

## CHAPTER 9— AUXILIARY SYSTEMS

### LIST OF FIGURES

Figure 9.1.2-1	Typical New Fuel Rack Array.....	9.1-15
Figure 9.1.2-2	Dry New Fuel Storage Racks.....	9.1-16
Figure 9.1.2-3	Spent Fuel Pool Elevation.....	9.1-17
Figure 9.1.2-4	New Fuel and Region 1 Spent Fuel Storage Rack Cross- Section .....	9.1-18
Figure 9.1.2-5	Region 2 Spent Fuel Storage Rack Cross-Section.....	9.1-19
Figure 9.1.2-6	Typical Spent Fuel Rack Array .....	9.1-20
Figure 9.1.2-7	Spent Fuel Storage Pool Layout.....	9.1-21
Figure 9.1.2-8	Fuel Storage and Handling Areas Layout.....	9.1-22
Figure 9.1.2-9	Cask Loading Pit Gates .....	9.1-23
Figure 9.1.3-1	Fuel Pool Cooling System.....	9.1-40
Figure 9.1.3-2	Fuel Pool Purification System .....	9.1-41
Figure 9.1.4-1	Refueling Machine .....	9.1-98
Figure 9.1.4-2	Fuel Assemblies Hoisting Mechanism .....	9.1-99
Figure 9.1.4-3	Fuel Transfer Tube Facility, Reactor Building.....	9.1-100
Figure 9.1.4-4	Fuel Transfer Tube Facility, Fuel Building .....	9.1-101
Figure 9.1.4-5	New Fuel Elevator.....	9.1-102
Figure 9.1.4-6	Spent Fuel Machine .....	9.1-103
Figure 9.1.4-7	Spent Fuel Cask Transfer Facility .....	9.1-104
Figure 9.1.4-8	Cask Loading Pit Penetration Assembly.....	9.1-105
Figure 9.1.4-9	Loading Pit Penetration Assembly Seals .....	9.1-106
Figure 9.1.4-10	Loading Penetration Docking Mechanism .....	9.1-107
Figure 9.1.4-11	Not Used .....	9.1-108
Figure 9.1.4-12	Permanent RPV Refueling Cavity Ring - General Configuration.....	9.1-109
Figure 9.1.4-13	Spent Fuel Cask Transfer Machine - Main Structural Assemblies.....	9.1-110
Figure 9.2.1-1	Essential Service Water System Piping & Instrumentation Diagram .....	9.2-21
Figure 9.2.2-1	Component Cooling Water System Trains 1 through 4 .....	9.2-95

