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October 29, 1985
ST-HL-AE-1455
File No.: G9.17

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Responses to DSER/FSAR Items
Regarding Section 7.3

Dear Mr. Knighton:

The attachment enclosed provides STP's response to Draft Safety Evaluation Report (DSER) or Final Safety Analysis Report (FSAR) items.

The item numbers listed below correspond to those assigned on STP's internal list of items for completion which includes open and confirmatory DSER items, STP FSAR open items and open NRC questions. This list was given to your Mr. N. Prasad Kadambi on October 8, 1985 by our Mr. M. E. Powell.

The attachment includes mark-ups of FSAR pages which will be incorporated in a future FSAR amendment unless otherwise noted below.

The items which are attached to this letter are:

Attachment	Item No.*	Subject
1	F 7.3-1 F 7.3-2 F 7.3-4 F 7.3-21 F 7.3-22	Updated Section 7.3 to respond to open items

*Legend
D - DSER Open Item
F - FSAR Open Item
C - DSER Confirmatory Item
Q - FSAR Question Response Item

L1/DSER/aaf

Bool
11

Please note that the tables containing the actuated equipment lists have been reformatted to read more easily. References to pertinent logic diagrams have also been added to allow the Staff to review the subject designs against the drawings referenced in Section 1.7 (provided by separate cover letter, periodically, to the Staff). Finally, several entries have been added to the table to reflect design evolution or to include the equipment which is not directly actuated by the signal, but is indirectly actuated. Added entries are noted by change bars at the right margins.

If you should have any questions concerning this matter, please contact Mr. Powell at (713) 993-1328.

Very truly yours,

M. R. Wisenburg
Manager, Nuclear Licensing

CAA/bl

Attachments: See above

L1/DSER/aaf

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Revised 9/25/85

L1/DSER/aaf

7.3 ENGINEERED SAFETY FEATURES SYSTEM

The occurrence of a postulated limiting fault, such as a Loss-of-Coolant Accident (LOCA) or a main steam line break (MSLB), requires a reactor trip plus actuation of engineered safety features (ESF) equipment to prevent or mitigate damage to the core and Reactor Coolant (RCS) components and to ensure containment integrity. The Engineered Safety Features Actuation System (ESFAS) directs various ESF equipment to take protective action to mitigate the consequences of postulated accidents. The ESFAS is comprised of the instrumentation and controls necessary to sense accident conditions and initiate the operation of necessary safety equipment.

In general, the sensors, analog circuitry and actuation logic are supplied by Westinghouse Electric Corporation (Westinghouse). The radiation monitors for Containment ventilation isolation are part of the BOP scope of supply and interface with the Westinghouse equipment. The interfaces between the Westinghouse actuation signals and the actuated equipment are shown on Figures 7.2-1 through 7.2-17B. The Westinghouse ESFAS is described in Section 7.3.1.

(monitors are digital)

The ESFAS's for the Control Room Envelope HVAC System and for the Fuel Handling Building (FHB) HVAC System are part of the BOP scope of supply, including sensors, analog circuitry and logic circuitry. Receipt of a safety injection (SI) signal from the Westinghouse ESFAS actuates these HVAC systems also. The Control Room Envelope HVAC ESFAS is described in Section 7.3.2; the FHB HVAC ESFAS is described in Section 7.3.3. X 43 X

The Containment Hydrogen Monitoring System is also part of the BOP scope of supply. This system (described in Section 7.6.5) is actuated manually after a LOCA and is used by the operator to determine when operation of the hydrogen recombiners is prudent for hydrogen gas control in the Containment. The Containment Combustible Gas Control System is discussed in Section 6.2.5, giving details of hydrogen recombiner design and analyses indicating when recombiner operation may be needed.

7.3.1 Nuclear Steam Supply System ESFAS

The Westinghouse ESFAS uses selected plant parameters and determines whether or not predetermined safety limits are being exceeded; if they are, it combines the signals into logic matrices sensitive to combinations indicative of primary or secondary system boundary ruptures (American Nuclear Society [ANS] Class III or IV faults). Once the required logic combination is completed, the system sends actuation signals to the appropriate ESF components. The ESFAS meets the requirements of General Design Criteria (GDC) 13, 20, 27, 28, and 38. 43

7.3.1.1 System Description. The ESFAS functionally consists of the following:

1. Process Instrumentation and Control System (Ref. 7.3-1)

2. Solid-State Protection System (Ref. 7.3-2)

3. Safeguards test cabinets (Ref. 7.3-3) 43

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2. Typical maximum allowable time delays in generating the actuation signal for secondary system break protection, in addition to the above, are:

a.	Steam line pressure (from which steam line pressure rate is also derived and to which add 0.5 sec)	0.6 seconds
b.	T_{cold} (direct immersion in cold leg)	5.0 seconds with flow 78% of nominal and straight line to 10 seconds at zero flow. 43
c.	Actuation signals for auxiliary feedwater pumps (steam generator water level)	2.0 seconds
d.	Primary loop flow	1.0 seconds
e.	Feedwater flow	2.0 seconds

3. The time delay in generating the Containment ventilation signal for a fuel handling accident inside Containment is the total of the time delay in the radiation monitors and the time delay in the Solid-State Protection System to generate the Containment ventilation isolation signal. The maximum allowable time delay is ~~(later)~~ 3.0 seconds ~~for the design basis release analyzed in Section 15.7.~~ 43

7.3.1.1.5.6.2 System Accuracies -

1. Typical accuracies required for generating the required actuation signals for Reactor Coolant System break protection are: 43

a.	Pressurizer pressure (uncompensated)	±14 psi
b.	Containment HI-1 pressure	±1.8 percent of full scale

