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AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

AGM/NTS 88-250

September 16, 1988

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Docket No. 50-312
Rancho Seco Nuclear Generating Station
License No. DPR-54
RESPONSE TO FIRE HAZARDS ANALYSIS, REQUEST FOR INFORMATION

Attention: George Knighton

The attached information is provided in response to your letter dated May 11, 1988, Fire Hazards Analysis, Request for Information. Members of your staff with questions requiring additional information or clarification may contact Dave Swank at (209) 333-2935, extension 4920.

Sincerely,

B G Croley

Bob G. Croley
Assistant General Manager
Nuclear Technical Services

Attachment

cc: A. D'Angelo, NRC, Rancho Seco
J. B. Martin, NRC, Walnut Creek

A006
1/1

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

1. NRC REQUEST

The licensee states that the Updated Fire Hazards Analysis (UFHA) included analyses for several new areas, including the Nuclear Services Electrical Building. Since these areas were not included in the 1977 Fire Hazards Analysis (FHA) the licensee should describe how the fire protection for these areas conforms with Appendix A to Branch Technical Position APCSB [9.5-1]. This response does not need to include the TDI Diesel Generator Building, since this has already been evaluated by the staff.

RESPONSE

Table 1 provides a listing of the 1977 FHAR fire areas and the 1987 UFHAR fire areas and identifies the new and revise fire areas. Previous BTP APCSB 9.5-1 or NUREG 0800 comparisons were reviewed to determine if the new fire area(s) had been previously evaluated for conformance to the Standard Review Plan.

The fire areas created since 1977 (with the exception of the TDI Bldg) are:

NSEB Fire Areas (75 through 91.2)	Previously reviewed by NRC (SER dated 6-4-85)
NSRW Pump Area (110)	New designation of an area previously reviewed (See BTP 9.5-1 submittal dated 8-31-76 regarding safety related pump areas).
Transformer Alley (70)	This fire area was designated in 1987 UFHA to allow tracking of cabling routed through the area for NNI/ICS and EFIC modifications. The transformer alley was described in Item 5.a.13 of the NSEB NUREG 0800 submittals (11-15-84, 3-21-85, 4-12-85, 4-16-85, and 5-14-85).

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

2. NRC REQUEST

The licensee has referenced a number of documents, related to the post-fire safe shutdown methodology, that were not listed in the July 1985 (UFHA). The licensee should identify how this methodology has changed from that which was evaluated by the staff in the May 19, 1986 safety evaluation.

RESPONSE

A comparison of the July 1985 list of post-fire safe shutdown equipment (July 1985 UFHAR Reference 17) and the 1987 UFHAR post-fire safe shutdown equipment list (1987 UFHAR Reference 18) was performed to identify the equipment added or deleted, and the bases for the changes. Table 2 provides this comparison.

The changes to the post-fire safe shutdown equipment list are summarized below:

- Components which are skid mounted with the Bruce die- generators are considered part of the diesel generat) and are no longer itemized on the safe shutdown equipment st.

- Addition of the TDI diesel generators and associated equipment, power panels, and cabling.

- Addition of the EFIC cabinets and associated control cabling.

- Additions to the auxiliary feedwater system, main feedwater system, and main steam system associated with the EFIC modifications.

- Certain steam generator instruments were deleted from the safe shutdown equipment list. New instruments associated with the EFIC system were added to the list.

- Changes of valve numbers were incorporated.

- As a result of modifications to the electrical distribution system, changes were ade to the lists of electrical buses which supply power to components required to operate for safe shutdown.

2. RESPONSE (cont)

- As a result of changes in the design of the NSEB HVAC system, the Train A and Train B normal/essential isolation was moved from dampers HV-50104 and HV-50105 to dampers HV-50126 and HV-50127.

  (Note: The final NSEB HVAC system design set the normal/essential isolation at HV-50104 and HV-50105. This change, as well as other changes resulting from the evaluation of Appendix R compliance of the final NSEB HVAC system configuration, will be reflected in future UFHAR revisions.)

- Control Room/TSC HVAC system filtration units SFA7A and SFA7B were deleted from the post-fire safe shutdown equipment list. These units are not required to operate to provide cooling to the Control Room/TSC. In the event of fire, the system is operated in the recirculation mode - radiological filtration is not required.

- Although not required to meet the separation requirements of Appendix R, Section III.G, certain components of the emergency communication system were added to the safe shutdown equipment list to ensure adequate communications capability is maintained to support alternative shutdown.

- The pressurizer spray valves were added to allow review of possible spurious valve operation. These valves were previously not included, as spray is isolated by trip of the reactor coolant pumps. These valves are added for information only and may be deleted from future revisions of the UFSAR.

- The reactor scram breaker cabinets were added to the safe shutdown equipment list for clarity only.

This comparison shows that the differences in safe shutdown methodolgy result primarily from the recent EFIC, TDI, and related modifications. The NRC review of the fire protection features for these modifications is documented in the respective SERs. (December 14, 1987, NUREG 1286).

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

3. NRC REQUEST

The licensee states that the UFHA incorporates changes in combustible loading since the previous FHA. The licensee should identify where these loadings have increased and the amount of change.

RESPONSE

Table 3 lists the combustible loadings from the 1977 FHAR, the 1985 UFHAR, and the 1987 UFHAR.

Table 3 shows that loadings have, in general, increased throughout the plant. The increased loadings are attributable to the following:

- Different combustible calculation methods used in the revisions to the UFHAR.
- Increased cable tray loadings due to cable pulls for recent plant modifications.
- Increased conservatism in cable combustible loading values.
- Walkdown surveys of area combustible loadings performed during plant outages. Because of the time period in which the surveys were conducted, certain construction related materials are included in the 1985 and 1987 UFHARs as in-situ combustible loading. In addition, the walkdowns conservatively estimated combustible loadings for items not normally considered as in-situ combustible loading, e.g. emergency lighting battery casings.

The 1987 UFHAR demonstrates the adequacy of the fire area boundaries to contain a design basis fire using these conservative combustible loading values.

(Note: The 1987 UFHAR did not include the combustible loading due to the charcoal filter installed on the Auxiliary Building roof (fire area RG1) as part of the below grade Auxiliary Building HVAC system modifications completed during the recent plant outage. This combustible loading increase (approximately 3,800 Btu/sq ft) will be included in future UFHAR revisions.)

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

4. NRC REQUEST

The licensee states that the Updated UFHA identifies changes in fire protection equipment since the previous FHA. The licensee should identify if any fire protection equipment has been deleted.

RESPONSE

The changes in the 1987 UFHAR descriptions of the fire protection equipment for each area result from the following:

- Different interpretations of extent of coverage provided by an area's installed suppression system. Table 4 shows the areas where descriptions of area suppression have been revised.

- Different interpretations of the number of hose stations considered available from adjacent fire areas for manual fire fighting. No hose stations have been physically removed from the plant.

- Changes in placement of portable fire extinguishers. Extinguisher placement is reviewed and modified as required to reflect extinguisher agent improvements, and changes in plant facilities and hazards. Fire extinguishers are located in accordance with the requirements of NFPA-10.

