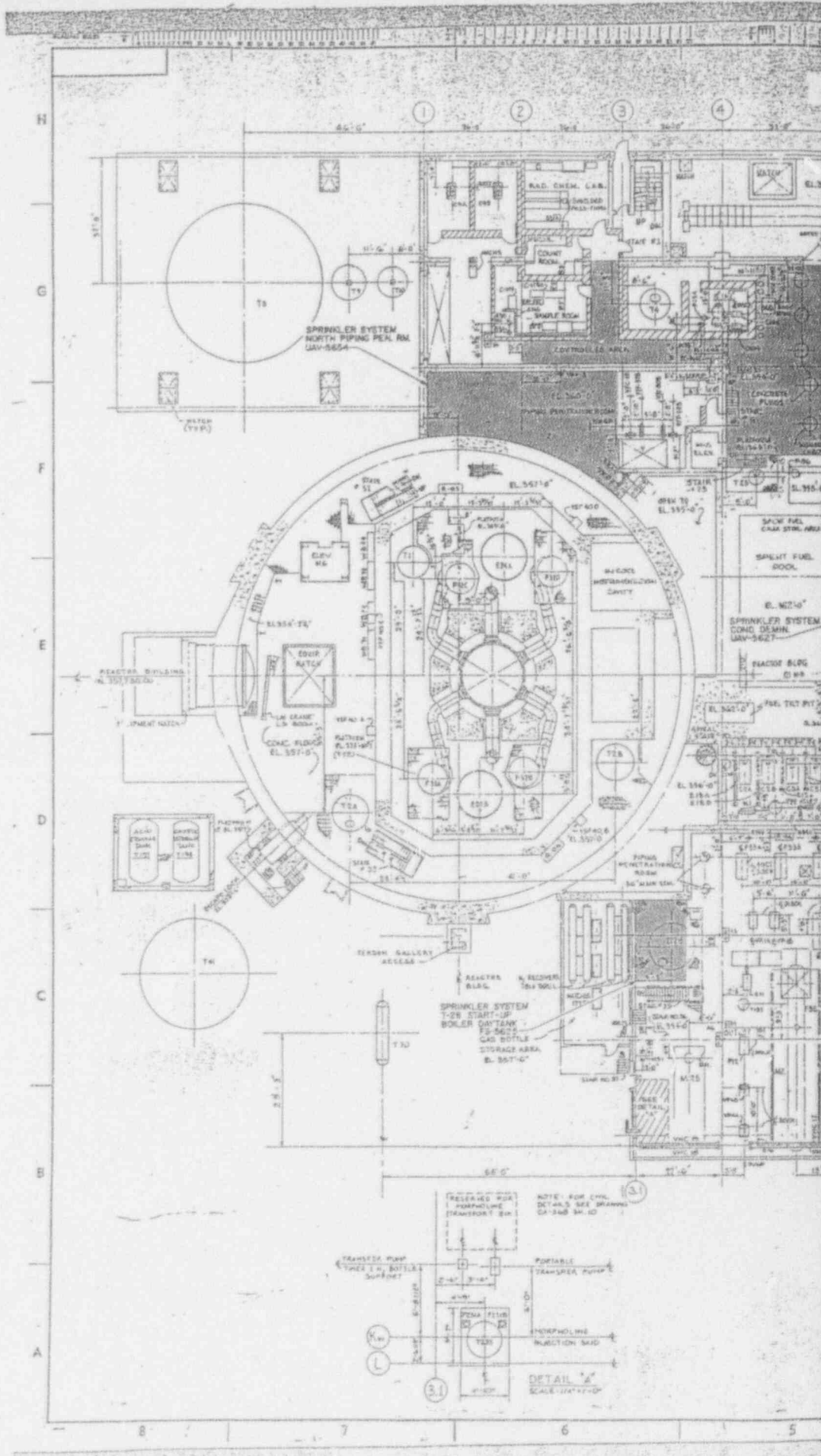
1	DESIGN AS BUILT NO. 50-T	CD	12	118
2	REVISED AS BUILT PLAN NO. 1-A	REV	26	123
REV	DATE	REVISION DESCRIPTION	BY	DATE
WV 5A	10/20/78	REVISION	WV 5A	10/20/78

ARKANSAS NUCLEAR ONE
UNIT 1
RUSSELLVILLE, ARKANSAS

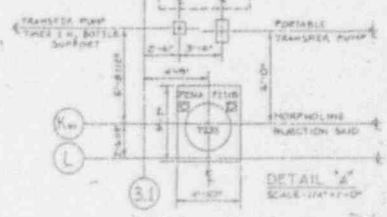
FIRE PROTECTION PLAN
INTERMEDIATE FLOOR PLAN

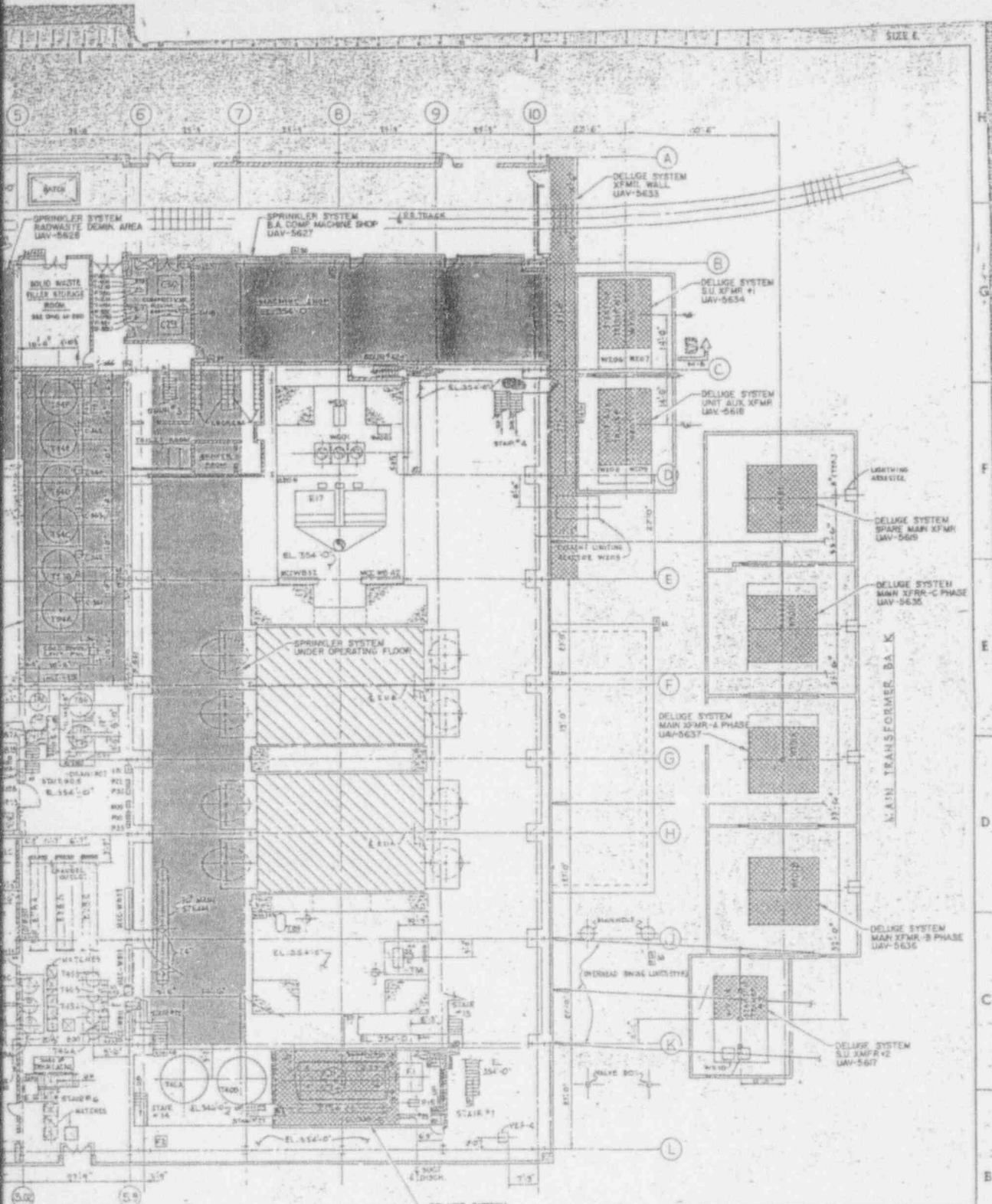
ENERGY	FS-103	1	1
--------	--------	---	---

9307280079-39



NOTE: FOR CIVIL DETAILS SEE DRAWING GA-348 SH. 10





SI
APERTURE
CARD

Also Available On
Aperture Card

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

NO.	DATE	BY	CHKD.	APP.