2. Typical accuracies required in generating the required actuation signals for secondary system break protection, in addition to the above, are:

a.	Steam line pressure	±2.5% of span
b.	T_{cold}	±2°F 43
c.	Actuation signals for auxiliary feedwater pumps (steam generator water level)	±2.3 percent of span 43
d.	Primary loop flow	±2.75% ΔP span 13

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e. Feedwater flow ±5.0% ΔP span | 43

3. Typical accuracy in generating the required radiation actuation signal for the Containment ventilation isolation signal is ±~~(later.)~~ 33 percent+ | 1

- 7.3.1.1.5.6.3 Ranges of Sensed Variables to be Accommodated Until Conclusions of Protective Action are Assured - | 43

1. Typical ranges required in generating the actuation signals for Reactor Coolant System break protection are:

a. Pressurizer pressure 1,700 to 2,500 psig

b. Containment pressure -5 to 60 → 65 psig | 43 | 1

2. Typical ranges required in generating the actuation signals for secondary system break protection, in addition to the above, are:

a. Steam line pressure (from which steam line pressure rate is derived) 0 to 1,400 psig

b. T_{cold} 510° to 630°F | 43

c. Actuation signals for auxiliary feedwater pumps (steam generator water level) ± 6 ft from nominal full-load water level

d. Primary loop flow 0 to 120% ΔP

e. Feedwater flow 0 to 100% ΔP*

3. The typical range required in generating the radiation actuation signals for the Containment ventilation isolation signal is 1×10^{-6} $\mu Ci/cm^3$ to 0.1 $\mu Ci/cm^3$. | 43

7.3.1.1.6 Final System Drawings. Functional block diagrams, electrical elementaries, and other drawings required to perform a safety review are listed in Section 1.7.

7.3.1.2 Analysis | 43

7.3.1.2.1 Failure Modes and Effects Analyses. Failure modes and effects analyses have been performed generically on the ESFAS within the scope of Westinghouse and documented in Reference 7.3-4. The results verify that these systems meet protection single-failure criteria as required by IEEE 279-1971. The STP ESFAS, although not identical, is designed to equivalent | 49

*Corresponds to 0 to 120 percent of rated FW flow at design rating.

The output of each of the initiation circuits consists of a master relay which drives slave relays for contact multiplication as required. The master and slave relays are mounted in the ESFAS cabinets, designated Train A, Train B, and Train C respectively, for the redundant counterparts. The master and slave relay circuits operate various pump and fan circuit breakers or starters, motor-operated valve contactors, solenoid-operated valves, ~~emergency~~ standby diesel generator starting equipment and other ESF actuation devices. | 43

7.3.1.2.2.5.4.2 Analog Testing - Analog testing is identical to that used for reactor trip circuitry as described in Sections 7.2.2.2.3 and includes the following analog channels for other safety-related circuits: | 43

1. Containment pressure
2. Pressurizer pressure | 43
3. Reactor coolant cold leg narrow-range temperature (excessive cooldown protection) | 43
4. Feedwater flow (excessive cooldown protection)
5. Primary coolant flow (excessive cooldown protection)
6. Steam line pressure | 43

An exception to this is Containment spray, which is energized to actuate 2/4 and reverts to 2/3 when one channel is in test.

7.3.1.2.2.5.4.3 Solid-State Logic Testing - Except for Containment spray channels, solid-state logic testing is the same as that discussed in Section 7.2.2.2.3. During logic testing of one train, the other two trains can initiate the required ESF function (Ref. 7.3-2). | 43 | 43

(this is logic train, not actuation train)

7.3.1.2.2.5.4.4 Actuation Testing - At this point, testing of the initiation circuits through operation of the master relay and its contacts to the coils of the slave relays has been accomplished. Slave relays do not operate because of reduced voltage. | 43

The ESFAS final actuation device or actuated equipment testing is performed from the Safeguards Test Cabinets. These cabinets are located adjacent to the ESFAS cabinets. There is one set of test cabinets provided for each of the three actuation trains, A, B, and C. Each set of cabinets contains individual test switches necessary to actuate the slave relays. To prevent accidental actuation, test switches are of the type that must be rotated and then depressed to operate the slave relays. Assignments of contacts of the slave relays for actuation of various final devices or actuators have been made so that groups of devices or actuated equipment can be operated individually during plant operation without causing plant upset or equipment damage. In the unlikely event that an SI signal is initiated during the test of the final device that is actuated by this test, the device will already be in its safeguards position. | 43 | 2

During this last procedure, close communication between the main control room operator and the operator at the test panel is required. Prior to the

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handle unexpected events which can be better dealt with by operator appraisal of changing conditions following an accident.

It is most important to note that manual control of the spray system does not occur once actuation has begun by just resetting the associated logic devices alone. Components seal in (latch) so that removal of the actuation signal, in itself, neither cancels nor prevents completion of protective action nor provides the operator with manual override of the automatic system by this single action. In order to take complete control of the system to interrupt its automatic performance, the operator must deliberately unlatch relays which have "sealed in" the initial actuation signals in the associated motor control center, in addition to tripping the pump motor circuit breakers, if stopping the pumps is desirable or necessary. | 43 | 43

The manual reset feature associated with Containment spray, therefore, does not perform a bypass function. It is merely the first of several manual operations required to take control from the automatic system or interrupt its completion should such an action be considered necessary.