Note: Subsequent to the issuance of the 1987 UFHAR, certain additional changes were made to the fire protection systems:

- Analysis of associated circuits issues related to the dampers used to isolate the NSEB carbon dioxide fire suppression systems necessitated the temporary disablement of these systems. Future licensing submittals will reflect the final configuration of these fire suppression systems.

- To ensure that fire extinguishers are supplied to required locations in a timely manner, information on portable extinguisher placement will be deleted from the UFHAR and controlled by plant administrative procedure.

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

5. NRC REQUEST

Item (6) on page 1-2 states that changes in the fire ratings of Appendix R fire barriers have been incorporated into the UFHA. The licensee should identify where if any, barrier ratings have been reduced along with justification of the new rating.

RESPONSE

The changes in the 1987 UFHAR regarding the fire rating of the fire barriers which form fire area boundaries result from a reevaluation of the fire rating of barriers constructed of metal stud and plaster partition. The fire area boundaries which were reevaluated are detailed in Table 5.

The acceptability of the revised barrier ratings is demonstrated in the UFHAR analysis for each fire area. The metal stud/plaster partition construction has been rerated for a one hour fire rating. The acceptability of the new rating is based on the low fire loadings within the fire areas involved.

RESPONSE TO CHEMICAL ENGINEERING BRANCH
REQUEST FOR ADDITIONAL INFORMATION
RANCHO SECO UPDATED FIRE HAZARDS ANALSYIS REPORT

6. NRC REQUEST

The licensee should identify if the changes in fire area configuration in the UFHA, from those in the 1977 FHA, [a]ffect any plant commitments to the guidelines of Branch Technical Position APCSB 9.5-1.

RESPONSE

The changes in fire area configuration are summarized below:

- Based on a review of wall construction, penetration ratings, fire loadings and separation requirements, certain of the 1977 FHAR fire areas have been redesignated as sub-fire areas of a larger "revised" fire area. The revised fire areas are:

  RT1 - Auxiliary Bldg Turbine Deck
  RM1 - Auxiliary Bldg Mezzanine Level
  RG1 - Auxiliary Bldg Grade Le
  RG3 - Auxiliary Bldg Elevator No. 2 and Machinery Room
  RB1 - North Auxiliary Bldg Below Grade
  RB2 - South Auxiliary Bldg Below Grade

  Boundaries of the sub-fire areas, which are now interior walls within the revised fire area(s), are no longer assigned a fire rating.

  The changes to the modifications listed in the Safety Evaluation Report for Rancho Seco License Amendment 19 which result from the revised fire area boundaries have been previously identified and submitted in R. J. Rodriquez to F. J. Miraglia letter dated January 16, 1986.

6.0 RESPONSE (cont)

- Subsequent to the issuance of the 1987 UHFAR, additional changes were made to the fire area boundaries within the NSEB. The fire area boundaries of the battery rooms and electrical equipment rooms were revised in order to clarify fire watch requirements for the walls within these areas. No physical changes are related to this change. Interior fire area wall fire ratings are maintained as non-Technical Specification boundaries. The changes in fire area numbering are detailed below.

  - Fire areas formerly designated as 75/1, 75/2, and 75/3 are redesignated as sub-fire areas of fire area 75.

  - Fire areas formerly designated as 76/1, 76/2, and 76/3 are redesignated as sub-fire areas of fire area 76.

  - Fire areas formerly designated as 77/1 and 77/2 are redesignated as sub-fire areas of fire area 77.

  - Fire areas formerly designated as 78/1 and 78/2 are redesignated as sub-fire areas of fire area 78.

- Changes in the configuration of fire area suppression, detection, combustible loading, and safe shutdown equipment location are identified in the responses to Items 1-5, and in the current UFHAR.

TABLE 1
UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING						
1	Control and Computer Room	338-344	1	Control and Computer Room	338-344	
2	Technical Support Center	333-336	2	Instrument Shop	333-337	No change in fire area boundaries. Internal walls reconfigured to support change in occupancy.
6	Chemical Storage Room	326	6	Chemical Storage Room	326	
15	West Station Battery Room	220	15	West Station Battery Room	220	
16	West AC/DC Panel Room	218, 219	16	West AC/DC Panel Room	218, 219	
17	West 480V Switchgear Room	217	17	West 480V Switchgear Room	217	
18	West Cable Shaft	055, 123, 216	18	West Cable Shaft	055, 123, 216	
19	East Cable Shaft	054, 122, 215	19	East Cable Shaft	054, 122, 215	
20	East 480V Switchgear Room	214	20	East 480V Switchgear Room	214	
21	East AC/DC Panel Room	212, 213	21	East AC/DC Panel Room	212, 213	
27	Ventilation Equipment/ Electrical Penetration Area	208, 211	27	Ventilation Equipment Room (Electrical Penetration Area)	211	No change in fire area boundaries. 1977 FHAR listing missing Room 208.

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
28	Electrical Penetration/ Radiation Monitoring Area	209	28	Electrical Penetration and Radiation Monitoring Area	209	
30	West Nuclear Service Battery Room	125, 126	30	Nuclear Service Battery Room	125, 126	
31	West 4160V Switchgear Room	124	31	West 4kV Swicthgear Room	124	
32	East 4160V Switchgear Room	121	32	East 4kV Switchgear Room	121	
33	East Nuclear Service Battery Room	119, 120	33	East Nuclear Service Battery Room	119, 120	
36	Main Corridor - Grade Level	103, 104 105	36	Main Corridor - Grade Level	103 - 105	
37	North Diesel Generator Room	132	37	North Diesel Generator Room	132	
38	South Diesel Generator Room	130	38	South Diesel Generator Room	130	
47	Corridor and Stair to (-47') Level	010, 056, 127, 138	47	Corridor to -47 Level	010, 056 127, 138	
48	Train A High Pressure Injection Pump Room	053	48	High Pressure Injection Pump "A" Room	053	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
56	Train A Decay Heat Pump Room	001	56	West Decay Heat Removal Pump Room	001	
57	Train B Decay Heat Pump Room	002, 003	57	East Decay Heat Removal Pump Room	002, 003	
61	Elevator No 1	115, 203 315	61	Elevator No. 1	115, 203, 315	
62	Stairwell No. 2	131, 222, 345	62	Stairwell	131, 222, 345	
64	Toilet - Ground Floor	135	64	Toilet - Ground Floor	135	
67	Stairwell No. 1	101, 201, 301	67	Stair No. 1	101, 201, 301	
72	Stairwell No. 3	116, 210 318	72	Stair No. 3	116, 210, 318	
74	Auxiliary Building Roof	---	74	Auxiliary Building Roof	---	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
RB1	North Auxiliary Building - Below Grade	044 - 052	49	West Containment Penetration Valve Area	052	Based on review of wall construction, penetration ratings, fire loading, and separation requirements, the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RB1 in the 1985 UFHAR.
			50	East Containment Penetration Valve Area	045, 051	
			51	Radwaste Air Supply Fan Room	050	
			52	Seal Return Cooler Room	046, 049	
			58	Make-Up Pump Room	044	
			60	Spent Resin Tank Room	047, 048	