Figure 9.2.2-2	Component Cooling Water System Common Loop 1 .....	9.2-97
Figure 9.2.2-3	Component Cooling Water System Common Loop 2 .....	9.2-104
Figure 9.2.2-4	Component Cooling Water System Dedicated CCWS Trains ....	9.2-112
Figure 9.2.5-1	Ultimate Heat Sink Piping and Instrumentation Diagram.....	9.2-133
Figure 9.2.5-2	[[Conceptual Site-Specific UHS Systems]] .....	9.2-134
Figure 9.2.5-3	Cross-Section of UHS Tower Basin.....	9.2-135
Figure 9.2.7-1	Seal Water Supply System .....	9.2-143
Figure 9.2.8-1	Safety Chilled Water System Diagram.....	9.2-171
Figure 9.2.8-2	Safety Chilled Water System Air Cooled Division Diagram .....	9.2-175
Figure 9.2.9-1	[[Conceptual Site-Specific Raw Water Supply System]] .....	9.2-177
Figure 9.3.1-1	Compressed Air Generation System .....	9.3-5
Figure 9.3.1-2	Compressed Air Distribution System .....	9.3-6
Figure 9.3.2-1	Nuclear Sampling System.....	9.3-32
Figure 9.3.2-2	Severe Accident Sampling System.....	9.3-41
Figure 9.3.3-1	Nuclear Island Drain and Vent System.....	9.3-50
Figure 9.3.4-1	Chemical and Volume Control System .....	9.3-86
Figure 9.3.4-2	Coolant Purification System.....	9.3-95
Figure 9.3.4-3	Coolant Degasification System .....	9.3-100
Figure 9.3.4-4	Reactor Boron and Water Makeup System .....	9.3-102
Figure 9.3.4-5	Coolant Supply and Storage System .....	9.3-104
Figure 9.3.4-6	Coolant Treatment System .....	9.3-107
Figure 9.4.1-1	Control Room Air Intake and CREF (Iodine Filtration) Train Subsystem .....	9.4-17
Figure 9.4.1-2	Control Room Air Conditioning and Recirculation Air Handling Subsystem .....	9.4-18
Figure 9.4.1-3	Control Room Envelope Air Supply and Recirculation Subsystem .....	9.4-19
Figure 9.4.2-1	Fuel Building Ventilation System .....	9.4-31
Figure 9.4.3-1	Nuclear Auxiliary Building Supply Air Filtration and A/C Trains .....	9.4-42
Figure 9.4.3-2	Nuclear Auxiliary Building Air Supply and Exhaust Subsystem .....	9.4-43
Figure 9.4.3-3	Nuclear Auxiliary Building Exhaust Filtration Trains Subsystem .....	9.4-44

Figure 9.4.3-4	Nuclear Auxiliary Building Exhaust Iodine Filtration Train Subsystem .....	9.4-45
Figure 9.4.3-5	Nuclear Auxiliary Building Laboratory Iodine Exhaust Filtration Train .....	9.4-46
Figure 9.4.5-1	Safeguard Building Controlled-Area Ventilation System Air Supply Subsystem .....	9.4-66
Figure 9.4.5-2	Safeguard Building Controlled-Area Ventilation System Exhaust Air Subsystem .....	9.4-67
Figure 9.4.6-1	Safeguard Building Electrical Divisions 1 and 4 Air Intake .....	9.4-83
Figure 9.4.6-2	Safeguard Building Electrical Divisions 1 and 4 Air Supply and Exhaust .....	9.4-84
Figure 9.4.6-3	Safeguard Building Electrical Divisions 2 and 3 Air Intake .....	9.4-85
Figure 9.4.6-4	Safeguard Building Electrical Divisions 2 and 3 Air Supply and Exhaust .....	9.4-86
Figure 9.4.7-1	Containment Building Low Flow and Full Flow Purge Supply Subsystem .....	9.4-102
Figure 9.4.7-2	Containment Building Low Flow and Full Flow Purge Exhaust Subsystem .....	9.4-103
Figure 9.4.7-3	Containment Building Internal Filtration Subsystem .....	9.4-104
Figure 9.4.7-4	Containment Building Cooling Subsystem .....	9.4-105
Figure 9.4.7-5	Containment Building Service Compartments Cooling Subsystem .....	9.4-106
Figure 9.4.8-1	Radioactive Waste Building Ventilation System Air Supply .....	9.4-116
Figure 9.4.8-2	Radioactive Waste Building Ventilation System Exhaust Air Station .....	9.4-117
Figure 9.4.9-1	Emergency Power Generating Building Ventilation System .....	9.4-128
Figure 9.4.11-1	Essential Service Water Pump Building Ventilation System .....	9.4-143
Figure 9.4.12-1	Main Steam and Feedwater Valve Room Ventilation System ...	9.4-148
Figure 9.4.13-1	Smoke Confinement System .....	9.4-153
Figure 9.4.13-2	Deleted .....	9.4-153
Figure 9.4.14-1	Access Building Ventilation System – Supply Air Subsystem .....	9.4-164
Figure 9.4.14-2	Access Building Ventilation System – Supply and Exhaust Air Subsystem .....	9.4-165
Figure 9.5.1-1	Fire Water Distribution System .....	9.5-52
Figure 9.5.1-2	Spray Deluge Systems Layout .....	9.5-66
Figure 9.5.1-3	Sprinkler Systems Layout .....	9.5-68

