

Mailing Address

Alabama Power Company
600 North 18th Street
Post Office Box 2641
Birmingham, Alabama 35291
Telephone 205 783-6090

R. P. McDonald
Senior Vice President
Flintridge Building



Alabama Power

THE SOUTHERN ELECTRIC SYSTEM

January 27, 1986

Docket Nos. 50-348
50-364

Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. L. S. Rubenstein

Joseph M. Farley Nuclear Plant - Units 1 and 2
10CFR50, Appendix R Exemption Request Revisions

Gentlemen:

Alabama Power Company (APCo) submitted exemption requests to the requirements of 10CFR50, Appendix R, based upon an NRC audit by letter dated October 18, 1985. This submittal supplemented letters dated March 13, 1985, May 31, 1985, June 26, 1985 and July 19, 1985.

In these exemption requests, APCo committed to a schedule of no later than the Unit 2 fourth and Unit 1 seventh refueling outages for development of detailed shutdown procedures for all fire areas other than a cable spreading room fire. During the development of the detailed shutdown procedure for exemption request #2-008 (fire area 2-005), an error in the exemption request was discovered. Installation of fire barriers for the cable trays in this area will not ensure a source of RCS makeup water since the solenoids and their associated cables for the valves are unprotected. As a result, attached is a revised copy of exemption request #2-008.

In addition, APCo was requested verbally by the NRC Staff to provide a list of fire doors to be included in generic exemption request #1-041. Attached is a revised copy of the exemption request that includes a list of the fire doors.

8602040210 860127
PDR ADOCK 05000348
F PDR

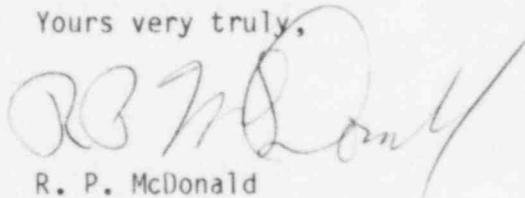
Adock
11

Mr. L. S. Rubenstein
U. S. Nuclear Regulatory Commission

January 27, 1986
Page 2

If there are any questions, please advise.

Yours very truly,

A handwritten signature in cursive script, appearing to read "R. P. McDonald", is written over the typed name. The signature is fluid and somewhat stylized, with a large loop for the 'M' and a long, sweeping stroke for the 'D'.

R. P. McDonald

RPM/DHJ:ddb-D43
Attachments

cc: Mr. L. B. Long
Dr. J. N. Grace
Mr. E. A. Reeves
Mr. W. H. Bradford
Mr. Dan Turner

J. M. FARLEY NUCLEAR PLANT

10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

EXEMPTION REQUEST: 2-8 Rev. 2

FIRE AREA: 2-005

LOCATION: UNIT-2 AUXILIARY BUILDING, EL 100 FT-0 IN., CHARGING PUMP ROOMS AND STORAGE AREAS

Fire area 2-005 consists of the three charging pump rooms (2173, 2174, and 2181), a hallway (2172), a general storage area (2171), and a contaminated storage area (2182). The fire area boundary walls, floors, and ceilings are 3-h fire rated except for the containment wall, and all fire area boundary doors are fire rated. Self expanding cork is installed between the fire area boundary walls and the containment wall.

EXEMPTION: An exemption to section III.G.2.a is requested to the extent that it requires a 3-h fire barrier between redundant safe shutdown cabling and equipment. An exemption is requested to section III.G.2.c to the extent that it requires one train of redundant safe shutdown cable and equipment to be enclosed by a 1-h fire-rated barrier and the installation of an automatic fire suppression system.

CONDITION REQUIRING EXEMPTION:

Physical Separation of the Charging Pumps

The fire area contains all three charging pumps, related valves and air handling units. Each charging pump is redundant to the other two. The redundant charging pumps, valves, and air handling units are located in separate rooms. The pump room walls internal to fire area 2-005 are watertight and of 2-ft-thick reinforced concrete. However, the watertight penetration seals and watertight doors in the subject walls are not fire rated.