TABLE 1
UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
R32	South Auxiliary Building - Below Grade	011 - 043 057, 058 107, 111	40	Waste Gas Compressor Room	022	Based on review of wall construction, penetration ratings, fire loadings, and separation requirements. the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RB2 in the 1985 UFHAR.
			41	Waste Gas Decay Tank Room	018	
			42	Miscellaneous Waste Gas Condensate Tank Room	021	
			43	Deboration Ion Exchange and Miscellaneous Waste Condensate Demineralizer Room	019, 020	
			44	Misc. Waste Concentrate Rm	023, 024	
			45	Boric Acid Evaporator Room	025	
			46	Main Corridor - Below Grade	011 - 013, 015, 016, 020, 036, 057, 058, 107	No change in sub-fire area boundaries. 1977 FHAR listing missing Room 111.
			53	Ion Exchange Valve Area	027 - 035	
			54	Miscellaneous Waste Filter Rm	026	
			55	Tank Farm - Below Grade	037 - 042	
			59	HPI Pump 'B' Room	043	
			66	Miscellaneous Waste Tank Rm	014, 017	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
RG1	Auxiliary Building - Grade Level	202, 204, 208, 106, 109, 110 112, 113, 114, 117, 118, 133, 134, 136	22	Air Conditioning Room	202, 204, 208	Based on review of wall construction, penetration ratings, fire loadings, and separation requirements, the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RG1 in the 1985 UFHAR.
			34	Electrical Penetration Area, Ion Exchange, and Chemical Storage Area	106, 109, 110, 114 117, 118	No change in sub-fire area 34 boundaries. 1977 FHAR listing missing Rooms 133, 136.
			35	Hot Machine Shop	134	
			39	Waste Solidification Area	112	
			65	Make-Up Tank Room	113	
			--	Auxiliary Building Roof Elevation 20'		
RG3	Auxiliary Building - Elevator No. 2 and Machinery Room	129, 221 346, 128	63	Elevator No. 2	129, 221, 346	Based on review of wall construction, penetration ratings, fire loadings, and separation requirements, the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RG3 in the 1985 UFHAR.
			70	Elevator Machinery Room	128	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
RM1	Auxiliary Building - Mezzanine Level	206, 207, 223, 224N, 224S, 225, 226, 227	23	Sample Cooler Chiller Room	225	Based on review of wall construction, penetration ratings, fire loadings, and separation requirements, the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RM1 in the 1985 UFHAR.
			24	North Communication Rm	224N, 227	
			25	South Communication Rm	224S	
			26	Storage Room	223	
			29	Main Corridor, Mezzanine	206, 207, 226	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
AUXILIARY BUILDING (continued)						
RT1	Auxiliary Building - Turbine Deck Level	302 - 306, 308, 309, 314, 316, 317, 319, 320, 321, 322E, 322W, 323, 324, 325, 327, 328, 329, 330 - 332 349 - 353	3	Health Physics Office	330 - 332	Based on review of wall construction, penetration ratings, fire loadings, and separation requirements, the 1977 FHAR fire areas were redesignated as sub-fire areas of revised fire area RT1 in the 1985 UFHAR.
			4	Clean Locker Room	304 - 308, 353	
			5	Conference Room	349	No change in sub-fire area 4 boundaries. 1987 UFHAR listing missing Room 307. 1977 FHAR listing missing Room 353.
			7	Storage Room	325	
			8	Chemical Laboratory and Sample Station	327, 328	
			9	Radio Chem Laboratory	319, 320	
			10	Calibration and Source Storage Room	324	
			11	Chemical Storage Room	323	
			12	Corridor to Spent Fuel Building	322	
			13	Reactor Building Access Area	309-313 316, 317 350, 351	
			14	Turbine Deck Corridor	302, 303, 329	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
REACTOR BUILDING						
68	Reactor Building	----	68	Reactor Building	----	
TURBINE BUILDING						
71	Turbine Buidling	----	71	Turbine Building	----	
FUEL STORAGE BUILDING						
73	Fuel Storage Building	----	73	Fuel Storage Building	----	

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
YARD AREA						
69	Reactor Yard Area	----	69	Fenced Yard Area	----	
70	Transformer Alley	368, 369. ext				New fire area designation of areas described in NSEB NUREG 0800 comparison. The Transformer Alley, an exterior area at grade, was not previously assigned a fire area designation since the previous analyses did not indicate that safety related or safe shutdown circuitry or components were located in the area. The resolution of NCR S5432 designated the area as fire area 70 in order to track cabling routed through the area in overhead conduits. The area was described in Item 5.a.13 of the NSEB NUREG 0800 submittal. The NSEB access bridge, formerly fire area 85/4, was redesignated as a sub-fire area of the Transformer Alley since the bridge is not separated by fire rated assemblies from the transformer hazard below.
110	Nuclear Service Raw Water Pump Area	---	---	----		The Nuclear Service Raw Water Pump Area was not assigned a fire area designation in the 1977 FHAR, but was previously reviewed against BTP APCSB guidelines (for safety-related pumps). (Refer to 8-31-76 submittal.)

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR			1977 FHAR			
Area	Description	Room(s)	Area	Description	Room(s)	Comments
NUCLEAR SERVICE ELECTRICAL BUILDING						
75.1	Train B Switchgear Room	146				NSEB fire areas designated in 1985.
75.2	Train B Battery Room	142				
75.3	Channel D Battery Room	143				
76.1	Train A Switchgear Room	147				
76.2	Train A Battery Room	145				
76.3	Channel C Battery Room	144				
77.1	Channel D Electrical Equipment Room	232				
77.2	Train B Electrical Equipment Room	234				
78.1	Channel C Electrical Equipment Room	233				
78.2	Train A Electrical Equipment Room	235				
79	Battery Room GB	371				
80	Battery Room GA	370				

TABLE 1
UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
NUCLEAR SERVICE ELECTRICAL BUILDING (continued)						
81	Train B Cable Shaft and Tunnel	061, 148, 238				
82	Train A Cable Shaft and Tunnel	062, 149, 239				Typographical error in 1985 UFHAR lists Room 239 as Room 139
83.1	Corridor at El. 1'6"	141				
83.2	Stairwell No. 11	151, 240, 366, 403				
84.1	Corridor at El. 21'6"	231				
84.2	Train B Mechanical Equipment Room	236				
84.3	Train A Mechanical Equipment Room	237				
85.1	Corridor at El. 40'0"	361				
85.2	Train A Cable Room	364				
85.3	Train B Cable Room	365				
85.5	Elevator and Machinery Room	150, 241, 367, 401				

TABLE 1

UFHAR FIRE AREA COMPARISON

1987 UFHAR Area	Description	Room(s)	1977 FHAR Area	Description	Room(s)	Comments
NUCLEAR SERVICE ELECTRICAL BUILDING (continued)						
87	Computer Room B	362				
89	Computer Room A	363				
91.1	Vestibule at El. 60'0"	402				
91.2	NSEB Roof	---				
TDI DIESEL BUILDING						
105	A2 Diesel Generator Rooms	161, 162, 250				TDI Diesel Building fire areas designated in 1987 UFHAR.
106	B2 Diesel Generator Rooms	163, 164, 251				
120	A2 Radiator Fan Area	---				
121	A2 Diesel Fuel Pump Vault	---				
122	B2 Radiator Fan Area	---				
123	B2 Diesel Fuel Pump Vault	---				
124	TDI Diesel Building Roof	---				