SCALE: NONE DIMENSIONS: DIMENSIONS

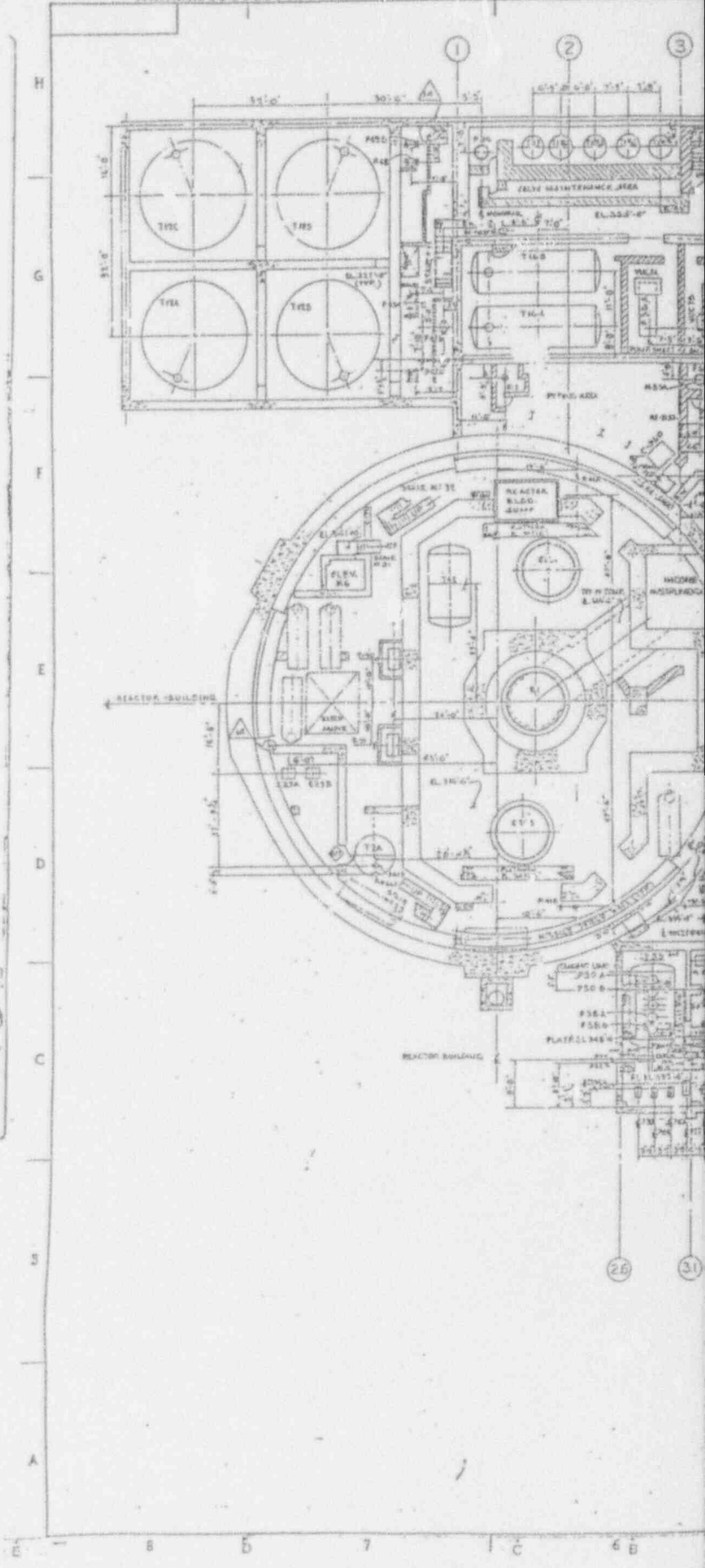
**ARKANSAS NUCLEAR ONE
UNIT 1
RUSSELLVILLE, ARKANSAS**

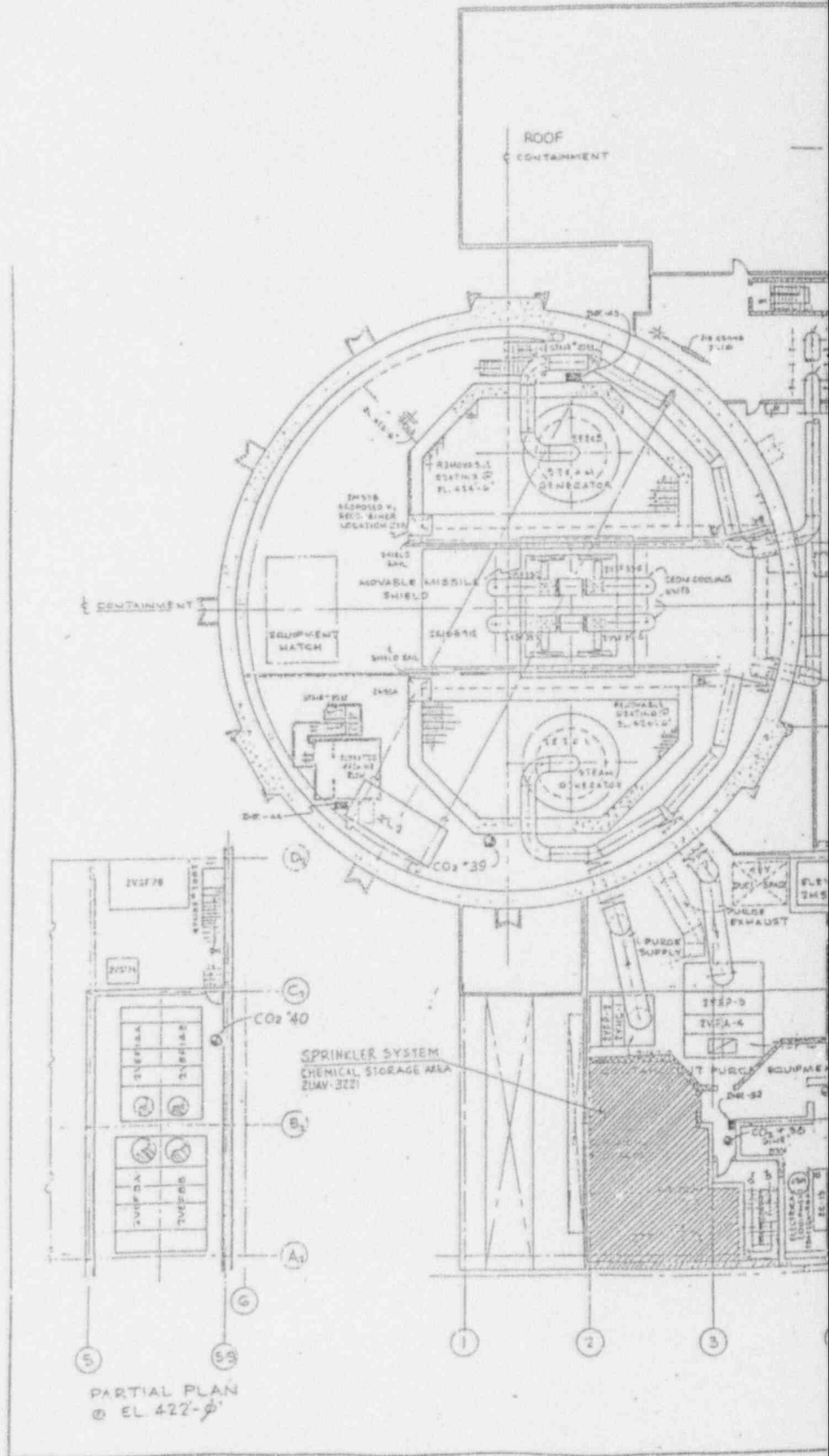
**FIRE PROTECTION PLAN
GROUP FLOOR PLAN**

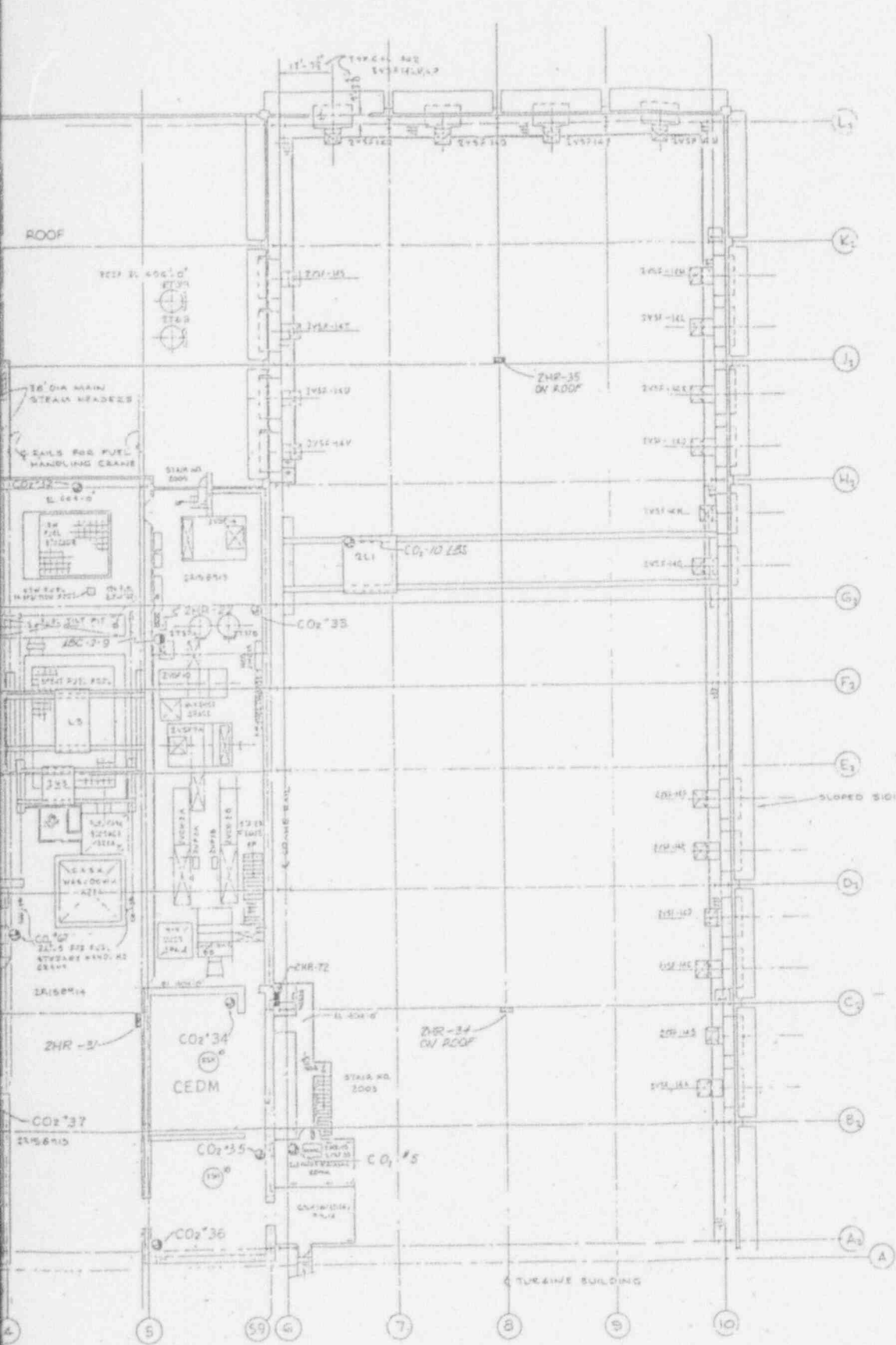
DRAWING NO.	SHEET	REVISION
FS-104	1	0

ENERGY

9307280079 -40







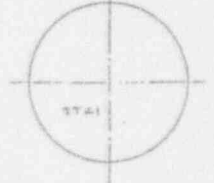
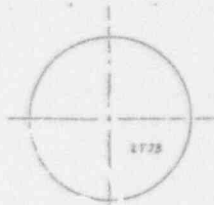
SI
APERTURE
CARD