Figure 9.5.1-4	Gaseous Fire Extinguishing Systems Layout .....	9.5-69
Figure 9.5.2-1	Portable Wireless Communication Systems .....	9.5-82
Figure 9.5.2-2	Sound-Powered System .....	9.5-83
Figure 9.5.4-1	Emergency Diesel Generator Fuel Oil Storage and Transfer System .....	9.5-104
Figure 9.5.5-1	Emergency Diesel Generator Cooling Water System.....	9.5-114
Figure 9.5.6-1	Emergency Diesel Generator Starting Air System.....	9.5-124
Figure 9.5.7-1	Emergency Diesel Generator Lubricating Oil System.....	9.5-136
Figure 9.5.8-1	Emergency Diesel Generator Air Intake and Exhaust System .....	9.5-143
Figure 9A-1	Fire Zone Layouts-Emergency Power Generating Buildings (UBP), +/-0 Feet.....	9A-94
Figure 9A-2	Fire Zone Layouts-Emergency Power Generating Buildings (UBP), +33 Feet.....	9A-95
Figure 9A-3	Fire Zone Layouts-Emergency Power Generating Buildings (UBP), +52 Feet.....	9A-96
Figure 9A-4	Fire Zone Layouts-Emergency Power Generating Buildings (UBP), Section-A-A .....	9A-97
Figure 9A-5	Fire Zone Layouts-Emergency Power Generating Buildings (UBP), Section-B-B .....	9A-98
Figure 9A-6	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, -31 Feet.....	9A-99
Figure 9A-7	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, -16 Feet.....	9A-100
Figure 9A-8	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +/-0 Feet .....	9A-101
Figure 9A-9	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +15 Feet.....	9A-102
Figure 9A-10	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +27 Feet.....	9A-103
Figure 9A-11	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +39 Feet.....	9A-104
Figure 9A-12	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +55 Feet.....	9A-105
Figure 9A-13	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +69 Feet.....	9A-106

Figure 9A-14	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +81 Feet.....	9A-107
Figure 9A-15	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, +96 Feet.....	9A-108
Figure 9A-16	Fire Zone Layouts-Safeguard Building (UJH and UJK): 1, Section A-A.....	9A-109
Figure 9A-17	Fire Zone Layouts-Safeguard Buildings 2 and 3, -31 Feet .....	9A-110
Figure 9A-18	Fire Zone Layouts-Safeguard Buildings 2 and 3, -16 Feet .....	9A-111
Figure 9A-19	Fire Zone Layouts-Safeguard Buildings 2 and 3, +/-0 Feet .....	9A-112
Figure 9A-20	Fire Zone Layouts-Safeguard Buildings 2 and 3, +15 Feet .....	9A-113
Figure 9A-21	Fire Zone Layouts-Safeguard Buildings 2 and 3, +27 Feet .....	9A-114
Figure 9A-22	Fire Zone Layouts-Safeguard Buildings 2 and 3, +39 Feet .....	9A-115
Figure 9A-23	Fire Zone Layouts-Safeguard Buildings 2 and 3, +53 Feet .....	9A-116
Figure 9A-24	Fire Zone Layouts-Safeguard Buildings 2 and 3, +69 Feet .....	9A-117
Figure 9A-25	Fire Zone Layouts-Safeguard Buildings 2 and 3, +79 Feet .....	9A-118
Figure 9A-26	Fire Zone Layouts-Safeguard Buildings 2 and 3, +94 Feet .....	9A-119
Figure 9A-27	Fire Zone Layouts-Safeguard Buildings 2 and 3, Section B-B.....	9A-120
Figure 9A-28	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, -31 Feet.....	9A-121
Figure 9A-29	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, -16 Feet.....	9A-122
Figure 9A-30	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +/-0 Feet .....	9A-123
Figure 9A-31	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +15 Feet.....	9A-124
Figure 9A-32	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +26 Feet.....	9A-125
Figure 9A-33	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +39 Feet.....	9A-126
Figure 9A-34	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +55 Feet.....	9A-127
Figure 9A-35	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +69 Feet.....	9A-128
Figure 9A-36	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +81 Feet.....	9A-129