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Deleted From 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description		Basis for Change
EGS	E-886-6A	DG Lube Oil Heat Exchanger	(G-886A)	Components which are skid-mounted with the Bruce-GM diesel are considered integral to the diesel and are no longer itemized on the safe shutdown equipment list.
	E-886-6B	DG Lube Oil Heat Exchanger	(G-886B)	
	ED FOP	Engine Driven Fuel Oil Pump	(G-886A)	
	ED FOP	Engine Driven Fuel Oil Pump	(G-886B)	
	F-877A	DG Lube Oil Filter	(G-886A)	
	F-877B	DG Lube Oil Filter	(G-886B)	
	F-886-1A	DG Fuel Filter	(G-886A)	
	F-886-1B	DG Fuel Filter	(G-886B)	
	F-894A	DG Air Intake Filter	(G-886A)	
	F-894B	DG Air Intake Filter	(G-886B)	
	FV-89029	DG Starting Air Control	(G-886A)	
	FV-89030	DG Starting Air Control	(G-886B)	
	FV-89031	DG Starting Air Control	(G-886A)	
	FV-89032	DG Starting Air Control	(G-886B)	
	FY-89025	DG Starting Air Control	(G-886A)	
	FY-89026	DG Starting Air Control	(G-886B)	
	FY-89027	DG Starting Air Control	(G-886A)	
	FY-89028	DG Starting Air Control	(G-886B)	
	LSHL89303A	DG Fuel Oil Day Tank Level Switch	(G-886A)	
	LSHL89303B	DG Fuel Oil Day Tank Level Switch	(G-886A)	
	LSHL89304A	DG Fuel Oil Day Tank Level Switch	(G-886B)	
	LSHL89304B	DG Fuel Oil Day Tank Level Switch	(G-886B)	
	MD FOP	Motor Driven Fuel Oil Pump	(G-886A)	
	MD FOP	Motor Driven Fuel Oil Pump	(G-886B)	
	P-881A	DG Scavenging Lube Oil Pump	(G-886A)	See above.
	P-881B	DG Scavenging Lube Oil Pump	(G-886B)	
	P-883A	DG Main Lube Oil Pump	(G-886A)	
	P-883B	DG Main Lube Oil Pump	(G-886B)	

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Deleted From 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
EGS (cont)	P-886-5A	DG Cooling Water Pump	(G-886A)
	P-886-5B	DG Cooling Water Pump	(G-886A)
	P-886-5C	DG Cooling Water Pump	(G-886B)
	P-886-5D	DG Cooling Water Pump	(G-886B)
	P-893-1A	DG Fuel Suction Filter	(G-886A)
	P-893-1B	DG Fuel Suction Filter	(G-886B)
	PCV-88301	DG Fuel Oil Control Valve	(G-886A)
	PCV-88302	DG Fuel Oil Control Valve	(G-886B)
	PCV-88601	DG Fuel Oil Control Valve	(G-886A)
	PCV-88602	DG Fuel Oil Control Valve	(G-886B)
	PCV-88603	DG Fuel Oil Control Valve	(G-886A)
	PCV-88604	DG Fuel Oil Control Valve	(G-886B)
	TCV-88601	DG Cooling Water Control Valve	(G-886A)
	TCV-88602	DG Cooling Water Control Valve	(G-886B)
	T-886-4A	DG Cooling Water Expansion Tank	(G-886A)
	T-886-4B	DG Cooling Water Expansion Tank	(G-886B)
	Y-882A	DG Lube Oil Strainer	(G-886A)
	Y-882B	DG Lube Oil Strainer	(G-886B)
	Y-886-2A	DG Fuel Strainer	(G-886A)
	Y-886-2B	DG Fuel Strainer	(G-886B)
	Y-890-1A	DG Starting Air Motor	(G-886A)
	Y-890-1B	DG Starting Air Motor	(G-886A)
	Y-890-1C	DG Starting Air Motor	(G-886A)
	Y-890-1D	DG Starting Air Motor	(G-886A)
	Y-890-1E	DG Starting Air Motor	(G-886B)
	Y-890-1F	DG Starting Air Motor	(G-886B)
	Y-890-1G	DG Starting Air Motor	(G-886B)
	Y-890-1H	DG Starting Air Motor	(G-886B)

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Deleted From 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
FWS-MFW	FV-20529	Main Feedwater Isolation Valve	Valve redesignated HV-20529.
	FV-20530	Main Feedwater Isolation Valve	Valve redesignated HV-20530.
FWS-AFW	FV-30801	AFW Pump P-318 Turbine Steam Control Valve	Valve redesignated HV-30801.
	SFV-20577	AFW Flow Control to Steam Generator A	Valve redesignated HV-20577.
	SFV 20578	AFW Flow Control to Steam Generator B	Valve redesignated HV-20578.
HVS (NSEB)	HV-50104	NSEB Train B Normal/Essential Isolation Damper	Damper HV-50126 added to list to replace HV-50104.
	HV-50105	NSEB Train A Normal/Essential Isolation Damper	Damper HV-50127 added to list to replace HV-50105.
HVS (CR/TSC)	SF-A-7A	Control Room/TSC HVAC Train A Filtration Unit	These units are not required to operate to provide cooling to the Control Room/TSC. In the event of fire, the control room system is operated in recirculation mode; radiological filtration is not required.
	SF-A-7B	Control Room/TSC HVAC Train B Filtration Unit	
MSS	PV-20562A	Atmospheric Steam Dump Valve	Changes associated with EFIC modifications. Two of the three ADVs per steamline are normally blocked closed during reactor operation via upstream manually operated valves. The unblocked ADVs are designated PV-20562 and PV-20571 (or PV-20562A and PV-20571A in the UFHAR).
	PV-20562B	Atmospheric Steam Dump Valve	
	PV-20562C	Atmospheric Steam Dump Valve	
	PV-20571A	Atmospheric Steam Dump Valve	
	PV-20571B	Atmospheric Steam Dump Valve	
	PV-20571C	Atmospheric Steam Dump Valve	
SIM/PLS	PV-23606	Seal Injection Flow Control Valve	Valve redesignated FV-23606.
RCS	HV-20535	Steam Generator A High Point Vent Valve	Valve redesignated HV-20579.
	HV-20536	Steam Generator B High Point Vent Valve	Valve redeisgnated HV-20580.
	HV-21520	Pressurizer Vent and Sample Isolation Valve	Valve redesignated HV-21528.

