APPENDIX B

CONTROL SYSTEMS AND SAFETY FUNCTIONS

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CONTROL SYSTEMS

1. Reactor Manual Control System
2. Recirculation Flow Control System
3. Reactor Feedwater Control System
4. Pressure Regulator and Turbine Generator Control System
5. Traversing In-Core Probe Control System
6. Reactor Water Cleanup Control System
7. Refueling Interlock Control System
8. Rod Block Monitor System
9. Nuclear Pressure Relief Control System

Ti

Core C

Radioa
Mater:

Store
Contr

React
Isola

Conta
Isola

Rod

Reac
Cont

Rest
Powe

Cont
Cool

Cont
Env:
Con

PLANT OPERATING MODE

STATE A (Cont.)
Reactor Shutdown/Head Off

SAFETY FUNCTIONS

Title	Description	Reference
Secondary Containment Isolation	Secondary containment isolation to minimize radiological effects	SSES FSAR 15A.6.5.3 Event 41
Radwaste Bldg. Isolation	Radwaste system building isolation to minimize radiological effects	SSES FSAR 15A.6.5.3 Event 48
Liquid Effluent Isolation	Liquid effluent system isolation to minimize radiological effects	SSES FSAR 15A.6.5.3 Event 48

PLANT OPERATING MODE

STATE B
Reactor Not Shutdown/Head Off

SAFETY FUNCTIONS

Title	Description	Reference
SCRAM	Control rod insertion to prevent fuel damage	SSES FSAR 15A.6.3 Events 7, 16
Core Cooling	Initial and extended safety-grade core cooling to prevent fuel damage	SSES FSAR 15A.6.3 Event 18
Radioactive Material	Radioactive material release control to minimize radiological effects	SSES FSAR 15A.6.5 Events 48, 49
Stored Fuel Control	Stored fuel cooling and reactivity control to prevent stored fuel damage	SSES FSAR 15A.6.2.3.14
Reactor Vessel Isolation	Reactor Pressure Vessel Isolation to prevent fuel damage	SSES FSAR 15A.6.3 Events 18, 28, 29
Containment Isolation	Primary Containment Isolation to minimize radiological effects	SSES FSAR 15A.6.3 Events 28, 29
Prohibit Rod Motion	Prevention of adverse rod motion to prevent exceeding fuel limits	SSES FSAR 15.4.1 and 15A.6.3, Event 17
Reactivity Control	Core nuclear reactivity control to prevent fuel damage	SSES FSAR 15A.6.3 Events 28, 29
Restore AC Power	Establishing on-site or off-site AC Power for safety systems to prevent fuel damage	SSES FSAR 15A.6.3 Event 29
Containment Cooling	Initial and extended primary containment cooling to prevent containment damage	SSES FSAR 15A.6.3 Events 28, 29

PLANT OPERATING MODE

STATE B (Cont.)
Reactor Not Shutdown/Head Off

SAFETY FUNCTIONS

Title	Description	Reference
Control Room Environmental Control	Conditioning of Control Room environment to prevent personnel overexposure	SSES FSAR 15A.6.5 Event 41
Secondary Containment Isolation	Secondary containment isolation to minimize radiological effects	SSES FSAR 15A.6.5 Event 41
Radwaste Building Isolation	Radwaste system building isolation to minimize radiological effects	SSES FSAR 15A.6.5 Event 48
Liquid Effluent Isolation	Liquid effluent system isolation to minimize radiological effects	SSES FSAR 15A.6.5 Event 48

PLANT OPERATING MODE

STATE C
Reactor Shutdown/Head On

SAFETY FUNCTIONS

Title	Description	Reference
SCRAM	Control rod insertion to prevent fuel damage	SSES FSAR 15A.6.3 Events 7, 15, 24, 43, 44, 45, 47
Pressure Relief	Nuclear Steam Supply System Pressure relief to prevent excessive pressure	SSES FSAR 15A.6.3 Events 8, 11, 14, 15, 20, 22, 24, 26, 28, 29, 42, 51, 52, 53
Core Cooling	Initial and extended safety-grade core cooling to prevent fuel damage	SSES FSAR 15A.6.3 Events 8, 12, 14, 15, 18, 20, 22, 23, 24, 28, 29, 42, 43, 44, 45, 51, 53
Radioactive Material	Radioactive material release control to minimize radiological effects	SSES FSAR 15A.2.3.1
Stored Fuel Control	Stored fuel cooling and reactivity control to prevent stored fuel damage	SSES FSAR 15A.6.2.3.14
Reactor Vessel Isolation	Reactor Pressure Vessel Isolation to prevent fuel damage	SSES FSAR 15A.6.3 Events 12, 15, 18, 20, 22, 23, 24, 28, 29, 43, 44, 45
Containment Isolation	Primary Containment Isolation to minimize radiological effects	SSES FSAR 15A.6.3 Events 15, 26, 28, 29, 42
Prohibit Rod Motion	Prevention of adverse rod motion to prevent exceeding fuel limits	SSES FSAR 15A.6.3
Reactivity Control	Core nuclear reactivity control to prevent fuel damage	SSES FSAR 15A.6.3 Events 20, 28