Boration/Makeup

Room 2172 in fire area 2-005 contains the control cables and valves for the RWST charging pump suction (LCV115B and LCV115D), the control cables and valves for the RWMT charging pump suction and boric acid dilution injection to the VCT (FCV0113B-A and FCV0114A-A). In addition control cables for the RWM to the boric acid blender and boric acid flow control valves (FCV0114B-A and FCV0113A-A) transit this room. These components provide redundant suction of makeup water from the RWMT or the RWST. Complete fire barriers and full suppression coverage is not provided for the valves or cables. The analysis of the effects of a fire upon the subject cables in the area shows that the RWST isolation valves could become electrically inoperative in the closed position or makeup to either the VCT or charging pump suction header could be isolated.

J. M. FARLEY NUCLEAR PLANT

10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

Reactor Coolant Boundary Integrity

Control cables of the Train-A pressurizer power operated relief and blocking valves Q2B31PCV0445A-A and Q2B13MOV8000A-A and the reactor head vent valves Q2B13SV2213A-A and Q2B13SV2214A-A are located in fire area 2-005. The subject cables are associated with the control function from the hot shutdown panel Q2H21NBAFP2605G-A. In addition control cables which shift control from the main control board to the hot shutdown panel via the transfer relay cabinet Q2H22L002-A are in this area. A fire induced failure having multiple hot shorts could cause the reactor inventory to letdown via the PORV, and reactor head vent paths.

JUSTIFICATION:

Physical Separation of the Charging Pumps

The redundant charging pumps, valves, and air handling units are located in independent, highly segregated rooms. Rooms 2171 and 2182 do not contain redundant safe shutdown cabling or equipment. An analysis was performed to demonstrate that a fire limited to one of the four areas identified below would not jeopardize the safe shutdown of the plant.

1. RM 2181 - Train-A Charging Pump Room
2. RM 2174 - Swing Charging Pump Room
3. RM 2173 - Train-B Charging Pump Room
4. RM's 2172, 2171, 2182 - Storage rooms and hallway

The following justification is provided to show that a fire would be contained in one of the four areas listed above.

The charging pump rooms (2173, 2174, and 2181) are watertight with 2-ft-thick reinforced concrete walls. The penetrations in the pump room walls internal to fire area 2-005 are sealed to provide a watertight boundary. The seals utilized to provide the watertight boundary are of the type (foam, welded plate, or grout) to provide an adequate barrier to inhibit the spread of fire, smoke, or gas. The doors are watertight and are normally maintained closed. Lubricating oil and cable insulation are the only combustibles present in the pump rooms. Lubricating oil would be contained within the individual rooms or would drain into the sump pump servicing the room. In addition there is a fixed suppression system installed in room 2172 (hallway) which provides additional protection in the area of the pump room doors which communicate with this hallway. A smoke detection system is installed throughout the area including the three charging pump rooms. The maximum combustible loading in any room of this fire is estimated to be, less than 48,000 Btu/ft² with a maximum fire severity of less than 1 h. Based upon the evaluation of the protection provided, a credible fire would

J. M. FARLEY NUCLEAR PLANT
10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

be contained within the zone of its initiation. Credit has been taken for the separation afforded by the subject pump room boundaries. As discussed during the NRC site exemption request walkdown, to ensure that the as-built configuration is maintained, the sealed penetrations shall be placed in the surveillance program.