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Deleted From 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
SG INST	LT-20501A	Steam Generator A Wide Range Level (also at H2SD)	Level transmitters LT-20507A, LT-20507B, LT-20508A and LT-20508B added.
	LT-20502A	Steam Generator B Wide Range Level (also at H2SD)	
	PT-20519B	Steam Generator A Wide Range Pressure	Pressure transmitters PT-20545A, PT-20545B, PT-20546A and PT-20546B added.
	PT-20520A	Steam Generator B Wide Range Pressure	
	PT-20543A	Steam Generator A Wide Range Pressure	
	PT-20543B	Steam Generator B Wide Range Pressure	
	PT-20543C	Steam Generator A Wide Range Pressure (also at H2SD)	
	PT-20543D	Steam Generator B Wide Range Pressure (also at H2SD)	
120VAC	S1N1	Non-Vital Distribution Panel	Distribution panel no longer supplies power to components required to operate for safe shutdown.
	S1N1-1	Non-Vital Inverter	
125VDC	H48N1	Battery Charger	See S1N1 above.

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Added To 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
EGS	E-104A	DG G-100A Radiator	Addition of TDI diesel generators and associated systems and equipment.
	E-104A-F1	DG G-100A Radiator Fan	
	E-104A-F2	DG G-100A Radiator Fan	
	E-104A-F3	DG G-100A Radiator Fan	
	E-104A-F4	DG G-100A Radiator Fan	
	E-104A-F5	DG G-100A Radiator Fan	
	E-104A-F6	DG G-100A Radiator Fan	
	E-104B	DG G-100B Radiator	
	E-104B-F1	DG G-100A Radiator Fan	
	E-104B-F2	DG G-100A Radiator Fan	
	E-104B-F3	DG G-100A Radiator Fan	
	E-104B-F4	DG G-100A Radiator Fan	
	E-104B-F5	DG G-100A Radiator Fan	
	E-104B-F6	DG G-100A Radiator Fan	
	G-100A	TDI A2 Diesel Engine	
	G-100B	TDI B2 Diesel Engine	
	GEA2	TDI A2 Diesel Generator	
	GEB2	TDI B2 Diesel Generator	
	H2DEA2	TDI A2 Diesel Engine Control Panel	
	H2DEB2	TDI B2 Diesel Engine Control Panel	
	H2DGA2	TDI A2 Diesel Generator Control Panel	
	H2DGB2	TDI B2 Diesel Generator Control Panel	
	P-108A	TDI A2 Fuel Oil Transfer Pump	
	P-108B	TDI B2 Fuel Oil Transfer Pump	
	P-108C	TDI A2 Fuel Oil Transfer Pump	
	P-108D	TDI B2 Fuel Oil Transfer Pump	

TABLE 2

UFHAR POST-FIRE SAFF SHUTDOWN EQUIPMENT COMPARISON

Items Added To 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
EGS (cont)	T-100A	TDI A2 Diesel Fuel Oil Day Tank	See above.
	T-100B	TDI B2 Diesel Fuel Oil Day Tank	
	T-108A	TDI A2 Fuel Oil Storage Tank	
	T-108B	TDI B2 Fuel Oil Storage Tank	
	V-101A	TDI A2 Air Start Receiver	
	V-101B	TDI B2 Air Start Receiver	
	V-101C	TDI A2 Air Start Receiver	
	V-101D	TDI B2 Air Start Receiver	
	Y-106A	TDI A2 Intake Air Silencer	
	Y-106B	TDI B2 Intake Air Silencer	
	Y-107A	TDI A2 Exhaust Air Silencer	
	Y-107B	TDI B2 Exhaust Air Silencer	
COMM	H5PRF	UHF Radio Emergency Repeater Station	Although not required to meet separation requirements of Appendix R, Section III.G, this equipment was added to the list to allow engineers to track recent communication system modifications to ensure adequrte communication capability to support alternative shutdown procedures.
	H7T566	UHF Radio Control Console	
EFIC	H4FWA	EFIC Control Cabinet	Addition of EFIC cabinets
	H4FWB	EFIC Control Cabinet	
	H4FWC	EFIC Control Cabinet	
	H4FWD	EFIC Control Cabinet	
FWS-MFW	HV-20515	Steam Gererator A MFW Block Valve	Addition of new main feedwater system valve
	HV-20516	Steam Generator B MFW Block Valve	Addition of new main feedwater system valve
	HV-20529	Steam Generator A MFW Control Valve	Existing valve FV-20529 renumbered to HV-20529.
	HV-20530	Steam Generator B MFW Control Valve	Existing valve FV-20530 renumbered to HV-20530.

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Added To 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
FWS-AFW	FV-20531	AFW Flow Control to Steam Generator A	Addition of new AFW valve, parallel to existing FV-20527
	FV-20532	AFW Flow Control to Steam Generator B	Addition of new AFW valve, parallel to existing FV-20528
	HV-20577	AFW Block Valve to Steam Generator A	Existing valve SFV-20577 renumbered to HV-20577.
	HV-20578	AFW Block Valve to Steam Generator B	Existing valve SFV-20578 renumbered to HV-20578.
	HV-20581	AFW Block Valve to Steam Generator A	Addition of new AFW valve.
	HV-20582	AFW Block Valve to Steam Generator B	Addition of new AFW valve.
	HV-30801	AFW Pump P-318 Turbine Steam Control Valve	Existing valve FV-30801 renumbered to HV-30801.
HVS (NSEB)	HV-50126	NSEB Train B Normal/Essential Isolation Damper	Added to list to replace HV-50104.
	HV-50127	NSEB Train A Normal/Essential Isolation Damper	Added to list to replace HV-50105.
HVS (CR/TSC)	HV-54737	Control Room/TSC HVAC Supply to the TSC	Addition of new CR/TSC HVAC system damper.
	HV-54738	Control Room/TSC HVAC Return from the TSC	Addition of new CR/TSC HVAC system damper.
HVS (TDI)	AH-DG-1A	DG G-100A Essential Air Handling Unit	Addition of TDI diesel generators and associated systems and equipment.
	AH-DG-1B	DG G-100B Essential Air Handling Unit	
	EF-556A	DG G-100A Essential Exhaust Fan	
	EF-556B	DG G-100B Essential Exhaust Fan	
	HV-55711	TDI Diesel A2 HVAC Control Room Supply Damper	
	HV-55712	TDI Diesel B2 HVAC Control Room Supply Damper	
	HV-55713	TDI Diesel A2 HVAC Control Room Exhaust Damper	
	HV-55714	TDI Diesel B2 HVAC Control Room Exhaust Damper	
MSS	HV-20517	Steam Generator A ADV Block Valve	Addition of new main steam system valve.
	HV-20518	Steam Generator B ADV Block Valve	Addition of new main steam system valve.
	HV-20521	Steam Generator A TBV Block Valve	Addition of new main steam system valve.
	HV-20522	Steam Generator B TBV Block Valve	Addition of new main steam system valve.