PLANT OPERATING MODE

STATE C (Cont.)
Reactor Shutdown/Head On

SAFETY FUNCTIONS

Title	Description	Reference
Restore AC Power	Establishing on-site or off-site AC Power for safety systems to prevent fuel damage	SSES FSAR 15A.6.3 Event 29P
Containment Cooling	Initial and extended primary containment cooling to prevent containment damage	SSES FSAR 15A.6.3
Control Room Environmental Control	Conditioning of Control Room environment to prevent personnel overexposure	SSES FSAR 15A.6.5 Events 41, 42
Secondary Containment Isolation	Secondary containment isolation to minimize radiological effects	SSES FSAR 15A.6.5, 15A.6.6 Events 41, 42, 50
Suppression Pool	Limit contamination release to environment	SSES FSAR 15A.6.5 Event 42
Stop Rod Ejection	Control rod drive processing support to prevent fuel cladding failure	SSES FSAR 15A.6.5 Event 42
Off-Gas System Isolation	Off-Gas System isolation to minimize radiological effect	SSES FSAR 15A.6.5 Events 46, 47
Radwaste Building Iso.	Limit contamination release to environment	SSES FSAR 15A.6.5 Events 48, 49
Liquid Effluent Isolation	Liquid effluent system isolation to minimize radiological effects	SSES FSAR 15A.6.5 Events 48, 49

PLANT OPERATING MODE

STATE D
Reactor Not Shutdown/Head On

SAFETY FUNCTIONS

Title	Description	Reference
SCRAM	Control rod insertion to prevent fuel damage	SSES FSAR 15A.6.5 Event 42
Recirculation Pump Trip	Recirculation pump trip to prevent fuel damage	SSES FSAR 15A.6.5 Event 42
Pressure Relief	Nuclear Steam Supply System Pressure relief to prevent excessive pressure	SSES FSAR 15A.6.5 Event 42
Core Cooling	Initial and extended safety-grade core cooling to prevent fuel damage	SSES FSAR 15A.6.5 Event 42
Radioactive Material	Radioactive material release control to minimize radiological effects	SSES FSAR 15A.6.5 Events 48, 49
Stored Fuel Control	Stored fuel cooling and reactivity control to prevent stored fuel damage	SSES FSAR 15A.6.2.3.14
Reactor Vessel Isolation	Reactor Pressure Vessel Isolation to prevent fuel damage	SSES FSAR 15A.6.5 Event 43
Containment Isolation	Primary Containment Isolation to minimize radiological effects.	SSES FSAR 15A.6 Event 42
Prohibit Rod Motion	Prevention of adverse rod motion to prevent exceeding fuel limits	SSES FSAR 15.6.3 Event 17
Reactivity Control	Core nuclear reactivity control to prevent fuel damage	SSES FSAR 15A.6.3 Event 29
Restore AC Power	Establishing on-site or off-site AC Power for safety systems to prevent fuel damage	SSES FSAR 15A.6.3 Event 29

PLANT OPERATING MODE

STATE D (Cont.)
Reactor Not Shutdown/Head On

SAFETY FUNCTIONS

Title	Description	Reference
Containment Cooling	Initial and extended primary containment cooling to prevent containment damage	SSES FSAR 15A.6.5 Event 42
Limit Reactivity Insertion Rate	Passive control rod velocity limiter to prevent fuel cladding failure	SSES FSAR 15A.6.5 Event 40
Control Room Environmental Control	Conditioning of Control Room environment to prevent personnel overexposure	SSES FSAR 15A.6.5 Event 42
Secondary Containment Isolation	Secondary containment isolation tominimize radiological effects	SSES FSAR 15A.6.5 Event 42
Restrict Loss of Reactor Coolant	Flow restrictors limiting reactor coolant loss to prevent fuel damage	SSES FSAR 15A.6.5 Events 43, 44, 45
Off-Gas System Isolation	Off-Gas System isolation to minimize radiological effect	SSES FSAR 15A.6.5 Events 46, 47
Radwaste Building Isolation	Radwaste system building isolation to minimize radiological effects	SSES FSAR 15A.6.5 Event 48
Liquid Effluent Isolation	Liquid effluent system isolation to minimize radiological effects	SSES FSAR 15A.6.5 Event 48
Stop Rod Ejection	Control rod drive processing support to prevent fuel cladding failure	SSES FSAR 15A.6.5 Event 42