Also Available On
Aperture Card

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

NO.	DATE	REVISION	BY	CHKD.
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS				
FIRE PROTECTION PLAN FUEL HANDLING FLOOR PLAN				
ENTRITY	FS-2101	1	0	

9307280079 - 42

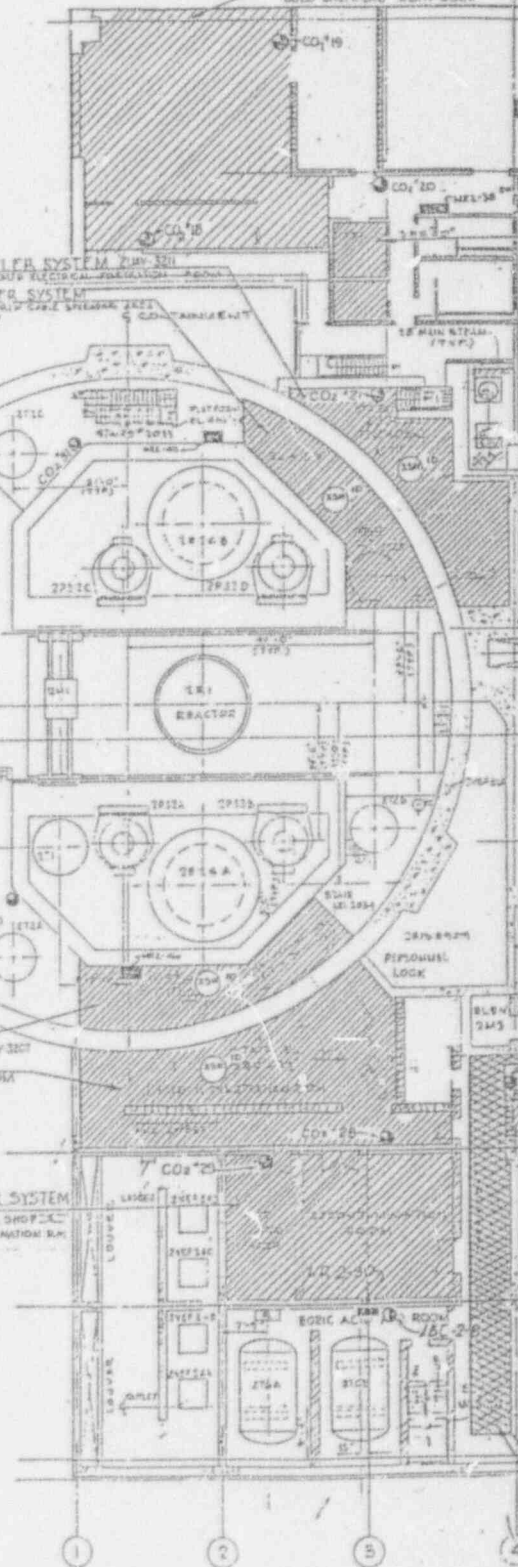


SPRINKLER SYSTEM
GOLD CHEM LAB ZUAV-3320

SPRINKLER SYSTEM ZUAV-320
TO UPPER MAIN ELECTRICAL PENETRATION ROOM
SPRINKLER SYSTEM
TO UPPER MAIN CABLE SPREADING AREA
ZUAV-3207

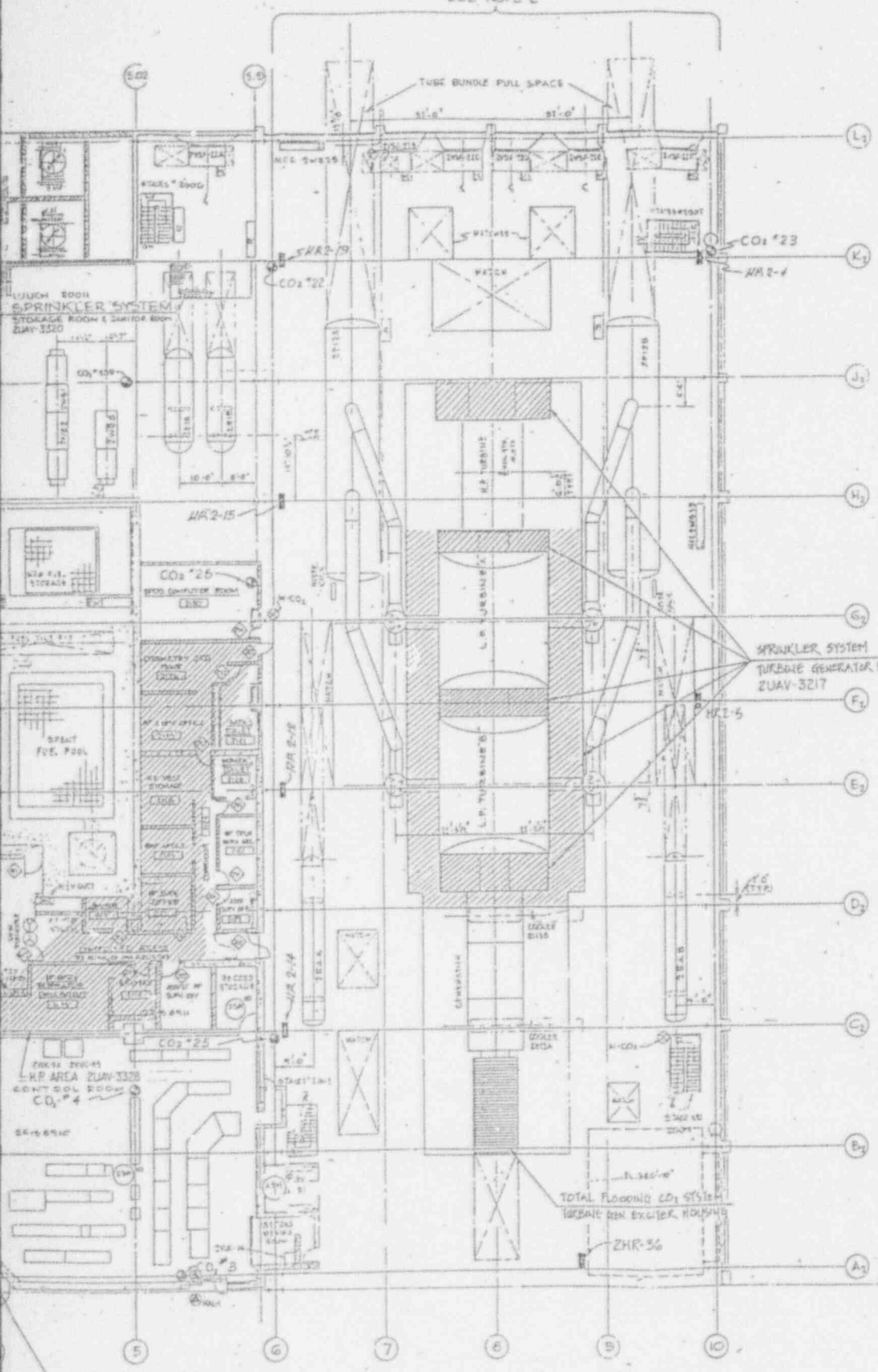
SPRINKLER SYSTEM
TO UPPER MAIN CABLE SPREADING AREA ZUAV-3207
SPRINKLER SYSTEM
TO UPPER MAIN ELECTRICAL PENETRATION ROOM
ZUAV-3204