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Added To 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
RCS	HV-20579	Steam Generator A High Point Vent Valve	Valve HV-20535 retagged as HV-20579.
	HV-20580	Steam Generator B High Point Vent Valve	Valve HV-20356 retagged as HV-20580.
	HV-21528	Pressurizer High Point Vent Valve	Valve HV-21520 retagged as HV-21528.
	PV-21509	Pressurizer Spray Valve	Added to allow review of potential spurious operation
	PV-21520	Pressurizer Spray Valve	Added to allow review of potential spurious operation.
RPS	H4RBA	AC Scram Breaker Cabinet	Added to list for clarity.
	H4RBB	AC Scram Breaker Cabinet	Added to list for clarity.
	H4RBD	DC Scram Breaker Cabinet	Added to list for clarity.
SIM/PLS	FV-23606	Seal Injection Flow Control Valve	Existing valve PV-23606 renumbered to FV-23606.
SG INST	LT-20507A	Steam Generator A Wide Range Level (also on H2SD)	Addition of new steam generator level and pressure transmitters.
	LT-20507B	Steam Generator A Wide Range Level	
	LT-20508A	Steam Generator B Wide Range Level (also on H2SD)	
	LT-20508B	Steam Generator B Wide Range Level	
	PT-20545A	Steam Generator A Wide Range Pressure (also on H2SD)	
	PT-20545B	Steam Generator A Wide Range Pressure	
	PT-20546A	Steam Generator B Wide Range Pressure	
	PT-20546B	Steam Generator B Wide Range Pressure (also on H2SD)	

TABLE 2

UFHAR POST-FIRE SAFE SHUTDOWN EQUIPMENT COMPARISON

Items Added To 1985 UFHAR Safe Shutdown Equipment List

System	Component	Description	Basis for Change
120VAC	S1A3	NSEB 120V Distribution Panel	Addition of buses which supply power to equipment required to operate for post-fire safe shutdown. Changes in the list of required power supply buses reflect changes in bus loads.
	S1A4	TDI A2 120V Distribution Panel	
	S1B3	NSF[illegible] 120V Distribution Panel	
	S1B4	TD[illegible] B2 120V Distribution Panel	
	S1GB-1	Non-Vital Distribution Panel	
	S1GB	Non-Vital Inverter	
	S1J	Non-Vital Distribution Panel	
480VAC	S2A4	TDI A2 480V Motor Control Center	Addition of TDI diesel generators and associated systems and equipment.
	S2B4	TDI B2 480V Motor Control Center	
125VDC	BGB	Non-Vital Battery Bank	See 120VAC above.
	H4BGB	Non-Vital Battery Charger	
	H4SDBO	SF Channel B Relay Power Cabinet	

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING							
1	Control and Computer Room	10,540	cable	38,210	cable, class A paper, carpet miscellaneous	38,684	cable, class A paper, carpet miscellaneous
2	Technical Support Center (formerly Instrument Shop)	47,370	class A, paper	46,727	cable, paper class A, miscellaneous	48,017	cable, paper class A, miscellaneous
6	Chemical Storage Room	35,600	class A miscellaneous	134,450	class A, paper	15,165	class A, paper miscellaneous
15	West Station Battery Room	10,162	cable	38,270	cable, plastic	56,696	cable, plastic miscellaneous
16	West AC/DC Panel Room	74,370	cable	97,054	cable	97,301	cable, plastic
17	West 480V Switchgear Room	92,960	cable	185,974	cable	191,598	cable, plastic class A
18	West Cable Shaft	3,390**	cable	242,832	cable	267,403	cable
19	East Cable Shaft	3,600**	cable	334,087	cable	351,044	cable

** Values are based upon oxygen depletion within the fire area

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (cont)							
20	East 480V Switchgear Room	78,660	cable	116,901	cable	119,350	cable, misc
21	East AC/DC Panel Room	8,055	elec cabinets	8,505	elec cabinets	952	elec cabinets
27	Ventilation Equipment/ Electrical Penetration Area	83,630	charcoal, cable	65,471	charcoal, cable, misc	66,765	charcoal, cable miscellaneous
28	Electrical Penetration/ Radiation Monitoring Area	14,540	cable	29,[illegible]7	cable, misc hydrogen	28,291	cable, misc
30	West Nuclear Service Battery Room	9,966	cable	18,016	cable, battery cases miscellaneous	22,424	cable, battery cases miscellaneous
31	West 4160V Switchgear Room	49,600	cable	53,211	cable, miscellaneous	74,720	cable, miscellaneous
32	East 4160V Switchgear Room	39,500	cable	46,232	cable, miscellaneous	67,453	cable, miscellaneous
33	East Nuclear Service Battery Room	24	cable	16,115	cable, battery cases, miscellaneous	16,435	cable, battery cases, miscellaneous
36	Main Corridor - Grade Level	46,700	cable	70,006	cable, class A miscellaneous	98,362	cable, class A, miscellaneous

TABLE 3

UNFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)							
37	North Diesel Generator Room	92,040	oil, cable	95,098	oil, cable, miscellaneous	96,982	oil, cable, miscellaneous
38	South Diesel Generator Room	93,800	oil, cable	115,662	oil, cable, miscellaneous	105,363	oil, cable, miscellaneous
47	Corridor and Stair to (-47') Level	9,500	cable	18,103	cable, class A miscellaneous	20,364	cable, class A, miscellaneous
48	Train A High Pressure Injection Pump Room	31,540	oil	31,054	oil	31,469	oil, misc
56	Train A Decay Heat Pump Room	2,186	cable	3,242	cable, miscellaneous	7,716	cable, miscellaneous
57	Train B Decay Heat Pump Room	3,150	cable	882	cable, miscellaneous	5,251	cable, miscellaneous
61	Elevator No. 1	-----	-----	-----	-----	----	-----
62	Stairwell No. 2	-----	-----	1,785	miscellaneous	4,071	miscellaneous
64	Toilet - Ground Floor	35,800	cable	78,319	cable, class A, miscellaneous	143,681	cable, class A, miscellaneous
67	Stairwell No. 1	-----	-----	500	miscellaneous	7,883	miscellaneous

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)							
72	Stairwell No. 3	-----	-----	2,105	miscellaneous	2,105	miscellaneous
74	Auxiliary Building Roof	-----	-----	703	oil, charcoal	1,068	oil, charcoal, miscellaneous
RB1	North Auxiliary Building - Below Grade						
49	West Containment Valve Area	4,480	cable	5,544	cable, miscellaneous	6,470	cable, miscellaneous
50	East Containment Valve Area	11,550	cable	8,341	cable, miscellaneous	12,952	cable, miscellaneous
51	Radwaste Air Supply Fan Room	-----	-----	-----	-----	1,798	miscellaneous
52	Seal Return Cooler Room	-----	-----	-----	-----	190	miscellaenous
58	Make-Up Pump Room	20,150	oil, cable	22,488	oil, miscellaneous	22,489	oil, miscellaneous
60	Spent Resin Tank Room	-----	-----	-----	-----	-----	-----

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)							
RB2	South Auxiliary Building - Below Grade						
40	Waste Gas Compressor Room	4,080	oil, cable	5,170	oil, cable	5,171	oil, cable
41	Waste Gas Decay Tank Room	-----	-----	-----	-----	-----	-----
42	Miscellaneous Waste Gas Condensate Tank Room	2,245	cable	2,802	cable	2,658	-----
43	Deboration Ion Exchange and Misc Waste Cond Demin Room	-----	----	78	miscellaneous	-----	-----
44	Misc. Waste Concentrator Rm	840	cable	1,376	cable	1,339	cable
45	Boric Acid Evaporator Room	2,072	cable	3,701	cable, plastic	3,320	cable
46	Main Corridor - Below Grade	19,870	cable	67,513	cable, class A, oil, miscellaneous	42,432	cable, class A, oil, miscellaneous
53	Ion Exchange Valve Area	-----	-----	-----	-----	-----	-----
54	Miscellaneous Waste Filter Rm	-----	-----	-----	-----	-----	-----
55	Tank Farm - Below Grade	-----	-----	-----	-----	-----	-----
59	HPI Pump 'B' Room	17,000	oil, cable	16,384	oil	16,384	oil
66	Miscellaneous Waste Tank Rm	6,610	cable	9,741	cable	8,404	cable