In the event that the operator anticipates system actuation and erroneously concludes that it is undesirable or unnecessary and imposes a standing reset condition in one train (by operating and holding the corresponding reset switch at the time the actuation signal is transmitted), the other trains automatically carry the protective action to completion. In the event that the reset condition is imposed simultaneously in all three trains at the time the actuation signals are generated, the automatic sequential completion of system action is interrupted and control has been taken by the operator. Manual takeover is maintained, even though the reset switches are released, if the original actuation signal exists. Should the actuation signal then clear and return again, automatic system actuation will repeat. | 43 | 43 | 43

Any time delays imposed on the system action are applied after the initiating signals are latched. In this way, delays of actuation signals for fluid system lineup, load sequencing, etc., do not provide the operator additional time to interrupt automatic completion with manual reset alone, as would be the case if a time delay were imposed prior to sealing of the initial actuation signal. | 43 | 43

The manual block controls of pressurizer pressure input and excessive cooldown protection input to the SI signal provide the operator with the means to block initiation of SI during plant shutdown and startup and allows main steam line isolation on high steam pressure negative rate. These block features meet the requirements of Paragraph 4.12 of IEEE 279-1971 in that automatic removal of the block occurs when plant conditions require the protection system to be functional. | X | X

(excessive cooldown protection block only)

7.3.1.2.2.7 Manual Initiation of Protective Actions (RG 1.62): There are eight individual main steam isolation momentary control switches (two per loop) mounted on the control board. Each switch, when actuated, isolates one of the main steam lines. In addition, there are two system-level switches. Operating either switch isolates all four steam lines at the system level. | 43

No exception to the requirements of IEEE 279-1971 has been taken in the manual initiation circuit of safety injection. Although Paragraph 4.17 of IEEE

7.3.3 Fuel Handling Building HVAC ESFAS

The ESFAS for the Fuel Handling Building HVAC System uses the spent fuel pool ventilation radiation monitors to sense whether predetermined setpoints have been exceeded. If they are, or if the Westinghouse ESFAS has generated a safety injection signal, the ESFAS sends actuation signals to the appropriate FHB HVAC components. The ESFAS meets the requirements of GDC 13, 20, 21 and 22. X

7.3.3.1 Description. The ESFAS for the FHB HVAC System receives high radiation signals from the redundant spent fuel pool ventilation radiation monitors and the safety injection signal from the NSSS ESFAS. Upon receipt of any of these signals, the building exhaust air is diverted through filters and the supply system is tripped. For a complete description of the Fuel Handling Building HVAC System and its operation, refer to Section 9.4.2. Section 11.5 provides a description of the radiation monitors.

7.3.3.1.1 System Description:

1. Actuating Circuits

The gaseous radioactivity level of the spent fuel pool exhaust air is monitored by two independent and separate radiation monitors. Each monitor transmits a signal to the ESFAS if acceptable radioactivity levels are exceeded. The sensitivity and response times of these monitors are listed in Table 7.3-13. Monitor failure is also sensed and transmitted to the ESFAS, resulting in HVAC operation as if radiation levels were high. 43 X

The Westinghouse ESFAS transmits signals to this ESFAS when an SI signal is generated.

The ESFAS may also be initiated manually.

2. Logic

The Fuel Handling Building HVAC ESFAS logic is shown on Figure 7.3-27. As can be seen in this figure, the two redundant radiation monitors each have three separate and redundant outputs, one to each of the ESFAS trains. In this way, detection of high radiation (or monitor failure) actuates all three trains of HVAC equipment.

A safety injection signal, one from each of the Westinghouse ESFAS actuation trains, is also sent to each ESFAS train.

Manual actuation capability is provided by actuate switches, one for each actuation train. Reset capability is also provided on a per-train basis.

The actuation signal is transmitted to each actuated device, causing each device to assume its safe state for these emergency conditions.

TABLE 7.3-2A

FUNCTIONS/SYSTEMS ACTUATED BY WESTINGHOUSE ESFAS SIGNALS

SAFETY INJECTION SIGNAL	CONTAINMENT SPRAY SIGNAL	
Reactor Trip System	Containment Spray System	43
Turbine Trip	Containment Isolation Phase B (no actuated equipment)	
Feedwater Isolation		
Auxiliary Feedwater System		
Main Steam Line Isolation	AUXILIARY FEEDWATER INITIATION SIGNAL	
Standby Diesel Generators	Auxiliary Feedwater System	43 Q32.16
Component Cooling Water System	Steam Generator Blowdown Isolation	
Safety Injection System	Steam Generator Sample Isolation	
Essential Cooling Water System		
Reactor Containment Fan Coolers		
Containment Isolation Phase A		
Containment Ventilation Isolation		
Control Room Envelope HVAC System		
EAB Main Area HVAC System		43
FHB HVAC Exhaust Subsystem		
ESF Load Sequencers		
Essential Chilled Water Systems		
Electrical Penetration Space HVAC Systems		

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TABLE 7.3-3

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCIIONS

No.	Functional Unit	No. of Channels	No. of Channels To Trip	
1.	Containment Isolation Phase A (See Figure 7.2-8)			
	a. Safety Injection	See item 1 (a through e) of Table 7.3-2		X
	b. Manual	2	1	
2.	Steam Line Isolation (See Figure 7.2-8)			
	a. High ~~steam~~ negative pressure rate (~~can be~~ enabled ~~blocked~~ by Excessive Cooldown Protection SI Block - see Figure 7.2-9)	12 (3/steam line)	2/3 in any steam line	X X X[4]
	b. Safety Injection	See item 1 (a through e) of Table 7.3-2		
	c. Manual*	2	1	
3.	Feedwater Line Isolation (See Figures 7.2-8 and 7.2-14)			
	a. SG hi-hi water level	16 (4/SG)	2/4 in any SG	
	b. Safety Injection	See item 1 (a through e) of Table 7.3-2		
	c. Low compensated T_{cold} (interlocked with P-15)	12 (3/loop)	2/3 in any loop	

* In addition to the two system level steam line isolation switches, each steam loop is provided with switches to effect steam line isolation in that loop.