SPRINKLER SYSTEM
TO UPPER MAIN CABLE SPREADING AREA
ZUAV-3210





SEE NOTE 2



SI
APERTURE
CARD

Also Available On
Aperture Card

SPRINKLER SYSTEM
TURBINE GENERATOR BEARINGS
ZUAV-3217

TOTAL FLOODING CO2 SYSTEM
TUBE BUNDLE PULL SPACE
ZHR-56

DELUXE WATER SPRAY FIRED SYSTEM CORRIDOR # 2159
ROUNDABOUT REACTOR PROTECTION SYSTEM CASE TRAYS
ZUAV-3287

9307280079-43

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

NO.	DATE	BY	CHKD BY	APP'D BY	REV.
1	10/1/68	W. J. B. / J. W. B.			
2	10/1/68	W. J. B. / J. W. B.			
3	10/1/68	W. J. B. / J. W. B.			
4	10/1/68	W. J. B. / J. W. B.			
5	10/1/68	W. J. B. / J. W. B.			
6	10/1/68	W. J. B. / J. W. B.			
7	10/1/68	W. J. B. / J. W. B.			
8	10/1/68	W. J. B. / J. W. B.			
9	10/1/68	W. J. B. / J. W. B.			
10	10/1/68	W. J. B. / J. W. B.			
11	10/1/68	W. J. B. / J. W. B.			
12	10/1/68	W. J. B. / J. W. B.			
13	10/1/68	W. J. B. / J. W. B.			
14	10/1/68	W. J. B. / J. W. B.			
15	10/1/68	W. J. B. / J. W. B.			
16	10/1/68	W. J. B. / J. W. B.			
17	10/1/68	W. J. B. / J. W. B.			
18	10/1/68	W. J. B. / J. W. B.			
19	10/1/68	W. J. B. / J. W. B.			
20	10/1/68	W. J. B. / J. W. B.			
21	10/1/68	W. J. B. / J. W. B.			
22	10/1/68	W. J. B. / J. W. B.			
23	10/1/68	W. J. B. / J. W. B.			
24	10/1/68	W. J. B. / J. W. B.			
25	10/1/68	W. J. B. / J. W. B.			
26	10/1/68	W. J. B. / J. W. B.			
27	10/1/68	W. J. B. / J. W. B.			
28	10/1/68	W. J. B. / J. W. B.			
29	10/1/68	W. J. B. / J. W. B.			
30	10/1/68	W. J. B. / J. W. B.			
31	10/1/68	W. J. B. / J. W. B.			
32	10/1/68	W. J. B. / J. W. B.			
33	10/1/68	W. J. B. / J. W. B.			
34	10/1/68	W. J. B. / J. W. B.			
35	10/1/68	W. J. B. / J. W. B.			
36	10/1/68	W. J. B. / J. W. B.			
37	10/1/68	W. J. B. / J. W. B.			
38	10/1/68	W. J. B. / J. W. B.			
39	10/1/68	W. J. B. / J. W. B.			
40	10/1/68	W. J. B. / J. W. B.			
41	10/1/68	W. J. B. / J. W. B.			
42	10/1/68	W. J. B. / J. W. B.			
43	10/1/68	W. J. B. / J. W. B.			
44	10/1/68	W. J. B. / J. W. B.			
45	10/1/68	W. J. B. / J. W. B.			
46	10/1/68	W. J. B. / J. W. B.			
47	10/1/68	W. J. B. / J. W. B.			
48	10/1/68	W. J. B. / J. W. B.			
49	10/1/68	W. J. B. / J. W. B.			
50	10/1/68	W. J. B. / J. W. B.			
51	10/1/68	W. J. B. / J. W. B.			
52	10/1/68	W. J. B. / J. W. B.			
53	10/1/68	W. J. B. / J. W. B.			
54	10/1/68	W. J. B. / J. W. B.			
55	10/1/68	W. J. B. / J. W. B.			
56	10/1/68	W. J. B. / J. W. B.			
57	10/1/68	W. J. B. / J. W. B.			
58	10/1/68	W. J. B. / J. W. B.			
59	10/1/68	W. J. B. / J. W. B.			
60	10/1/68	W. J. B. / J. W. B.			
61	10/1/68	W. J. B. / J. W. B.			
62	10/1/68	W. J. B. / J. W. B.			
63	10/1/68	W. J. B. / J. W. B.			
64	10/1/68	W. J. B. / J. W. B.			
65	10/1/68	W. J. B. / J. W. B.			
66	10/1/68	W. J. B. / J. W. B.			
67	10/1/68	W. J. B. / J. W. B.			
68	10/1/68	W. J. B. / J. W. B.			
69	10/1/68	W. J. B. / J. W. B.			
70	10/1/68	W. J. B. / J. W. B.			
71	10/1/68	W. J. B. / J. W. B.			
72	10/1/68	W. J. B. / J. W. B.			
73	10/1/68	W. J. B. / J. W. B.			
74	10/1/68	W. J. B. / J. W. B.			
75	10/1/68	W. J. B. / J. W. B.			
76	10/1/68	W. J. B. / J. W. B.			
77	10/1/68	W. J. B. / J. W. B.			
78	10/1/68	W. J. B. / J. W. B.			
79	10/1/68	W. J. B. / J. W. B.			
80	10/1/68	W. J. B. / J. W. B.			
81	10/1/68	W. J. B. / J. W. B.			
82	10/1/68	W. J. B. / J. W. B.			
83	10/1/68	W. J. B. / J. W. B.			
84	10/1/68	W. J. B. / J. W. B.			
85	10/1/68	W. J. B. / J. W. B.			
86	10/1/68	W. J. B. / J. W. B.			
87	10/1/68	W. J. B. / J. W. B.			
88	10/1/68	W. J. B. / J. W. B.			
89	10/1/68	W. J. B. / J. W. B.			
90	10/1/68	W. J. B. / J. W. B.			
91	10/1/68	W. J. B. / J. W. B.			
92	10/1/68	W. J. B. / J. W. B.			
93	10/1/68	W. J. B. / J. W. B.			
94	10/1/68	W. J. B. / J. W. B.			
95	10/1/68	W. J. B. / J. W. B.			
96	10/1/68	W. J. B. / J. W. B.			
97	10/1/68	W. J. B. / J. W. B.			
98	10/1/68	W. J. B. / J. W. B.			
99	10/1/68	W. J. B. / J. W. B.			
100	10/1/68	W. J. B. / J. W. B.			
101	10/1/68	W. J. B. / J. W. B.			
102	10/1/68	W. J. B. / J. W. B.			
103	10/1/68	W. J. B. / J. W. B.			
104	10/1/68	W. J. B. / J. W. B.			
105	10/1/68	W. J. B. / J. W. B.			
106	10/1/68	W. J. B. / J. W. B.			
107	10/1/68	W. J. B. / J. W. B.			
108	10/1/68	W. J. B. / J. W. B.			
109	10/1/68	W. J. B. / J. W. B.			
110	10/1/68	W. J. B. / J. W. B.			
111	10/1/68	W. J. B. / J. W. B.			
112	10/1/68	W. J. B. / J. W. B.			
113	10/1/68	W. J. B. / J. W. B.			
114	10/1/68	W. J. B. / J. W. B.			
115	10/1/68	W. J. B. / J. W. B.			
116	10/1/68	W. J. B. / J. W. B.			
117	10/1/68	W. J. B. / J. W. B.			
118	10/1/68	W. J. B. / J. W. B.			
119	10/1/68	W. J. B. / J. W. B.			
120	10/1/68	W. J. B. / J. W. B.			
121	10/1/68	W. J. B. / J. W. B.			
122	10/1/68	W. J. B. / J. W. B.			
123	10/1/68	W. J. B. / J. W. B.			
124	10/1/68	W. J. B. / J. W. B.			
125	10/1/68	W. J. B. / J. W. B.			
126	10/1/68	W. J. B. / J. W. B.			
127	10/1/68	W. J. B. / J. W. B.			
128	10/1/68	W. J. B. / J. W. B.			
129	10/1/68	W. J. B. / J. W. B.			
130	10/1/68	W. J. B. / J. W. B.			
131	10/1/68	W. J. B. / J. W. B.			
132	10/1/68	W. J. B. / J. W. B.			
133	10/1/68	W. J. B. / J. W. B.			
134	10/1/68	W. J. B. / J. W. B.			
135	10/1/68	W. J. B. / J. W. B.			
136	10/1/68	W. J. B. / J. W. B.			
137	10/1/68	W. J. B. / J. W. B.			
138	10/1/68	W. J. B. / J. W. B.			
139	10/1/68	W. J. B. / J. W. B.			
140	10/1/68	W. J. B. / J. W. B.			
141	10/1/68	W. J. B. / J. W. B.			
142	10/1/68	W. J. B. / J. W. B.			
143	10/1/68	W. J. B. / J. W. B.			
144	10/1/68	W. J. B. / J. W. B.			
145	10/1/68	W. J. B. / J. W. B.			
146	10/1/68	W. J. B. / J. W. B.			
147	10/1/68	W. J. B. / J. W. B.			
148	10/1/68	W. J. B. / J. W. B.			
149	10/1/68	W. J. B. / J. W. B.			
150	10/1/68	W. J. B. / J. W. B.			
151	10/1/68	W. J. B. / J. W. B.			
152	10/1/68	W. J. B. / J. W. B.			
153	10/1/68	W. J. B. / J. W. B.			
154	10/1/68	W. J. B. / J. W. B.			
155	10/1/68	W. J. B. / J. W. B.			
156	10/1/68	W. J. B. / J. W. B.			
157	10/1/68	W. J. B. / J. W. B.			
158	10/1/68	W. J. B. / J. W. B.			
159	10/1/68	W. J. B. / J. W. B.			
160	10/1/6				