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)							
RG1	Auxiliary Building Grade Level						
22	Air Conditioning Room	7,900	cable	11,032	cable	12,312	cable, misc
34	Electrical Penetration Area, Ion Exchange, and Chemical Storage Area	17,059	cable, charcoal	21,488	cable, oil, charcoal, miscellaneous	32,206	cable, oil, plastic, misc
35	Hot Machine Shop	945	cable, miscellaneous	970	cable, miscellaneous	7,260	cable, miscellaneous
39	Waste Solidification Area	24,650	cable, miscellaneous	42,840	cable, miscellaneous	44,216	cable, miscellaneous
65	Make-Up Tank Room	-----	-----	-----	-----	-----	-----

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA	DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)								
RG3		Auxiliary Building - Elevator No. 2 and Machinery Room						
	63	Elevator No. 2	-----	-----	-----	-----	-----	-----
	70	Elevator Machinery Room	-----	-----	10,936	oil	12,760	oil, grease
2M1		Auxiliary Building - Mezzanine Level						
	23	Sample Cooler Chiller Room	-----	-----	19,185	cable, oil, miscellaneous	16,089	cable, oil, miscellaneous
	24	North Communication Room	70,000	paper	12,984	cable, class A, miscellaneous	12,985	cable, class A, miscellaneous
	25	South Communication Room	3,100	cable, miscellaneous	14,913	cable	16,089	cable
	26	Storage Room	-----	-----	-----	-----	-----	-----
	29	Main Corridor, Mezzanine	78,100	cable	125,432	rable	134,701	cable

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
AUXILIARY BUILDING (continued)							
RT1	Auxiliary Building - Turbine Deck						
3	Health Physics Office	96,470	class A, paper	86,363	class A, paper, miscellaneous	125,657	class A, paper, miscellaneous
4	Clean Locker Room	-----	-----	9,816	class A, misc	2,527	class A, misc
5	Conference Room	43,300	paper	548,682	class A, paper, cable, misc	87,729	class A, paper, cable, misc
7	Storage Room	2,220	miscellaneous	12,092	miscellaneous	54,158	paper, misc
8	Chemical Laboratory and Sample Station	434	miscellaneous	16,364	paper, misc	11,382	paper, misc
9	Radio Chem Laboratory	476	paper	10,911	paper, misc	14,737	paper, misc
10	Calibration and Source Storage Rm	-----	-----	3,040	miscellaneous	3,040	miscellaneous
11	Chemical Storage Room	59,600	class A PVC, misc	42,350	paper, miscellaneous	42,350	paper, miscellaneous
12	Corridor to Spent Fuel Bldg	-----	-----	41,884	paper, plastic, miscellaneous	15,396	paper, plastic miscellaneous
13	Reactor Building Access Area	3,308	class A, PVC	7,210	paper, misc	10,804	paper, misc
14	Turbine Deck Corridor	-----	-----	8,811	cable, misc	12,826	cable, misc

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
REACTOR BUILDING							
68	Reactor Building			39,817	oil, cable, charcoal	47,069	oil, cable, charcoal
	Zone 68/1	54,000	oil, cable	N/A	N/A	N/A	N/A
	Zone 68/2	51,400	oil, cable	N/A	N/A	N/A	N/A
	Zone 68/3	26,210	cable	N/A	N/A	N/A	N/A
	Zone 68/4	6,300	cable	N/A	N/A	N/A	N/A
	Zone 68/5	26,600	cable	N/A	N/A	N/A	N/A
	Zone 68/6	22,890	cable	N/A	N/A	N/A	N/A
	Zone 68/7	35,650	cable	N/A	N/A	N/A	N/A
	Zone 68/8	41,600	cable	N/A	N/A	N/A	N/A
	Zone 68/9	38,750	charcoal	N/A	N/A	N/A	N/A
	Zone 68/10	73,700	charcoal, cable	N/A	N/A	N/A	N/A
	Zone 68/11	745	oil	N/A	N/A	N/A	N/A

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
TURBINE BUILDING							
71	Turbine Building			129,577	oil, cable, class A, hydrazine, misc	133,220	oil, cable, class A, hydrazine, misc
	Zone 71/1	146,740	oil, cable	N/A	N/A	N/A	N/A
	Zone 71/2	9,270	cable	N/A	N/A	N/A	N/A
	Zone 71/3	-----	Turbine lube oil leak in bearing housings	N/A	N/A	N/A	N/A
FUEL STORAGE BUILDING							
73	Fuel Storage Building	-----	-----	196	miscellaneous	2,091	miscellaneous

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
YARD AREA							
69	Reactor Yard Area	1,060	cable	1,786	oil, cable, miscellaneous	1,969	oil, cable, miscellaneous
70	Transformer Alley						
70-1	Transformer Alley at Grade	N/A	N/A	N/A	N/A	61,652	oil, cable
70-2	NSEB Access Bridge (formerly designated 85/4)	N/A	N/A	6,692	cable	18,757	cable

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
NUCLEAR SERVICE ELECTRICAL BUILDING							
75.1	Train B Switchgear Room	N/A	N/A	12,487	cable, plastic	30,627	cable, plastic
75.2	Train B Battery Room	N/A	N/A	26,470	battery cases, miscellaneous	27,335	battery cases, miscellaneous
75.3	Channel D Battery Room	N/A	N/A	16,242	battery cases, miscellaneous	34,876	battery cases, miscellaneous
76.1	Train A Switchgear Room	N/A	N/A	10,609	cable, plastic	26,317	cable, plastic
76.2	Train A Battery Room	N/A	N/A	26,470	battery cases, miscellaneous	26,903	battery cases, miscellaneous
76.3	Channel C Battery Room	N/A	N/A	16,243	battery cases, miscellaneous	34,324	battery cases, miscellaneous
77.1	Channel D Electrical Equipment Room	N/A	N/A	1,143	plastics	8,324	plastics
77.2	Train B Electrical Equipment Room	N/A	N/A	10,974	cable, plastic	31,805	cable, plastic
78.1	Channel C Electrical Equipment Room	N/A	N/A	1,143	plastics	11,990	plastics
78.2	Train A Electrical Equipment Room	N/A	N/A	6,909	cable, plastic	28,089	cable, plastic