TABLE 7.3-3 (Continued)

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

No.	Functional Unit	No. of Channels	No. of Channels To Trip
	d. Low primary loop flow or low T_{avg} in 2/4 loops, high FW flow and P-15	See Figures 7.2-5 and 7.2-9	
4.	Containment Isolation Phase B		
	a. Containment Spray	See item 2 (a and b) of Table 7.3-2	
5.	Containment Ventilation Isolation		
	a. Safety Injection	See item 1 (a through e) of Table 7.3-2	
	b. Manual Containment Spray Actuation	See item 2a of Table 7.3-2	
	c. Manual Containment Isolation Phase A	See item 1b of this table	
	d. High radiation signal*	2	1
	e. Low T_{avg} (interlocked with P-4)	4 (1 per loop)	2

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* High radiation signal is derived from 1 of 3 radiation monitors: two Class 1E RCB Purge Isolation monitors and one Containment atmosphere monitor (non-Class 1E). High radiation signal is redundantly provided to logic trains R and S. These radiation monitors are discussed in Section 11.5.

TABLE 7.3-5

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
1A	High-head safety injection pump	A	Start*	6.3-1	9F05013
1B	High-head safety injection pump	B	Start*	6.3-2	9F05014
1C	High-head safety injection pump	C	Start*	6.3-3	9F05015
1A	Low-head safety injection pump	A	Start*	6.3-1	9F05013
1B	Low-head safety injection pump	B	Start*	6.3-2	9F05014
1C	Low-head safety injection pump	C	Start*	6.3-3	9F05015
XSI0039A	Accumulator 1A discharge isolation valve	A	Open	6.3-4	9F05016
XSI0039B	Accumulator 1B discharge isolation valve	B	Open	6.3-4	9F05016
XSI0039C	Accumulator 1C discharge isolation valve	C	Open	6.3-4	9F05016
XCV0113B	RWST to charging pump valve	B	Open	9.3.4-3	9F05007
XCV0112C	RWST to charging pump valve	C	Open	9.3.4-3	9F05007
XCV0113A	VCT outlet isolation valve	B	Close	9.3.4-3	9F05007
XCV0112B	VCT outlet isolation valve	C	Close	9.3.4-3	9F05007
FV-3936	RWST to SFPCCS valve	A	Close	6.3-1	9F05013
FV-3937	RWST to SFPCCS valve	B	Close	6.3-1	9F05013
1A	CCW Pump	A	Start*	9.2.2-1	9F05017
1B	CCW Pump	B	Start*	9.2.2-2	9F05018
1C	CCW Pump	C	Start*	9.2.2-3	9F05019
CC0297	CCW to RCDT HX and excess letdown HX isolation valve	A	Close	9.2.2-5	9F05021

* Through ESF load sequencers

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DELETE ENTIRE TABLE AND INSERT REPLACEMENT TABLE

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STP FSAR

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
CC0393	CCW to excess letdown HX isolation valve	B	Close	9.2.2-5	9F05021
CC0392	CCW to RCDT HX isolation valve	C	Close	9.2.2-5	9F05021
CC0059	RCFC chilled water supply valve	A	Close	9.2.2-1	9F05017
CC0137	RCFC chilled water supply valve	B	Close	9.2.2-2	9F05018
CC0199	RCFC chilled water supply valve	C	Close	9.2.2-3	9F05019
CC0070	RCFC chilled water supply valve	A	Close	9.2.2-1	9F05017
CC0149	RCFC chilled water supply valve	B	Close	9.2.2-2	9F05018
CC0209	RCFC chilled water supply valve	C	Close	9.2.2-3	9F05019
CC0057	CCW RCFC supply valve	A	Open	9.2.2-1	9F05017
CC0136	CCW RCFC supply valve	B	Open	9.2.2-2	9F05018
CC0197	CCW RCFC supply valve	C	Open	9.2.2-3	9F05019
CC0069	CCW RCFC return valve	A	Open	9.2.2-1	9F05017
CC0148	CCW RCFC return valve	B	Open	9.2.2-2	9F05018
CC0210	CCW RCFC return valve	C	Open	9.2.2-3	9F05019
CC0235	CCW common loads isolation valve	A	Close	9.2.2-4	9F05020
CC0032	CCW common loads isolation valve	B	Close	9.2.2-4	9F05020
CC0236	CCW common loads isolation valve	C	Close	9.2.2-4	9F05020
CC0447	CCW common loads isolation valve	C	Close	9.2.2-4	9F05020
1A	RHR pump	A	Stop	5.4-7	9F20000
1B	RHR pump	B	Stop	5.4-7	9F20000
1C	RHR pump	C	Stop	5.4-7	9F20000