SPRINKLER SYSTEM
SECONDARY SAMPLING
SYSTEM RM. 2UAV-3319

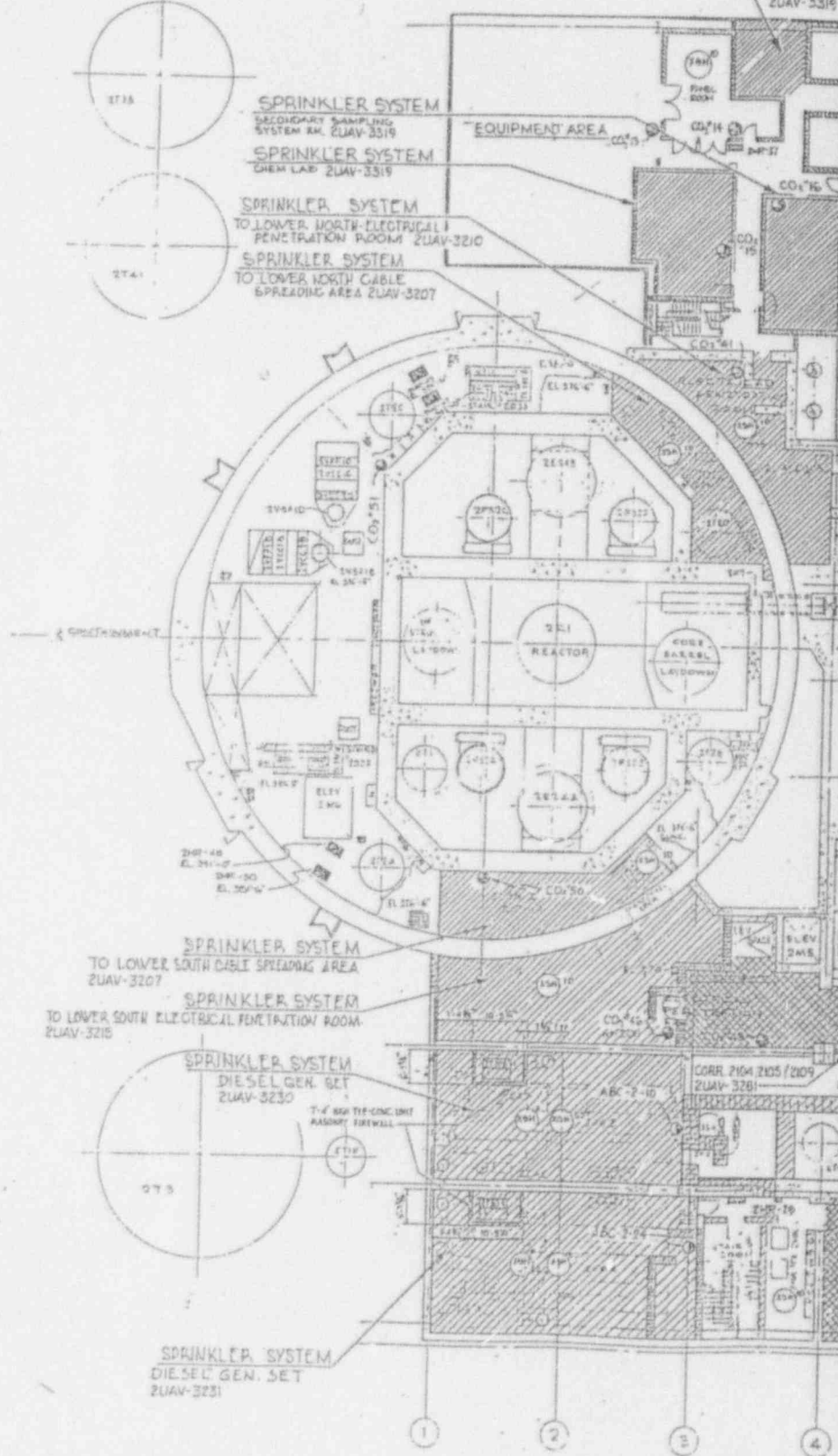
SPRINKLER SYSTEM
CHEM LAB 2UAV-3319

SPRINKLER SYSTEM
TO LOWER NORTH ELECTRICAL
PENETRATION ROOM 2UAV-3210

SPRINKLER SYSTEM
TO LOWER NORTH CABLE
SPREADING AREA 2UAV-3207

SPRINKLER
WASTE FILL
2UAV-3319

EQUIPMENT AREA



SPRINKLER SYSTEM
TO LOWER SOUTH CABLE SPREADING AREA
2UAV-3207

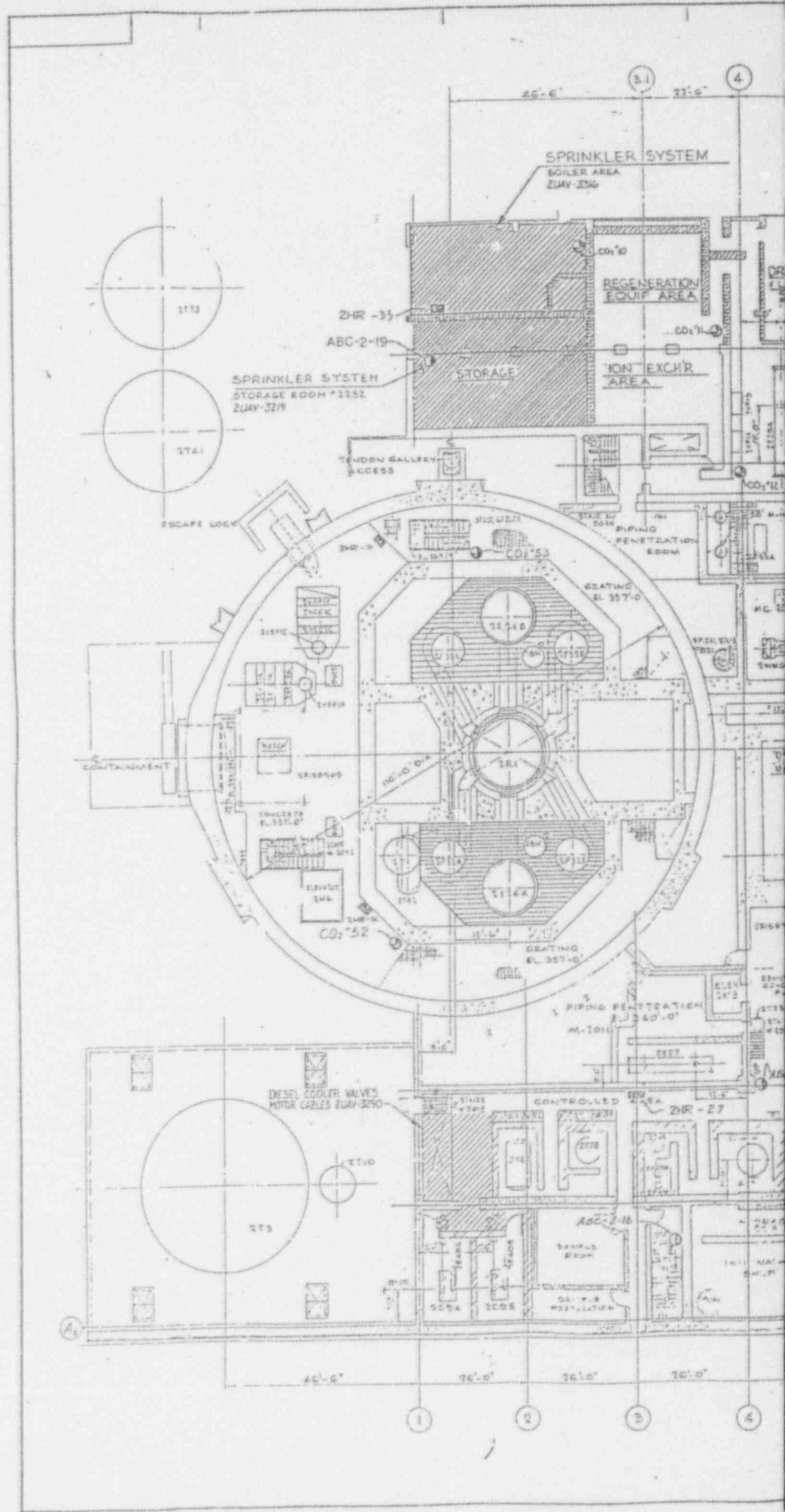
SPRINKLER SYSTEM
TO LOWER SOUTH ELECTRICAL PENETRATION ROOM
2UAV-3210

SPRINKLER SYSTEM
DIESEL GEN. SET
2UAV-3230

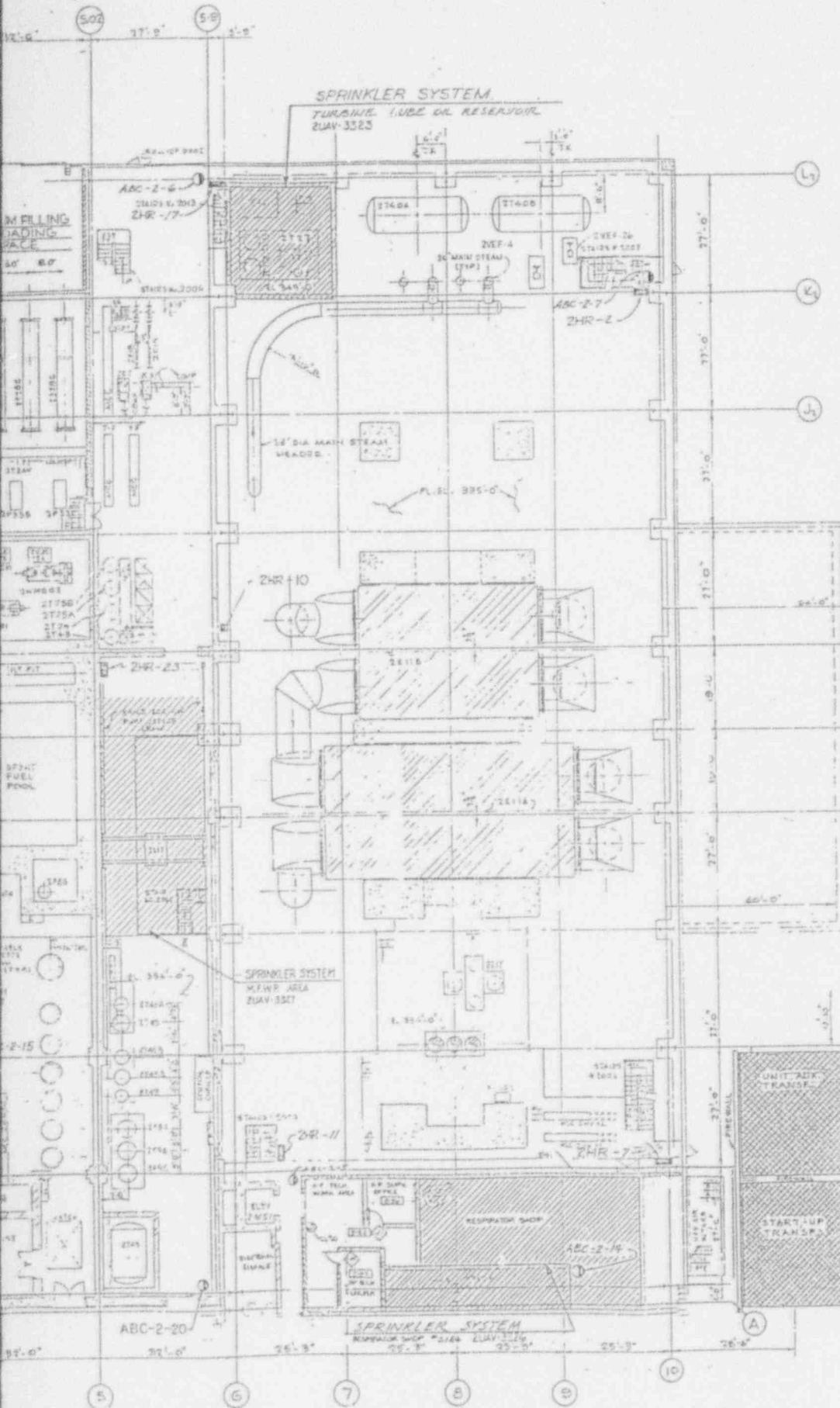


SPRINKLER SYSTEM
DIESEL GEN. SET
2UAV-3231

1 2 3 4

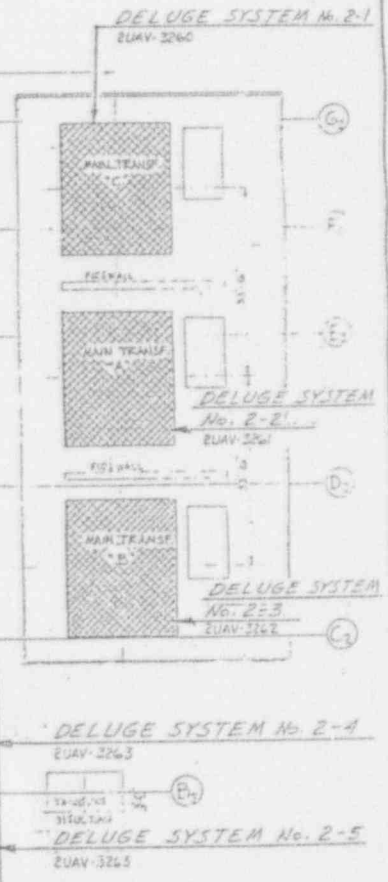


1000000



SI APERTURE CARD