Boration/Makeup

A fire barrier has been provided for raceway sections AHF15A, AHD12B, AID258, AID12B and AID15B in rooms 2182 and 2172 of fire area 2-005. These barriers protect cables for the boric acid flow control and the RWM to the boric acid blender valves (FCV0113A-A and FCV0114B-A) as they transit rooms 2182 and 2172 of fire area 2-005. These subject barriers also provide protection for the RWMT charging pump suction, boric acid dilution injection to the VCT cables (FCV0113B-A and FCV0114A-A) and the redundant RWST charging pump suction train A cables (LCV0115B-A), with separation of approximately 19 feet. Partial suppression coverage is provided for the subject cables and valves in this area of FCV0113B-A and FCV0114A-A. There is approximately 15 feet of separation between the RWMT charging pump suction valve and cables (FCV0113B-A) and the redundant train B RWST suction valve and cables (FCV0113B-A) and the redundant train B RWST suction valve and cables (LCV0115D-B). Again partial suppression coverage is provided in the area of FCV0113B-A and FCV0114A-A. Detection is provided in the area of the subject components. Due to the barriers provided; the spatial separation, detection and partial suppression coverage and the low insitu combustible loading (much of which has now been covered in a fire barrier) a credible exposure fire would not affect both redundant sources of borated makeup water. In the event of a fire in Room 2181, the Train B RWST isolation valve, LCV115D-B will be operable. An automatic suppression system covers the raceway to be protected with the exception of 18 feet of raceway sections AHF15A, AHD12B and AID15B in Room 2172 and 10 feet of AHF15A and AHD12B in Room 2182.

In the unlikely event that a fire in this area caused a loss of these three independent sources of reactor makeup water, the additional fire barriers that have been installed in Rooms 2182 and 2172 will ensure that a fire induced RCS letdown will not exist thus increasing the time margin available to establish makeup. Reactor decay heat will be sufficient to maintain RCS temperature and thereby prevent shrinkage of the RCS until manual action can be taken to restore makeup water. In addition, the Reactor Coolant Pump seal integrity can be maintained by the normal seal injection flow path from the VCT or by using Component Cooling Water. These flow paths will not be affected by a fire in this area; therefore, the integrity of the pump seals will not be jeopardized while makeup is being established.

Reactor Coolant Boundary Integrity

Cables for the subject reactor coolant boundary integrity valves are also routed in the raceway for which the addition of a fire barrier was implemented under boration/makeup. Based on the implementation of the modification implemented under boration/makeup, the following scenario applies to a fire in Room 2181 only.

Fire induced failures (hot shorts) to the control cables for the transfer relay cabinet Q2H22L002-A could cause control for the pressurizer power operated relief and blocking valves and the reactor head vent valves, to shift from their normal main control board alignment to the remote hot shutdown panel. Subsequent fire induced failures (hot shorts from adjacent control cables in the shared raceway) of the control cables for

J. M. FARLEY NUCLEAR PLANT

10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

Q2B31PCV0445A-A, pressurizer power operated relief valve Q2B13SV2213A-A, and Q2B13SV2214A-A reactor head vent valves, could result in the valves being energized to open. The power relief blocking valves (MOV) could become electrically inoperative in the open position. In the unlikely event of the multiple hot shorts occurring, this condition can be mitigated by removing power from the transfer relays and manual operation (handle) of the affected relay thereby shifting control to the main control board. To remove power from the transfer relay open breaker 9 on dc distribution panel 2C (Q2R41L001C-A) located in Room 2312, fire area 2-004. Then go to transfer relay cabinet TRC-1 (Q2H22L002-A) in fire area 2-035 room 2347 and manually shift transfer relays TR1 (Q2B13SV2213A-A), TR2 (Q2B13SV2214A-A), TR3 (Q2B31PCV0445A-A), and TR5 (Q2B31MOV8000A-A) placing control back to the main control board to allow the operator to mitigate the letdown.

FIRE AREA INFORMATION:

<u>ROOM NUMBERS/ TITLES</u>	<u>SHUTDOWN TRAIN</u>	<u>COMBUSTIBLE MATERIAL</u>	<u>QUANTITY</u>	<u>FIRE LOAD (Btu/ft²)</u>	<u>MAXIMUM FIRE SEVERITY</u>
Room 2173 Charging/ Safety Injec- tion Pump Room	B	Cable Insul. Lube Oil	148 lb 35 gal	27,563	<30 min
Room 2174 Charging/ Safety Injec- tion Pump Room	A, B, C	Cable Insul. Lube Oil	103 lb 35 gal	28,508	<30 min
Room 2181 Charging/ Safety Injec- tion Pump Room	A	Cable Insul. Lube Oil	625 lb 35 gal	47,414	<1 h
Room 2171 Combustible Area (a)		Cable Insul.			
Room 2172 Hallway	A, C	Cable Insul.	2,393 lb ^(b)	31,820 ^(b)	<30 min ^(b)
Room 2182 Contamination Storage Area	A	Cable Insul.			

a. Room 2171 is utilized to store combustible material, usually in the form of contaminated clothing, cables, and tools in drums.

b. Applies to rooms 2171, 2172, 2182 collectively.