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
1A	ECW pump	A	Start*	9.2.1-3	9F05038
1B	ECW pump	B	Start*	9.2.1-3	9F05038
1C	ECW pump	C	Start*	9.2.1-3	9F05038
FV-6935	ECW blowdown isolation valve	A	Close	9.2.1-3	9F05038
FV-6936	ECW blowdown isolation valve	B	Close	9.2.1-3	9F05038
FV-6937	ECW blowdown isolation valve	C	Close	9.2.1-3	9F05038
11A	RCFC fan	A	Start*	6.2.2-4	9V00016
12A	RCFC fan	A	Start*	6.2.2-4	9V00016
11B	RCFC fan	B	Start*	6.2.2-4	9V00016
12B	RCFC fan	B	Start*	6.2.2-4	9V00016
11C	RCFC fan	C	Start*	6.2.2-4	9V00016
12C	RCFC fan	C	Start*	6.2.2-4	9V00016
11A	Essential HVAC chilled water pump	A	Start*	9.4.1-4	9V10001
11B	Essential HVAC chilled water pump	B	Start*	9.4.1-4	9V10001
11C	Essential HVAC chilled water pump	C	Start*	9.4.1-4	9V10001
11A	EAB return air fan	A	Start*	9.4.1-1	9V25000
11B	EAB return air fan	B	Start*	9.4.1-1	9V25000
11C	EAB return air fan	C	Start*	9.4.1-1	9V25000

* Through ESF load sequencers

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
11A	Control room supply air handling unit fan	A	Start*	9.4.1-2	9V25004
11B	Control room supply air handling unit fan	B	Start*	9.4.1-2	9V25004
11C	Control room supply air handling unit fan	C	Start*	9.4.1-2	9V25004
11A	EAB HVAC supply air handling unit fan	A	Start*	9.4.1-1	9V25000
11B	EAB HVAC supply air handling unit fan	B	Start*	9.4.1-1	9V25000
11C	EAB HVAC supply air handling unit fan	C	Start*	9.4.1-1	9V25000
11A	Control room return air fan	A	Start*	9.4.1-1	9V25004
11B	Control room return air fan	B	Start*	9.4.1-1	9V25004
11C	Control room return air fan	C	Satrt*	9.4.1-1	9V25004
11	Standby diesel generator air starting system	A	Start	9.5.6-1	(later)
12	Standby diesel generator air starting system	B	Start	9.5.6-1	(later)
13	Standby diesel generator air starting system	C	Start	9.5.6-1	(later)
11A	Essential HVAC chiller	A	Start*	9.4.1-4	9V10001
11B	Essential HVAC chiller	B	Start*	9.4.1-4	9V10001
11C	Essential HVAC chiller	C	Start*	9.4.1-4	9V10001
12A	Essential HVAC chiller	A	Start*	9.4.1-4	9V10001
12B	Essential HVAC chiller	B	Start*	9.4.1-4	9V10001
12C	Essential HVAC chiller	C	Start*	9.4.1-4	9V10001

* Through ESF load sequencers

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
FV-9700	Control room envelope HVAC fire protection damper	A&B	Open	9.4.1-2	9V25005
FV-9699	Control room envelope HVAC fire protection damper	A&B	Open	9.4.1-2	9V25005
FV-9603	Control room envelope HVAC fire protection damper	A&B	Open	9.4.1-2	9V25005
11A	Containment cubicle exhaust fan	A	Stop	6.2.2-4	9V00016
11B	Containment cubicle exhaust fan	B	Stop	6.2.2-4	9V00016
12A	Containment cubicle exhaust fan	A	Stop	6.2.2-4	9V00016
12B	Containment cubicle exhaust fan	C	Stop	6.2.2-4	9V00016
11A	EAB penetration space emergency fan	C	Start	9.4.1-1	9V00020
11B	EAB penetration space emergency fan	B	Start	9.4.1-1	9V00020
11C	EAB penetration space emergency fan	A	Start	9.4.1-1	9V00020
1A	ECW screen wash booster pump	A	Start	9.2.1-4	9F05039
1B	ECW screen wash booster pump	B	Start	9.2.1-4	9F05039
1C	ECW screen wash booster pump	C	Start	9.2.1-4	9F05039
1A	ECW traveling water screen	A	Start	9.2.1-4	9F05039
1B	ECW traveling water screen	B	Start	9.2.1-4	9F05039
1C	ECW traveling water screen	C	Start	9.2.1-4	9F05039
--	EAB main AHU heating coil breaker	A	Trip	9.4.1-1	9V25000
--	EAB main AHU heating coil breaker	B	Trip	9.4.1-1	9V25000
--	EAB main AHU heating coil breaker	C	Trip	9.4.1-1	9V25000

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
TV-9476	EAB/Control room essential chilled water cooling coils	A	Open	9.4.1-4	9V10002
TV-9486	EAB/Control room essential chilled water cooling coils	B	Open	9.4.1-4	9V10002
TV-9496	EAB/Control room essential chilled water cooling coils	C	Open	9.4.1-4	9V10002
TV-9477	EAB/Control room essential chilled water cooling coils	A	Open	9.4.1-4	9V10002
TV-9487	EAB/Control room essential chilled water cooling coils	B	Open	9.4.1-4	9V10002
TV-9497	EAB/Control room essential chilled water cooling coils	C	Open	9.4.1-4	9V10002
11A	EAB battery room exhaust air fan	A	Start	9.4.1-1	9V25000
11B	EAB battery room exhaust air fan	B	Start	9.4.1-1	9V25000
11C	EAB battery room exhaust air fan	C	Start	9.4.1-1	9V25000
CC0643	CCW heat exchanger throttle valve	A	Open	9.2.2-1	9F05017
CC0645	CCW heat exchanger throttle valve	B	Open	9.2.2-2	9F05018
CC0647	CCW heat exchanger throttle valve	C	Open	9.2.2-3	9F05019
CC0642	CCW heat exchanger bypass valve	A	Close	9.2.2-1	9F05017
CC0644	CCW heat exchanger bypass valve	B	Close	9.2.2-2	9F05018
CC0646	CCW heat exchanger bypass valve	C	Close	9.2.2-3	9F05019
FV-4531	CCW discharge from RHR HX valve	A	Open	9.2.2-1	9F05017
FV-4548	CCW discharge from RHR HX valve	B	Open	9.2.2-2	9F05018
FV-4565	CCW discharge from RHR HX valve	C	Open	9.2.2-3	9F05019
SI0014A	LHSI pump recirculation valve	A	Open	6.3-1	9F05013
SI0014B	LHSI pump recirculation valve	B	Open	6.3-2	9F05014
SI0014C	LHSI pump recirculation valve	C	Open	6.3-3	9F05015