Figure 9A-37	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, +96 Feet.....	9A-130
Figure 9A-38	Fire Zone Layouts-Safeguard Building (UJH and UJK): 4, Section A-A .....	9A-131
Figure 9A-39	Fire Zone Layouts-Reactor Building, -50 Feet .....	9A-132
Figure 9A-40	Fire Zone Layouts-Reactor Building, -20 Feet .....	9A-133
Figure 9A-41	Fire Zone Layouts-Reactor Building, -8 Feet .....	9A-134
Figure 9A-42	Fire Zone Layouts-Reactor Building, +5 Feet .....	9A-135
Figure 9A-43	Fire Zone Layouts-Reactor Building, +17 Feet .....	9A-136
Figure 9A-44	Fire Zone Layouts-Reactor Building, +29 Feet .....	9A-137
Figure 9A-45	Fire Zone Layouts-Reactor Building, +45 Feet .....	9A-138
Figure 9A-46	Fire Zone Layouts-Reactor Building, +64 Feet .....	9A-139
Figure 9A-47	Fire Zone Layouts-Reactor Building, +79 Feet .....	9A-140
Figure 9A-48	Fire Zone Layouts-Reactor Building, +94 Feet .....	9A-141
Figure 9A-49	Fire Zone Layouts-Reactor Building, Section A-A .....	9A-142
Figure 9A-50	Fire Zone Layouts-Reactor Building, Section B-B .....	9A-143
Figure 9A-51	Fire Zone Layouts-Reactor Building, Section C-C .....	9A-144
Figure 9A-52	Fire Zone Layouts-Nuclear Auxiliary Building, -31 Feet.....	9A-145
Figure 9A-53	Fire Zone Layouts-Nuclear Auxiliary Building, -21 Feet.....	9A-146
Figure 9A-54	Fire Zone Layouts-Nuclear Auxiliary Building, -11 Feet.....	9A-147
Figure 9A-55	Fire Zone Layouts-Nuclear Auxiliary Building, +/-0 Feet .....	9A-148
Figure 9A-56	Fire Zone Layouts-Nuclear Auxiliary Building, +12 Feet.....	9A-149
Figure 9A-57	Fire Zone Layouts-Nuclear Auxiliary Building, +24 Feet.....	9A-150
Figure 9A-58	Fire Zone Layouts-Nuclear Auxiliary Building, +34 Feet.....	9A-151
Figure 9A-59	Fire Zone Layouts-Nuclear Auxiliary Building, +50 Feet.....	9A-152
Figure 9A-60	Fire Zone Layouts-Nuclear Auxiliary Building, +64 Feet.....	9A-153
Figure 9A-61	Fire Zone Layouts-Nuclear Auxiliary Building, +81 Feet.....	9A-154
Figure 9A-62	Fire Zone Layouts-Nuclear Auxiliary Building, +98 Feet.....	9A-155
Figure 9A-63	Fire Zone Layouts-Nuclear Auxiliary Building, Section A-A .....	9A-156
Figure 9A-64	Fire Zone Layouts-Nuclear Auxiliary Building, Section B-B .....	9A-157
Figure 9A-65	Fire Zone Layouts-Nuclear Auxiliary Building, Section C-C.....	9A-158
Figure 9A-66	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), -32 Feet.....	9A-159