J. M. FARLEY NUCLEAR PLANT

10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

DESIGN FEATURES:

Construction: Floors, ceilings, and walls forming the area boundary are of reinforced concrete. Self-expanding cork is installed between the fire area boundary walls and the containment.

Doors: A fire-rated airtight door is installed between rooms 2172 and 2161 (area 2-4).

Pipe and Electrical Penetrations: All penetrations through the area boundary are sealed with silicone foam or Nelson fittings.

Ventilation: There is no normal ventilation for the area. There are four ventilation openings through the area ceiling into room 2223 (area 2-1); UL Class-A fire damper doors are installed in these openings. Fixed smoke removal capability is not provided.

Floor Drains: A 4-in. diameter floor drain having a 100-gal/m capacity is located in rooms 2173, 2174, and 2181, and drains to a separate sump for each room. The sumps for rooms 2173 and 2181 are located in the rooms while the sump for room 2174 is located immediately outside the room in room 2172. The sumps have two 100-gal/m pumps each that discharge to the waste holdup tank or to the floor drain tank. Four 4-in. diameter floor drains having a 100-gal/m capacity each are located throughout the remainder of the area and drain into the floor drain tank.

FIRE PROTECTION:

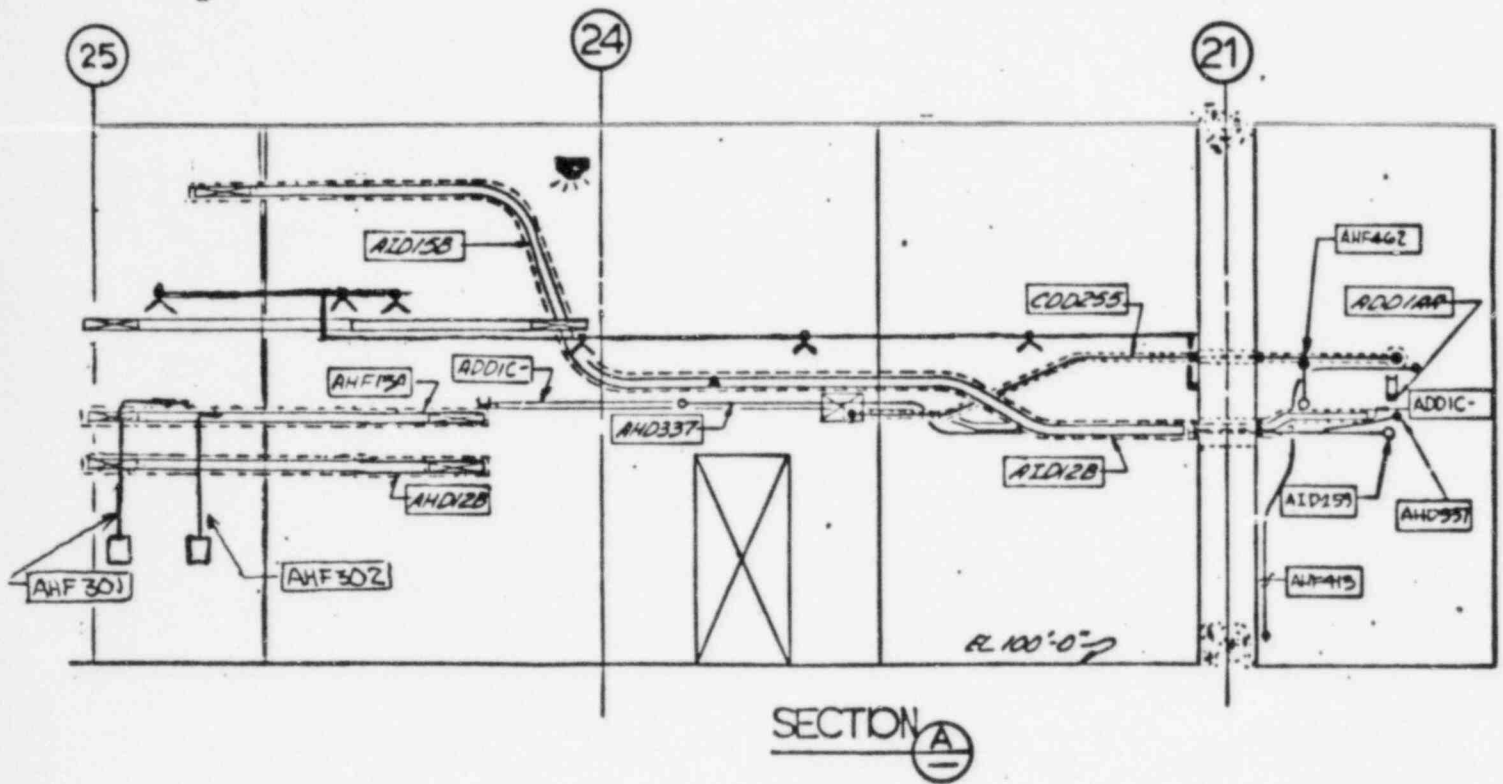
A smoke detection system is installed throughout this area. A manual hose station, CO₂ hose reel, portable dry chemical extinguishers, portable CO₂ extinguishers, and portable smoke removal equipment located in the corridor just outside the area are available for use in the area. An automatic sprinkler system is installed in room 2172.