Also Available On Aperture Card



THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

DATE	ISSUED AS	BY	CHKD BY
SCALE	REVISION	DATE	BY
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS			
FIRE PROTECTION PLAN GROUND FLOOR PLAN			
ENTRGY	FS-2104	1	0

9307280079 - 45

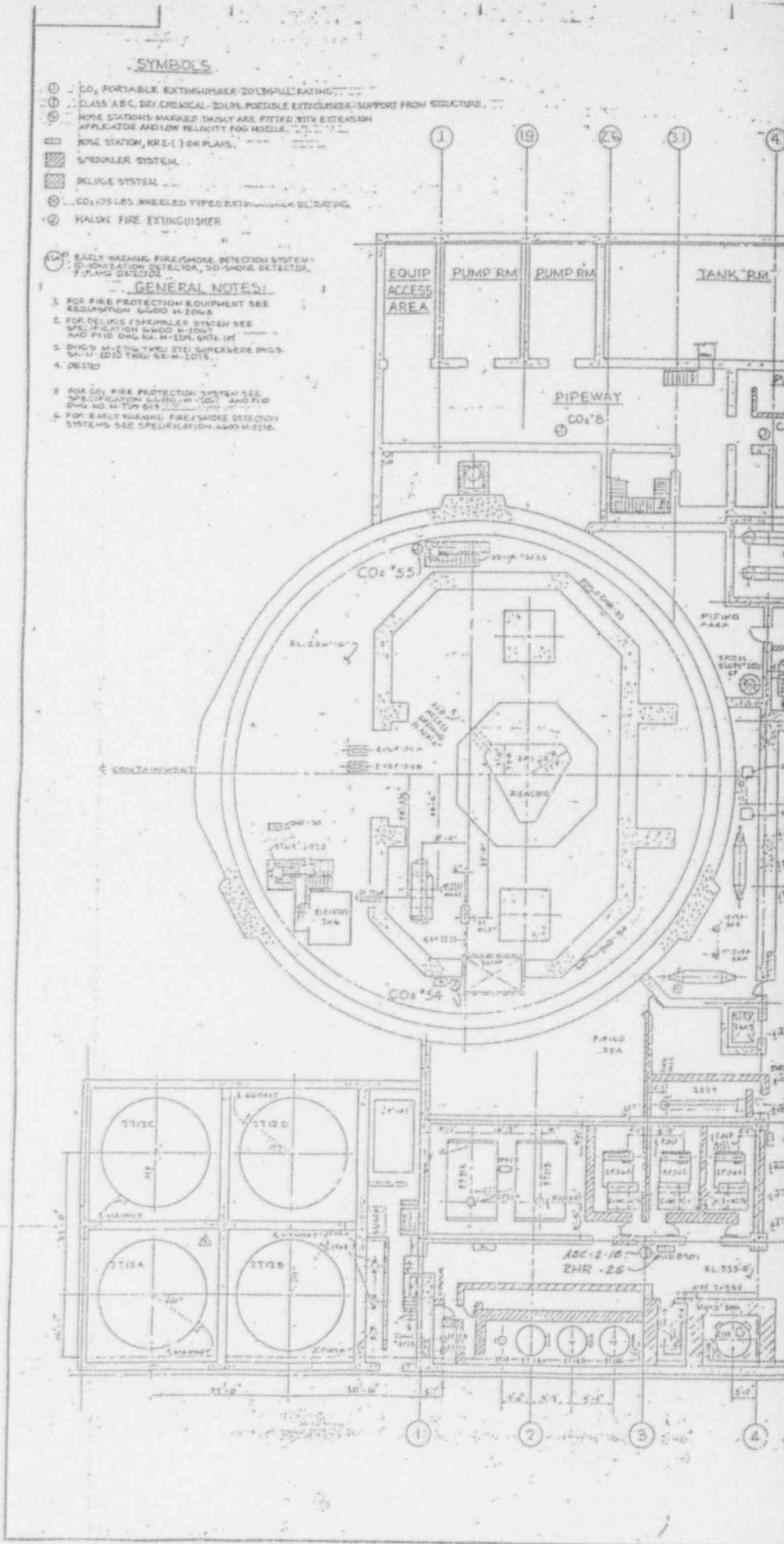
SYMBOLS

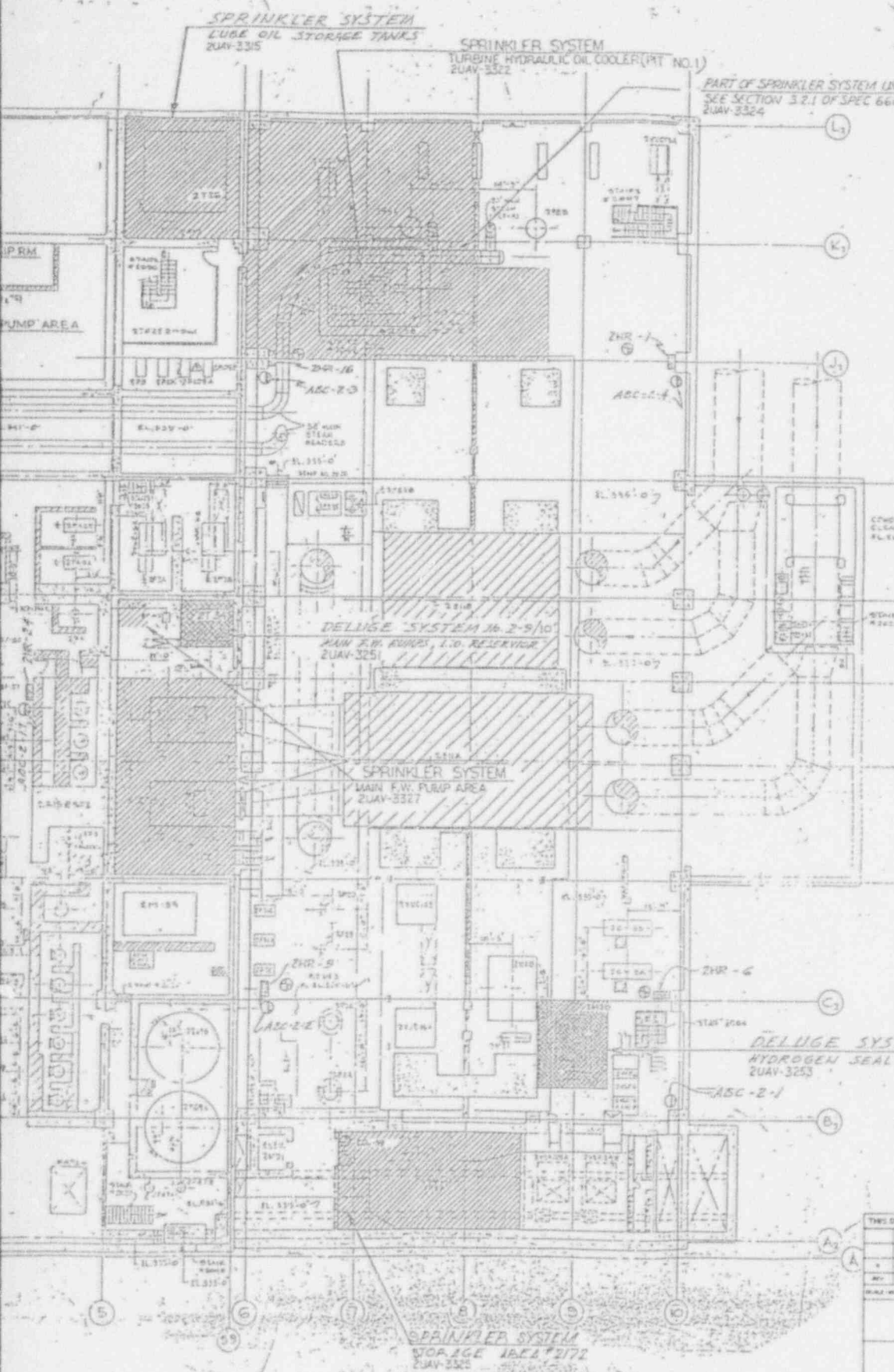
- ① CO₂ PORTABLE EXTINGUISHER-20 LBS FULL RATING
- ② CLASS A B C, DRY CHEMICAL-20 LBS. PORTABLE EXTINGUISHER-SUPPORT FROM STRUCTURE
- ③ HOSE STATIONS MARKED THUSLY ARE FITTED WITH EXTENSION APPLICATOR AND LOW VELOCITY FOG NOZZLE
- ④ HOSE STATION, NR 2 () ON PLAYS
- SPRINKLER SYSTEM
- DELUGE SYSTEM
- CO₂ 175 LBS WHEELED TYPED EXTINGUISHER RATED
- ⑤ HALON FIRE EXTINGUISHER