TABLE 7.3-5 (Continued)

SAFETY INJECTION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
SI0011A	HHSI pump recirculation valve	A	Open	6.3-1	9F05013
SI0011B	HHSI pump recirculation valve	B	Open	6.3-2	9F05014
SI0011C	HHSI pump recirculation valve	C	Open	6.3-3	9F05015
FV-7659	Reactor makeup water non-essential services isolation valve	C	Close		9F05033
FV-7663	Reactor makeup water non-essential services isolation valve	B	Close		9F05033
Group 1A	Pressurizer backup heater	A	Off	-	--
Group 1B	Pressurizer backup heater	C	Off	-	--
-	ECW intake structure shunt trip space heater panel breaker	A	Trip	-	--
-	ECW intake structure shunt trip space heater panel breaker	B	Trip	--	--
-	ECW intake structure shunt trip space heater panel breaker	C	Trip	--	--
-	EAB shunt trip space heater panel breaker	A	Trip	--	--
-	EAB shunt trip space heater panel breaker	B	Trip	--	--
-	EAB shunt trip space heater panel breaker	C	Trip	--	--
-	Control room and EAB HVAC outside reheat coil breaker	A	Trip	9.4.1-2	9V25003

TABLE 7.3-5

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
CC0032	CCW TO SFP HEAT EXCHANGERS ISOL. VALVE	B	CLOSE	9.2.2-4	9F05020	Z42045
CC0052	CCW COMMON HEADER OUTLET VALVE	A	OPEN**	9.2.2-4	9F05020	Z42044
CC0057	CCW RCFC SUPPLY ISOL. VALVE	A	OPEN	9.2.2-1	9F05017	Z42042
CC0059	RCFC CHILLED WATER SUPPLY ISOL. VALVE	A	CLOSE	9.2.2-1	9F05017	Z42041
CC0069	CCW RCFC RETURN ISOL. VALVE	A	OPEN	9.2.2-1	9F05017	Z42042
CC0070	RCFC CHILLED WATER RETURN ISOL. VALVE	A	CLOSE	9.2.2-1	9F05017	Z42041
CC0132	CCW COMMON HEADER OUTLET VALVE	B	OPEN**	9.2.2-4	9F05020	Z42044
CC0136	CCW RCFC SUPPLY ISOL. VALVE	B	OPEN	9.2.2-2	9F05018	Z42042
CC0137	RCFC CHILLED WATER SUPPLY ISOL. VALVE	B	CLOSE	9.2.2-2	9F05018	Z42041
CC0148	CCW RCFC RETURN ISOL. VALVE	B	OPEN	9.2.2-2	9F05018	Z42042
CC0149	RCFC CHILLED WATER RETURN ISOL. VALVE	B	CLOSE	9.2.2-2	9F05018	Z42041
CC0192	CCW COMMON HEADER OUTLET VALVE	C	OPEN**	9.2.2-4	9F05020	Z42044
CC0197	CCW RCFC SUPPLY ISOL. VALVE	C	OPEN	9.2.2-3	9F05019	Z42042
CC0199	RCFC CHILLED WATER SUPPLY ISOL. VALVE	C	CLOSE	9.2.2-3	9F05019	Z42041
CC0209	RCFC CHILLED WATER RETURN ISOL. VALVE	C	CLOSE	9.2.2-3	9F05019	Z42041
CC0210	CCW RCFC RETURN ISOL. VALVE	C	OPEN	9.2.2-3	9F05019	Z42042
CC0235	CCW TO NON-ESSENTIAL LOADS ISOLATION VALVE	A	CLOSE	9.2.2-4	9F05020	Z42045
CC0236	CCW TO NON-ESSENTIAL LOADS ISOLATION VALVE	C	CLOSE	9.2.2-4	9F05020	Z42045
CC0297	CCW TO EXCESS LETDOWN & RCDT HX'S ISOL. VALVE	A	CLOSE	9.2.2-5	9F05021	Z42053
CC0312	CCW COMMON HEADER INLET VALVE	C	OPEN**	9.2.2-4	9F05020	Z42044

TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
CC0314	CCW COMMON HEADER INLET VALVE	B	OPEN**	9.2.2-4	9F05020	Z42044
CC0316	CCW COMMON HEADER INLET VALVE	A	OPEN**	9.2.2-4	9F05020	Z42044
CC0392	CCW TO RCDT HX ISOLATION VALVE	C	CLOSE	9.2.2-5	9F05021	Z42054
CC0393	CCW TO EXCESS LETDOWN HX ISOLATION VALVE	B	CLOSE	9.2.2-5	9F05021	Z42053
CC0447	CCW TO SFP HEAT EXCHANGERS ISOL. VALVE	C	CLOSE	9.2.2-4	9F05020	Z42045
CC0642	CCW HEAT EXCHANGER BYPASS VALVE	A	CLOSE	9.2.2-1	9F05017	Z42055
CC0643	CCW HEAT EXCHANGER THROTTLE VALVE	A	OPEN	9.2.2-1	9F05017	Z42055
CC0644	CCW HEAT EXCHANGER BYPASS VALVE	B	CLOSE	9.2.2-2	9F05018	Z42055
CC0645	CCW HEAT EXCHANGER THROTTLE VALVE	B	OPEN	9.2.2-2	9F05018	Z42055
CC0646	CCW HEAT EXCHANGER BYPASS VALVE	C	CLOSE	9.2.2-3	9F05019	Z42055
CC0647	CCW HEAT EXCHANGER THROTTLE VALVE	C	OPEN	9.2.2-3	9F05019	Z42055
CC0768	CCW TO CHARGING PUMPS SUPPLY VALVE	A	OPEN**	9.2.2-4	9F05020	Z42064
CC0770	CCW TO CHARGING PUMPS SUPPLY VALVE	B	OPEN**	9.2.2-4	9F05020	Z42065
CC0771	CCW TO CHARGING PUMPS SUPPLY VALVE	C	OPEN**	9.2.2-4	9F05020	Z42065
CC0772	CCW TO CHARGING PUMPS RETURN VALVE	A	OPEN**	9.2.2-4	9F05020	A42064
CC0774	CCW TO CHARGING PUMPS RETURN VALVE	B	OPEN**	9.2.2-4	9F05020	Z42065
CC0775	CCW TO CHARGING PUMPS RETURN VALVE	C	OPEN**	9.2.2-4	9F05020	Z42065
CCW PUMP 1A	COMPONENT COOLING WATER PUMP 1A	A	START*	9.2.2-1	9F05017	Z42040
CCW PUMP 1B	COMPONENT COOLING WATER PUMP 1B	B	START*	9.2.2-2	9F95018	Z42040
CCW PUMP 1C	COMPONENT COOLING WATER PUMP 1C	C	START*	9.2.2-3	9F05019	Z42040
FV-4531	CCW TO RHR HEAT EXCHANGER ISOLATION VALVE	A	OPEN	9.2.2-1	9F05017	Z42058
FV-4540	CCW TO POST ACCIDENT SAMPLING PANEL ISOL. VALVE	A	CLOSE	9.2.2-4	9F05020	Z42067
FV-4541	CCW TO POST ACCIDENT SAMPLING PANEL ISOL. VALVE	B	CLOSE	9.2.2-4	9F05020	Z42067

TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-454B	CCW TO RHR HEAT EXCHANGER ISOLATION VALVE	B	OPEN	9.2.2-2	9F05018	Z42058
FV-456S	CCW TO RHR HEAT EXCHANGER ISOLATION VALVE	C	OPEN	9.2.2-3	9F05019	Z42058
CH PUMP 11A	ESSENTIAL CHILLED WATER PUMP 11A	A	START*	9.4.1-4	9V10001	Z41570
CH PUMP 11B	ESSENTIAL CHILLED WATER PUMP 11B	B	START*	9.4.1-4	9V10001	Z41570
CH PUMP 11C	ESSENTIAL CHILLED WATER PUMP 11C	C	START*	9.4.1-4	9V10001	Z41570
ESS CLR 001	ESSENTIAL CHILLER 11A	A	START*	9.4.1-4	9V10001	Z41593
ESS CLR 002	ESSENTIAL CHILLER 11B	B	START*	9.4.1-4	9V10001	Z41593
ESS CLR 003	ESSENTIAL CHILLER 11C	C	START*	9.4.1-4	9V10001	Z41593
ESS CLR 004	ESSENTIAL CHILLER 12A	A	START*	9.4.1-4	9V10001	Z41593
ESS CLR 005	ESSENTIAL CHILLER 12B	B	START*	9.4.1-4	9V10001	Z41593
ESS CLR 006	ESSENTIAL CHILLER 12C	C	START*	9.4.1-4	9V10001	Z41593
TV-9476A	CONTROL ROOM COOLING COILS CHILLED WATER OUTLET VALVE	A	OPEN	9.4.1-4	9V10002	Z41592
TV-9476B	CONTROL ROOM CHILLED WATER COOLING COILS BYPASS VALVE	A	CLOSE	9.4.1-4	9V10002	Z41592
TV-9477A	EAB MAIN AREA COOLING COILS CHILLED WATER OUTLET VALVE	A	OPEN	9.4.1-4	9V10002	Z41592
TV-9477B	EAB MAIN AREA CHILLED WATER COOLING COILS BYPASS VALVE	A	CLOSE	9.4.1-4	9V10002	Z41592
TV-9486A	CONTROL ROOM COOLING COILS CHILLED WATER OUTLET VALVE	B	OPEN	9.4.1-4	9V10002	Z41592
TV-9486B	CONTROL ROOM CHILLED WATER COOLING COILS BYPASS VALVE	B	CLOSE	9.4.1-4	9V10002	Z41592
TV-9487A	EAB MAIN AREA COOLING COILS CHILLED WATER OUTLET VALVE	B	OPEN	9.4.1-4	9V10002	Z41592
TV-9487B	EAB MAIN AREA CHILLED WATER COOLING COILS BYPASS VALVE	B	CLOSE	9.4.1-4	9V10002	Z41592
TV-9496A	CONTROL ROOM COOLING COILS CHILLED WATER OUTLET VALVE	C	OPEN	9.4.1-4	9V10002	Z41592
TV-9496B	CONTROL ROOM CHILLED WATER COOLING COILS BYPASS VALVE	C	CLOSE	9.4.1-4	9V10002	Z41592
TV-9497A	EAB MAIN AREA COOLING COILS CHILLED WATER OUTLET VALVE	C	OPEN	9.4.1-4	9V10002	Z41592
TV-9497B	EAB MAIN AREA CHILLED WATER COOLING COILS BYPASS VALVE	C	CLOSE	9.4.1-4	9V10002	Z41592