FIRE AREA 2-005

SVO 114 A-A BORIC ACID DILUTION INJECTION TO VCT.



J.M. FARLEY NUCLEAR PLANT
 EXEMPTION REQUEST: 2-8 REV. 2
 FIRE AREA 2-005



J. M. FARLEY NUCLEAR PLANT
10CFR50 APPENDIX "R" FIRE HAZARDS ANALYSIS REEVALUATION

GENERIC EXEMPTION REQUEST: 1-41 Rev. 1

FIRE AREA: N/A

LOCATION: FIRE AREAS IN THE UNIT 1 AND UNIT 2 AUXILIARY BUILDING, THE
DIESEL GENERATOR BUILDING AND THE SERVICE WATER INTAKE STRUCTURE.

EXEMPTION

Request exemption from the provision of 10CFR50, Appendix R III.G.2 to the extent that a deviation from the National Fire Protection Association Standard for Fire Doors and Windows (NFPA 80) which specifies the maximum clearance between the bottom of a fire-rated door and its sill or the floor results in the doors potentially having a rating of less than 3 hours. NFPA 80.3-6.1 states that the noncombustible clearance between the bottom of flush mounted doors and a raised noncombustible sill shall not exceed 3/8 inch, or where there is no sill, the maximum clearance between the bottom of the door and the floor shall not exceed 3/4 inch. The attached list of doors deviates slightly from this standard.

JUSTIFICATION

Various doors in the fire area boundaries in the locations identified in the attachment exceed NFPA 80 gap specifications. In the majority of instances, the NFPA standard is exceeded by less than 3/4 inches. Most of the excess clearances result from an unintentional unevenness of or a deliberate slope in the poured concrete floors.

Smoke or heat detection systems are installed on both sides of the affected doors except as noted on the attached list. There are fourteen exceptions. Eleven of these exceptions involve stairwells; nine instances wherein the stairwell does not have detection, and two instances where small unprotected vestibules (Rooms 115 and 2115) are adjacent to protected stairwells. The remaining three exceptions involve doors between the diesel generator building switchgear rooms and the diesel generator-auxiliary building cable tunnels. These doors all have smoke detection on their diesel generator building side and automatic water suppression systems on their tunnel side. The in-situ combustible loading in the vicinity of the bottom of the doors is minimal. Transient loads are unlikely to be located near the doors because access to fire doors is routinely kept clear. Since the excessive gaps are located at the bottom of the doors, passage of smoke and heat is minimized in the event of a fire. The results of a liquid spill near a door with excessive clearance would not differ significantly from one near a door with prescribed clearance since a flow path exists under both doors. Therefore, the existence of the gaps at the bottom of the fire doors greater than those recommended in the NFPA 80 does not prevent each door from performing its intended function.