---

Figure 9A-67	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), -21 Feet.....	9A-160
Figure 9A-68	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), -11 Feet.....	9A-161
Figure 9A-69	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), +/- 0 Feet.....	9A-162
Figure 9A-70	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), +12 Feet.....	9A-163
Figure 9A-71	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), +23 Feet.....	9A-164
Figure 9A-72	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), +36 Feet.....	9A-165
Figure 9A-73	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), +53 Feet.....	9A-166
Figure 9A-74	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), Section A-A.....	9A-167
Figure 9A-75	Fire Zone Layouts-Radioactive Waste Processing Building (UKS), Section B-B.....	9A-168
Figure 9A-76	Fire Zone Layouts- Essential Service Water Building, +/-0 Feet.....	9A-169
Figure 9A-77	Fire Zone Layouts- Essential Service Water Building, +14 Feet.....	9A-170
Figure 9A-78	Fire Zone Layouts- Essential Service Water Building, +47 Feet.....	9A-171
Figure 9A-79	Fire Zone Layouts- Essential Service Water Building, +63 Feet.....	9A-172
Figure 9A-80	Fire Zone Layouts- Essential Service Water Building, +80 Feet.....	9A-173
Figure 9A-81	Fire Zone Layouts- Essential Service Water Building, +96 Feet.....	9A-174
Figure 9A-82	Fire Zone Layouts- Essential Service Water Building, Section A-A.....	9A-175
Figure 9A-83	Fire Zone Layouts- Essential Service Water Building, Section B-B.....	9A-176
Figure 9A-84	Fire Zone Layouts-Fuel Building, -31 Feet.....	9A-177
Figure 9A-85	Fire Zone Layouts-Fuel Building, -20 Feet.....	9A-178
Figure 9A-86	Fire Zone Layouts-Fuel Building, -11 Feet.....	9A-179





---

Figure 9A-87	Fire Zone Layouts-Fuel Building, +0 Feet.....	9A-180
Figure 9A-88	Fire Zone Layouts-Fuel Building, +12 Feet.....	9A-181
Figure 9A-89	Fire Zone Layouts-Fuel Building, +24 Feet.....	9A-182
Figure 9A-90	Fire Zone Layouts-Fuel Building, +36 Feet.....	9A-183
Figure 9A-91	Fire Zone Layouts-Fuel Building, +49 Feet.....	9A-184
Figure 9A-92	Fire Zone Layouts-Fuel Building, +64 Feet.....	9A-185
Figure 9A-93	Fire Zone Layouts-Fuel Building, +79 Feet.....	9A-186
Figure 9A-94	Fire Zone Layouts-Fuel Building, +90 Feet.....	9A-187
Figure 9A-95	Fire Zone Layouts-Fuel Building, Section A-A.....	9A-188
Figure 9A-96	Fire Zone Layouts-Fuel Building, Section B-B.....	9A-189
Figure 9A-97	Fire Zone Layouts-Fuel Building, Section C-C.....	9A-190
Figure 9A-98	[[ Fire Zone Layouts- Access Building (UKE), -31 Feet ]]	..... 9A-191
Figure 9A-99	[[ Fire Zone Layouts- Access Building (UKE), -13 Feet ]]	..... 9A-192
Figure 9A-100	[[ Fire Zone Layouts- Access Building (UKE), +/- 0 Feet ]]	..... 9A-193
Figure 9A-101	[[ Fire Zone Layouts- Access Building (UKE), +12 Feet ]]	..... 9A-194
Figure 9A-102	[[ Fire Zone Layouts- Access Building (UKE), +25 Feet ]]	..... 9A-195
Figure 9A-103	[[ Fire Zone Layouts- Access Building (UKE), +39 Feet ]]	..... 9A-196
Figure 9A-104	[[ Fire Zone Layouts- Access Building (UKE), +54 Feet ]]	..... 9A-197
Figure 9A-105	[[ Fire Zone Layouts- Access Building (UKE), Section A-A ]]	..... 9A-198
Figure 9A-106	[[ Fire Zone Layouts- Access Building (UKE), Section B-B ]]	..... 9A-199

Next File