- ⑥ EARLY WARNING FIRE/SMOKE DETECTION SYSTEM - IONIZATION DETECTOR, 30" SHAFT DETECTOR, 7" PLAYS DETECTOR

GENERAL NOTES:

1. SEE FIRE PROTECTION EQUIPMENT SEE REGULATION 54000 M-1009
2. FOR DELUGE / SPRINKLER SYSTEM SEE SPECIFICATION 54000 M-1007 AND PFD 54000 M-1008 PART 101
3. DVG'S M-1014 TRUL STEEL SUPERHEATED DVG'S M-1015 ID10 TRUL STEEL LOTS
4. DET170
5. FOR CO₂ FIRE PROTECTION SYSTEM SEE SPECIFICATION 54000 M-1007 AND PFD 54000 M-1008
6. FOR EARLY WARNING FIRE/SMOKE DETECTION SYSTEMS SEE SPECIFICATION 54000 M-1010



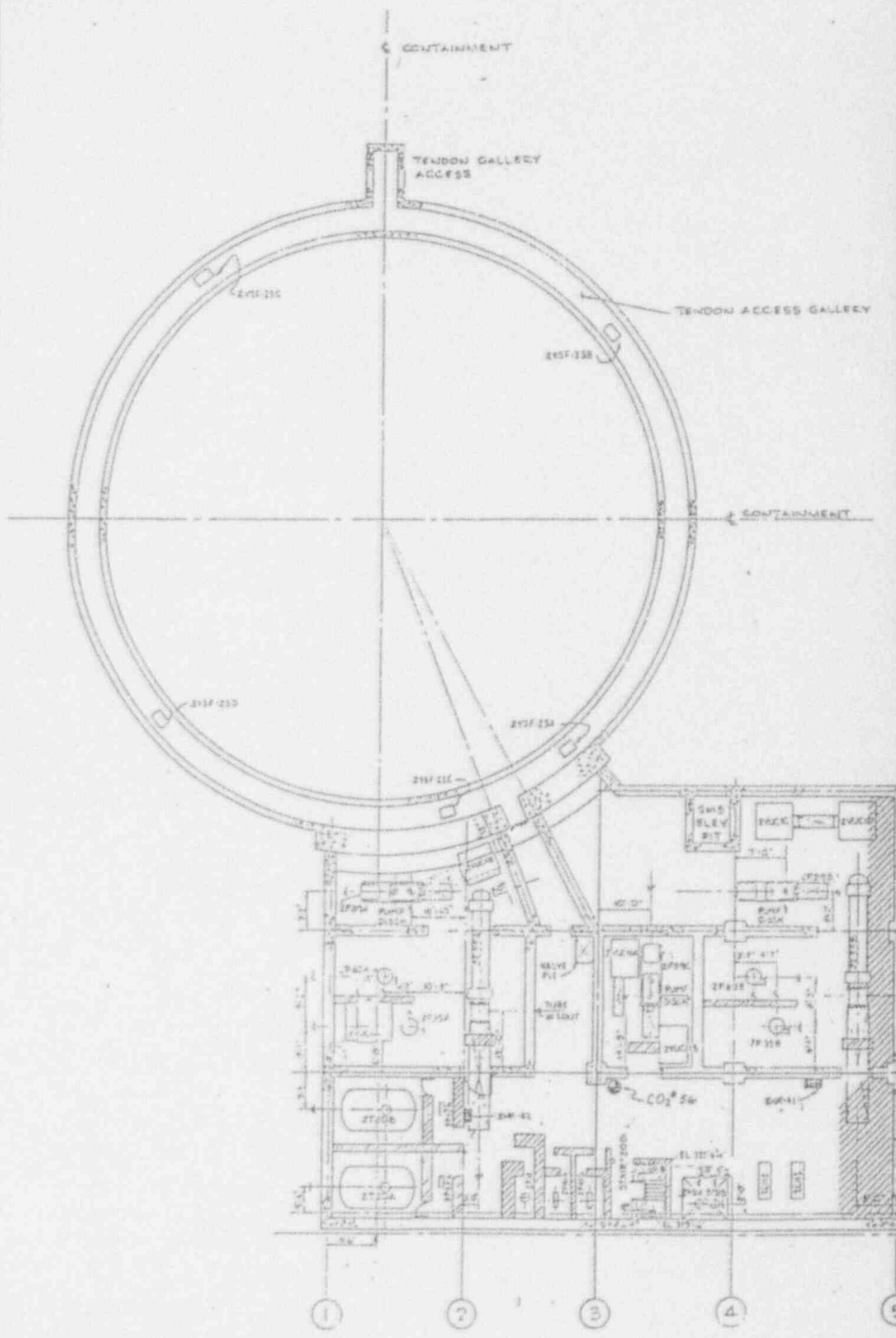


SI
APERTURE
CARD

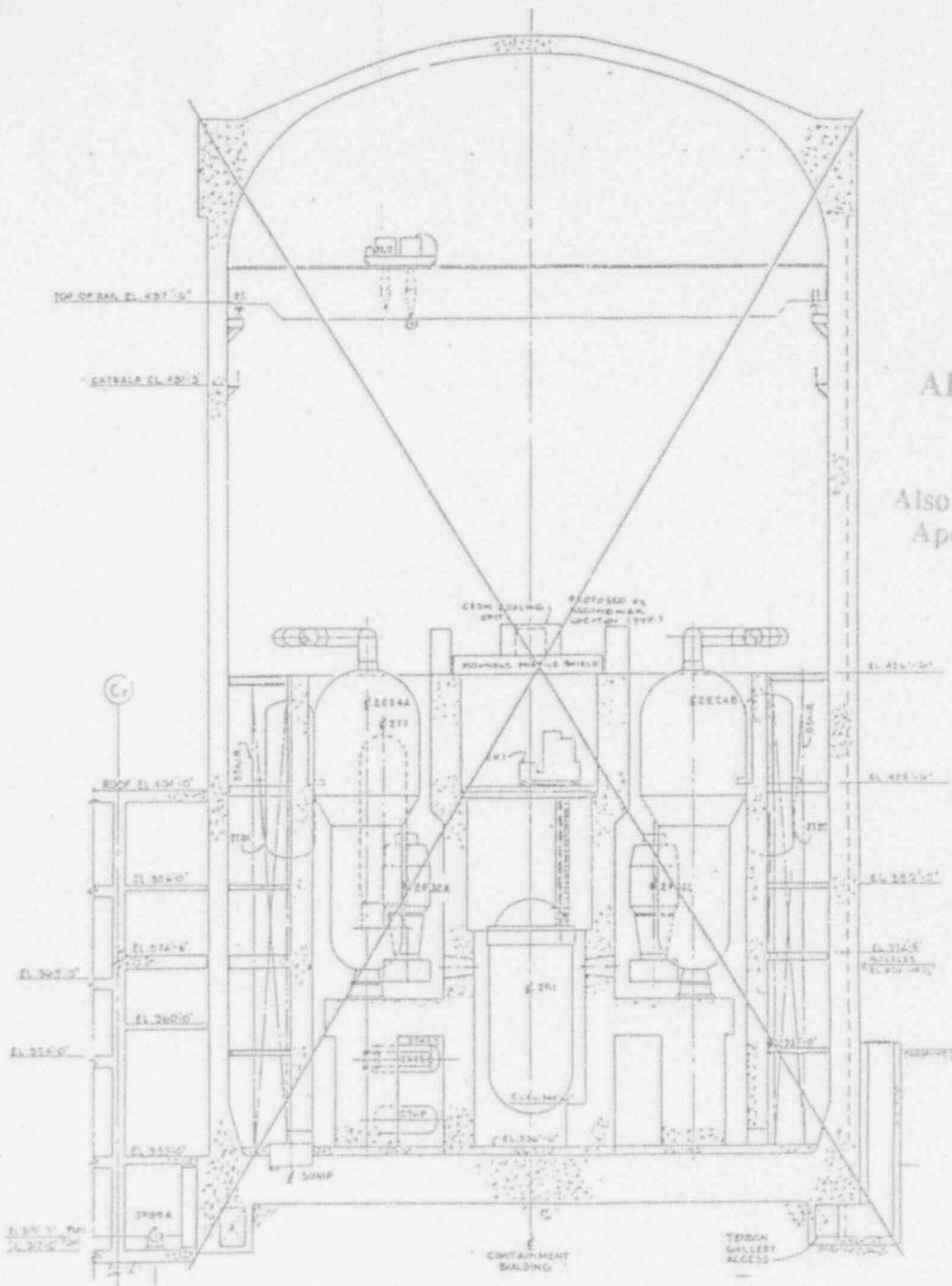
Also Available On
Aperture Card

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY			
NO.	DATE	REVISIONS	BY
ARKANSAS NUCLEAR ONE UNIT 3 RUSSELLVILLE, ARKANSAS			
FIRE PROTECTION PLAN BELOW GRADE			
PROJECT NO. FS - 2105	SHEET NO. 1	OF SHEETS 0	