LIST OF FIRE DOORS THAT EXCEED
NFPA MAXIMUM GAP ALLOWANCE
REFERENCE GENERIC EXEMPTION REQUEST 1-41

UNIT 1

<u>DOOR NO.</u>	<u>BETWEEN ROOMS</u>	<u>LOCATION DESCRIPTION</u>	<u>ELEV.</u>
101	104 & Unit 2	Hallway to Unit 2 - WS	83'
150	155 & Unit 2	Hallway to Unit 2 - WS	100'
163	183 & 162	Hallway E of Spray Add Tank	100'
155	172 & 161	Corridor to Chg Pump Area	100'
102	103 & 107	Corridor to Storage Room	83'
*105	Str. #2 & 115	Stairwell - WS to Spray Pumps	77'
165	116 & 185	Entry to Cable Chase - CCW	100'
169	Str. #1 & 185	Stairwell to CCW	100'
201	254 & Unit 2	HSP Room to Unit 2	121'
207	202 & 210	Communications Room	121'
202	205 & Unit 2	Hallway to Unit 2 - C	121'
*205	208 & Str. #8	Stairwell - ES	121'
203	207 & Unit 2	Corridor to Unit 2 - ES	121'
210	212 & 213	Battery Room 1B	121'
217	226 & 225	SWGR 1B to Charger Room	121'
216	213 & 225	Charger Room to Corridor	121'
211	213 & 214	Corridor to Battery Room A	121'
219	228 & 229	Corridor to SWGR Room - N	121'
223	234 & 235	Corridor to CRDM Room - N	121'
224	234 & 235	Corridor to CRDM Room - S	121'

*This door has automatic smoke/heat detection on one side only.

LIST OF FIRE DOORS THAT EXCEED
NFPA MAXIMUM GAP ALLOWANCE
REFERENCE GENERIC EXEMPTION REQUEST 1-41

UNIT 1

<u>DOOR NO.</u>	<u>BETWEEN ROOMS</u>	<u>LOCATION DESCRIPTION</u>	<u>ELEV.</u>
225	234 & Str. #1	Stairwell - WS	121'
227	233 & 235	CRDM to SWGR Room	121'
240	250 & 235	Half Door to Cable Chase - E	121'
301	319 & Unit 2	Corridor to Unit 2 - WS	139'
302	316 & Unit 2	Corridor to Unit 2 - C	139'
304	309 & Unit 2	Big Door to Unit 2 - ES	139'
318	333 & 334	Room between Elect. Pen Rms - W	139'
311	317 & 322	Pen Filt Room	139'
312	318 & 319	Corridor to Cable Spr Room - N	139'
324	335 & 338	SWGR Room to Cable Chase - M	139'
322	343 & 339	Corridor to SWGR Room - S	139'
447	429 & Str. #2	Stairwell to Radwaste Vent Room	155'
402	405 & Unit 2	Double Doors Corridor to 2 - ES	155'
411	409 & Str. #2	Stairwell - WS	155'
*333	604 & Str. #10	Hallway to Stairwell	130'

DIESEL BUILDING

*732	56C & Cable Tunnel	SWGR Room to West Tunnel	155'
734	56A & 56B	Center Foyer to E SWGR	155'

*This door has automatic smoke/heat detection on one side only.