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
NUCLEAR SERVICE ELECTRICAL BUILDING (continued)							
79	Battery Room GB	N/A	N/A	25,?42	battery cases, miscellaneous	25,964	battery cases, miscellaneous
80	Battery Room GA	N/A	N/A	25,242	battery cases, miscellaneous	25,778	battery cases, miscellaneous
81	Train B cable Shaft and Tunnel	N/A	N/A	21,760	cable, plastic	82,494	cable, plastic
82	Train A cable Shaft	N/A	N/A	31,816	cable, plastic	114,645	cable, plastic
83.1	Corridor at El. 1'6"	N/A	N/A	-----	-----	1,138	miscellaneous
83.2	Stairwell No. 11	N/A	N/A	-----	-----	1,143	miscellaneous
84.1	Corridor at El. 21'6"	N/A	N/A	403	plastics	3,328	plastics
84.2	Train B Mechanical Equipment Room	N/A	N/A	155	plastics	282	plastics
84.3	Train A Mechanical Equipment Room	N/A	N/A	155	plastics	234	plastics

TABLE 3

UHFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
NUCLEAR SERVICE ELECTRICAL BUILDING (continued)							
85.1	Corridor at El. 40'0"	N/A	N/A	1,819	cable	6,159	cable, plastic
85.2	Train A Cable Room	N/A	N/A	9,091	cable	28,583	cable
85.3	Train B Cable Room	N/A	N/A	11,253	cable	35,000	cable
85.5	Elevator and Machinery Room	N/A	N/A	-----	-----	-----	-----
87	Computer Room B	N/A	N/A	15,374	wood, plastic	13,738	wood, plastic
89	Computer Room A	N/A	N/A	133	paper, misc	1,421	paper, misc
91.1	Vestibule at El. 60'0"	N/A	N/A	-----	-----	873	miscellaneous
91.2	NSEB Roof	N/A	N/A	9	oil, plastic	501	oil, plastic

TABLE 3

UNFAR COMBUSTIBLE LOADING COMPARISON

FIRE AREA	AREA DESCRIPTION	1977 FIRE LOADING (Btu/sq ft)	1977 COMBUSTIBLES (Type)	1985 FIRE LOADING (Btu/sq ft)	1985 COMBUSTIBLES (Type)	1987 FIRE LOADING (Btu/sq ft)	1987 COMBUSTIBLES (Type)
TDI DIESEL BUILDING							
105	A2 Diesel Generator Rooms	N/A	N/A	N/A	N,A	72,584	oil, cable, plastic
106	B2 Diesel Generator Rooms	N/A	N/A	N/A	N/A	72,669	oil, cable, plastic
120	A2 Radiator Fan Area	N/A	N/A	N/A	N/A	-----	-----
121	A2 Diesel Fuel Pump Vault	N/A	N/A	N/A	N/A	-----	-----
122	B2 Radiator Fan Area	N/A	N/A	N/A	N/A	21	miscellaneous
123	B2 Diesel Fuel Pump Vault	N/A	N/A	N/A	N/A	514	miscellaneous
124	TDI Diesel Building Roof	N/A	N/A	N/A	N/A	-----	-----

TABLE 4

UFHAR FIRE SUPPRESSION SYSTEM COMPARISON

FIRE AREA	1977 FHAR SUPPRESSION SYSTEM DESCRIPTION	1985 UFHAR SUPPRESSION SYSTEM DESCRIPTION	1987 UFHAR SUPPRESSION SYSTEM DESCRIPTION	COMMENTS
27 Ventilation Equipment Electrical Penetration Area	Wet pipe sprinkler system	Area-wide wet pipe sprinkler system	Area-wide wet pipe sprinkler system except over duct chase.	Difference in 1987 UFHAR interpretation of area-wide coverage. There are no sprinkler heads located in the duct chase; however, no combustibiles are located in the chase, and sprinkler coverage is not required (NFPA 13-1971).
47 Corridor and Stair to -47'Level	One hose station located within the fire area	Two hose stations located within the fire area	One hose station located within the fire area	Error in 1985 UFHAR apparently due to misinterpretation of drawing M-311. Drawing shows a sump pump in the fire area, using a symbol similar to that used for hose station location. No fire hose stations were physically deleted.
61 Elevator #1	Wet pipe sprinkler system at top of shaft only	Area-wide wet pipe sprinkler coverage	No suppression	Error in 1977 FHAR and 1985 UFHAR apperently due to misinterpretation of sprinkler layout drawings. There are no sprinkler heads located in the elevator shaft; however, elevator No. 2 (Fire Area RG3) does have a sidewall sprinkler installed at the top of the elevator shaft.

TABLE 4

UFHAR FIRE SUPPRESSION SYSTEM COMPARISON

FIRE AREA	1977 FHAR SUPPRESSION SYSTEM DESCRIPTION	1985 UFHAR SUPPRESSION SYSTEM DESCRIPTION	1987 UFHAR SUPPRESSION SYSTEM DESCRIPTION	COMMENTS
67 Stairwell #2	Wet pipe sprinkler system	Area-wide wet-pipe sprinkler coverage	Wet pipe sprinklers at turbine deck level	Error in 1987 UFHAR. Sprinkler heads are provided at each elevation of the stairwell.
RG1 Auxiliary Building - Level	Wet pipe sprinkler system except in Room 113	Area-wide wet pipe sprinkler coverage except in Room 114	Area-wide wet pipe sprinkler coverage except in Rooms 113 and 114	Difference in 1987 UFHAR interpretation of area-wide coverage. Sprinklers are Grade not provided in Room 113 since this area does not contain combustibles and is normally sealed.
RG3 Auxiliary Building - Elevator #2 Machinery Room	Wet pipe sprinklers at top of shaft and in machinery room	Area wide wet pipe sprinkler coverage	Wet-pipe sprinkler coverage in elevator machine room only	Error in 1987 UFHAR. Sprinkler protection is provided for the elevator machine room. In addition, a sidewall sprinkler and is located at the top of the elevator shaft.

TABLE 5

CHANGES IN UFHAR FIRE AREA BOUNDARY FIRE RATINGS

Building	BOUNDARY DESCRIPTION Elevation	Location	BOUNDARY FIRE RATING 1977 FHAR	1985 UFHAR	1987 UFHAR
Auxiliary Building	60'	Fire Area 62 walls above 60' to adjacent Fire Area 74	1.5 hour	1.5 hour	1 hour
	40'	Fire Area 6 air duct exterior walls adjacent to Fire Area 69	1.5 hour	1.5 hour	1 hour
	40'	Fire Area RG1 duct shaft to adjacent Fire Area RT1	N/A	2 hour	1 hour
	60', 40' 29' & 0'	Fire Area 67 west wall (adjacent to transformer alley which was designated as Fire Area 70 in the 1987 UFHAR).	2 hour	Exterior wall not assigned fire rating	1 hour
	20'	Fire Area 67 wall adjacent to Fire Area RM1	2 hour	1 hour	1 hour
	0'	Fire Area RG3 exterior walls adjacent to Fire Area 69	2 hour	2 hour	1 hour
	0'	Fire Area 67 walls to adjacent Fire Area 36	1.2 hour	1 hour	1 hour
Nuclear Service Electrical Building	21'-6"	Fire Area 77/2 walls to adjacent Fire Areas 84/2 and 77/1	N/A	3 hour	1 hour
	21'-6"	Fire Area 78/2 walls to adjacent Fire Areas 84/3 and 78/1	N/A	3 hour	1 hour