9307280079 - 46



PLAN AT ELEV. 317'-0"



SI
APERTURE
CARD

Also Available On
Aperture Card

ROOM 42007
2UAV-3289

ROOM 42006
2UAV-3288

9307280079 -47

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY					
NO.	DATE	ISSUED AS	BY	CHKD.	APP'D.
REV.	DATE	REVISION	BY	CHKD.	APP'D.
SCALE	NO.	DESIGN	NO.	DESIGN	NO.
ARKANSAS NUCLEAR ONE UNIT 2 RUSSELLVILLE, ARKANSAS					
FIRE PROTECTION PLAN AT ELEV. 317'-0"					
EMERGENCY	FS-2106	1	0		

UNIT UNIT 8

WATER HSD-11-2

PLAN ABOVE GRADE

DELUGE SYSTEM D/G FO. STG. TK. ZT-57A ZUAV-3270

DELUGE SYSTEM D/G FO. STG. TK. ZUAV-3271

EMERGENCY DIESEL FUEL VAULT ZT-57A

EMERGENCY DIESEL FUEL VAULT ZT-57B

CONV. DWG. C-1
HSD-15-0
HSD-14-3
HSD-14-4
FROM DIESEL OIL STORAGE TK. T-18 FOR CONT. SUPPLY DWG. C-21



DELUGE SYSTEM T-57A UAV-3409

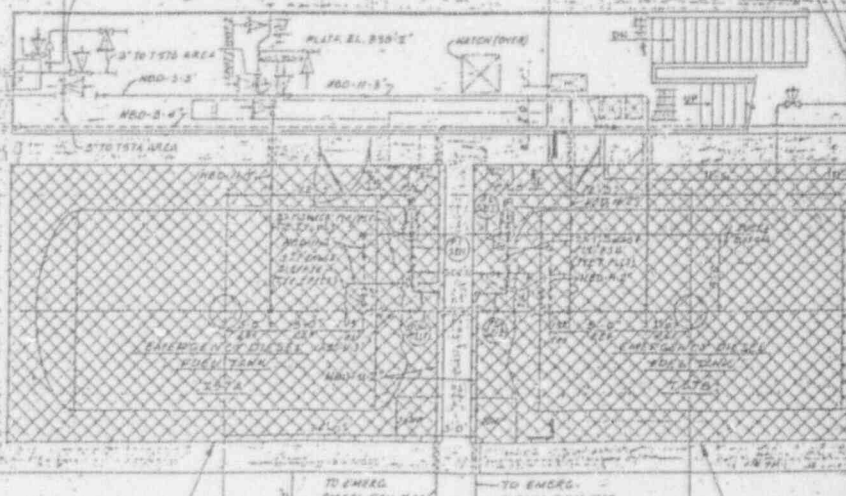
PLAN BELOW GRADE

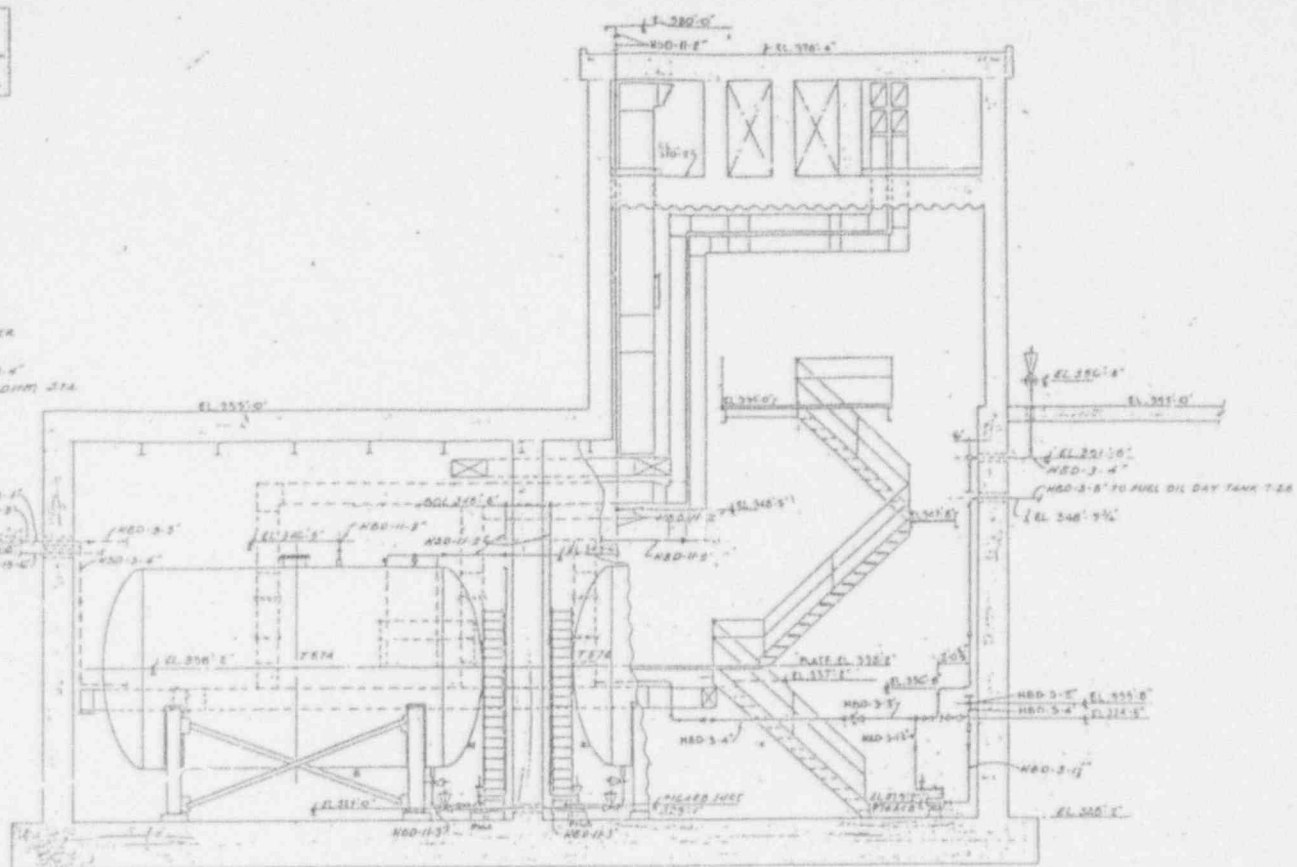
DELUGE SYSTEM T-57B UAV-3410

CONV. DWG. C-21

TO EMERG. DIESEL GEN #44

TO EMERG. DIESEL GEN #40



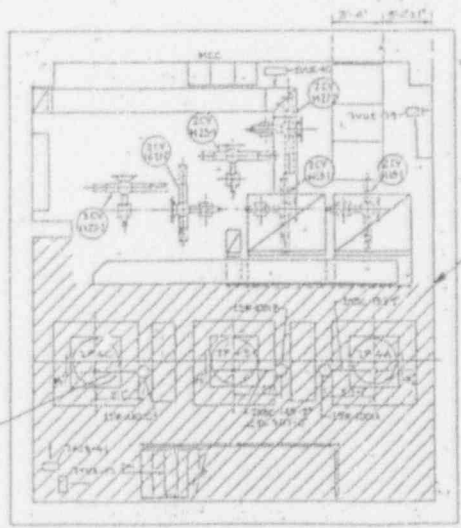
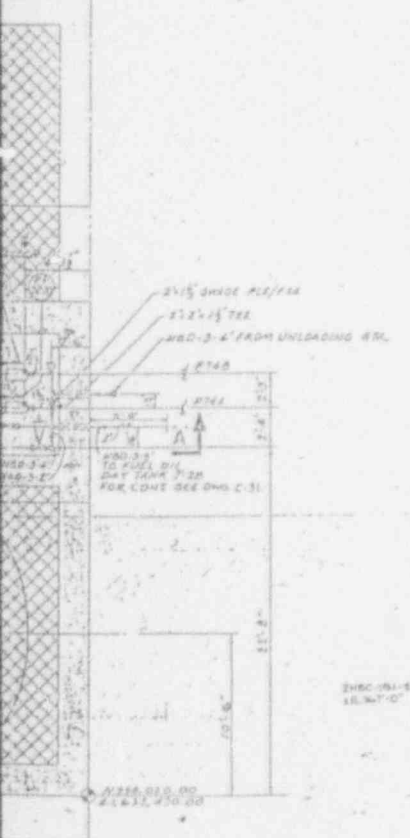


SECT. A-A

SI
APERTURE
CARD

Also Available On
Aperture Card

16 TK



PLAN-FLEV 366'-0"

SPRINKLER SYSTEM
SERVICE WATER PUMP
HOUSE 2UAV-3347

THIS DRAWING TO BE USED FOR FIRE PROTECTION SYSTEMS ONLY

NO.	DATE	REVISION	BY	CHECKED
1	11/11/68	ISSUED AS BUILT PLAN NO. 104	W.M. [signature]	[signature]
2	01/11/69	REVISIONS	[signature]	[signature]

SCALE: HORIZ. DIMENSIONS: 1/4" = 1'-0"
VERT. DIMENSIONS: 1/8" = 1'-0"

ARKANSAS NUCLEAR ONE
UNIT 2
RUSSELLVILLE, ARKANSAS

FIRE PROTECTION PLAN
FUEL OIL STORAGE & INTAKE STRUCTURE

DESIGNED BY	DRAWN BY	REVISIONS
ENERGY	FS-2107	3 0

9307280079-48