LIST OF FIRE DOORS THAT EXCEED
NFPA MAXIMUM GAP ALLOWANCE
REFERENCE GENERIC EXEMPTION REQUEST 1-41

UNIT 1

<u>DOOR NO.</u>	<u>BETWEEN ROOMS</u>	<u>LOCATION DESCRIPTION</u>	<u>ELEV.</u>
715	56A & 61	SWGR to 1-2A Diesel Room	155'
716	56A & 60	SWGR to 1C Diesel Room	155'
717	56B & 59	Foyer to 2B Diesel Room	155'
718	56C & 58	SWGR to 1B Diesel Room	155'
719	56C & 57	SWGR to 2C Diesel Room	155'
701	71 & 61	South Hallway to 1-2A Diesel	155'
704	71 & 60	South Hallway to 1C Diesel Room	155'
707	71 & 59	South Hallway to 2B Diesel Room	155'
710	71 & 58	South Hallway to 1B Diesel Room	155'
713	71 & 57	South Hallway to 2C Diesel Room	155'
700	71 & 66	Hallway to 1-2A Day Tank Room	155'
703	71 & 65	Hallway to 1C Day Tank Room	155'
706	71 & 64	Hallway to 2B Day Tank Room	155'
709	71 & 63	Hallway to 1B Day Tank Room	155'
712	71 & 62	Hallway to 2C Day Tank Room	155'
*731	56A & Cable Tunnel	SWGR Room to East Tunnel Unit II	155'
*733	56C & Cable Tunnel	SWGR Room to West Tunnel Unit II	155'

SERVICE WATER BUILDING

851	72C & 73	Foyer to 1B Battery Room	155'
853	72D & 74	Foyer to 1A Battery Room	155'

*This door has automatic smoke/heat detection on one side only.

LIST OF FIRE DOORS THAT EXCEED
NFPA MAXIMUM GAP ALLOWANCE
REFERENCE GENERIC EXEMPTION REQUEST 1-41

UNIT 2

<u>DOOR NO.</u>	<u>BETWEEN ROOMS</u>	<u>LOCATION DESCRIPTION</u>	<u>ELEV.</u>
*2105	Str. #2 & 2115	Stair No. 2	77'
*2154	Str. #8 & 2160	Stair No. 8	100'
2155	2172 & 2161	Corridor	100'
2159	Str. 2 & 2162	Hallway	100'
2163	2183 & 2162	Hallway	100'
2165	2197 & 2185	CCW HX Room	100'
2167	2198 & 218	CCW Hx Room	100'
2169	Str. #1 & 2185	Stair No. 1	100'
*2205	Str. #8 & 2207	Hatch Area	121'
2207	2202 & 2210	Corridor	121'
2212	Str. #2 & 2209	Hallway	121'
2215	2224 & 2225	Battery Charger Room	121'
2216	2225 & 2213	Battery Service Room	121'
2217	2226 & 2225	Battery Charger Room	121'
2222	2233 & 2228	Corridor	121'
2223	2235 & 2234	Hallway	121'
2224	2235 & 2234	Hallway	121'
2225	2234 & Str. #1	Stair No. 1	121'
2227	2235 & 2233	Switchgear Room	121'

*This door has automatic smoke/heat detection on one side only.

LIST OF FIRE DOORS THAT EXCEED
NFPA MAXIMUM GAP ALLOWANCE
REFERENCE GENERIC EXEMPTION REQUEST 1-41

UNIT 2

<u>DOOR NO.</u>	<u>BETWEEN ROOMS</u>	<u>LOCATION DESCRIPTION</u>	<u>ELEV.</u>
2241	2249 & 2235	Control Sys. Cab. Room	121'
*2305	Str. #8 & 2309	Hatch Area	139'
2312	2318 & 2319	Corridor	139'
2317	2334 & 2322	Hallway	139'
2318	2333 & 2334	Elec. Pene. Room	139'
2319	2337 & 2335	Load Center Room	139'
2322	2343 & 2339	Corridor	139'
2324	2338 & 2335	Load Center Room	139'
2329	2604 & 2602	Blow Down Panel Room	130'
*2333	2604 & Str. #10	Stair No. 10	130'
*2335	2609 & Str. #10	Stair No. 10	130'
2403	2405 & 406	Decon Room	155'
2404	2408 & 407	Hot Machine Shop	155'
2406	2405 & 407	Hot Machine Shop	155'
*2407	2405 & Str. #8	Stair No. 8	155'
*2431	2422 & Str. #10	Stair No. 10	155'
2439	2452 & Str. #1	Stair No. 1	155'
2447	2429 & Str. #2	Stair No. 2	155'
2327	2339 & 2346	MG Set Room	139'

*This door has automatic smoke/heat detection on one side only.