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TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
XCV0112B	VCT OUTLET ISOLATION VALVE	C	CLOSE	9.3.4-3	9F05007	Z42415
XCV0112C	RWST TO CHARGING PUMPS SUCTION ISOL. VALVE	C	OPEN	9.3.4-3	9F05007	Z42414
XCV0113A	VCT OUTLET ISOLATION VALVE	B	CLOSE	9.3.4-3	9F05007	Z42415
XCV0113B	RWST TO CHARGING PUMPS SUCTION ISOL. VALVE	B	OPEN	9.3.4-3	9F05007	Z42414
DG 11	STANDBY DIESEL GENERATOR 11	A	START	8.3-4SH1	NONE	Z42100
DG 12	STANDBY DIESEL GENERATOR 12	B	START	8.3-4SH1	NONE	Z42100
DG 13	STANDBY DIESEL GENERATOR 13	C	START	8.3-4SH1	NONE	Z42100
BOOST PMP 1A	ECW SCREEN WASH BOOSTER PUMP 1A	A	START**	9.2.1-4	9F05039	Z42078
BOOST PMP 1B	ECW SCREEN WASH BOOSTER PUMP 1B	B	START**	9.2.1-4	9F05039	Z42078
BOOST PMP 1C	ECW SCREEN WASH BOOSTER PUMP 1C	C	START**	9.2.1-4	9F05039	Z42078
ECW PUMP 1A	ESSENTIAL COOLING WATER PUMP 1A	A	START*	9.2.1-3	9F05038	Z42077
ECW PUMP 1B	ESSENTIAL COOLING WATER PUMP 1B	B	START*	9.2.1-3	9F05038	Z42077
ECW PUMP 1C	ESSENTIAL COOLING WATER PUMP 1C	C	START*	9.2.1-3	9F05038	Z42077
ECW STRNR 1A	ECW SELF-CLEANING STRAINER 1A	A	RUN**	9.2.1-3	9F05038	Z42080
ECW STRNR 1B	ECW SELF-CLEANING STRAINER 1B	B	RUN**	9.2.1-3	9F05038	Z42080
ECW STRNR 1C	ECW SELF-CLEANING STRAINER 1C	C	RUN**	9.2.1-3	9F05038	Z42080
EW0121	ECW PUMP DISCHARGE VALVE	A	OPEN**	9.2.1-3	9F05038	Z42081
EW0137	ECW PUMP DISCHARGE VALVE	B	OPEN**	9.2.1-3	9F05038	Z42081
EW0151	ECW PUMP DISCHARGE VALVE	C	OPEN**	9.2.1-3	9F05038	Z42081
FV-6914	ECW SCREEN WASH VALVE	A	OPEN**	9.2.1-4	9F05039	Z42082
FV-6924	ECW SCREEN WASH VALVE	B	OPEN**	9.2.1-4	9F05039	Z42082
FV-6934	ECW SCREEN WASH VALVE	C	OPEN**	9.2.1-4	9F05039	Z42082
FV-6935	ECW BLOWDOWN ISOLATION VALVE	A	CLOSE	9.2.1-3	9F05038	Z42083

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TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-6936	ECW BLOWDOWN ISOLATION VALVE	B	CLOSE	9.2.1-3	9F05038	Z42083
FV-6937	ECW BLOWDOWN ISOLATION VALVE	C	CLOSE	9.2.1-3	9F05038	Z42083
TRAV SCRN 1A	ECW TRAVELLING WATER SCREEN 1A	A	START	9.2.1-4	9F05039	Z42079
TRAV SCRN 1B	ECW TRAVELLING WATER SCREEN 1B	B	START	9.2.1-4	9F05039	Z42079
TRAV SCRN 1C	ECW TRAVELLING WATER SCREEN 1C	C	START	9.2.1-4	9F05039	Z42079
RCB FAN 027	CONTAINMENT CUBICLES EXHAUST FAN 11A	A	TRIP	6.2.2-4	9V00016	Z41657
RCB FAN 028	CONTAINMENT CUBICLES EXHAUST FAN 11B	B	TRIP	6.2.2-4	9V00016	Z41657
RCB FAN 029	CONTAINMENT CUBICLES EXHAUST FAN 12A	A	TRIP	6.2.2-4	9V00016	Z41657
RCB FAN 030	CONTAINMENT CUBICLES EXHAUST FAN 12B	C	TRIP	6.2.2-4	9V00016	Z41657
RCFC FAN 001	REACTOR CONTAINMENT FAN COOLER 11A	A	START*	6.2.2-4	9V00016	Z41630
RCFC FAN 002	REACTOR CONTAINMENT FAN COOLER 12A	A	START*	6.2.2-4	9V00016	Z41630
RCFC FAN 003	REACTOR CONTAINMENT FAN COOLER 11B	B	START*	6.2.2-4	9V00016	Z41630
RCFC FAN 004	REACTOR CONTAINMENT FAN COOLER 12B	B	START*	6.2.2-4	9V00016	Z41630
RCFC FAN 005	REACTOR CONTAINMENT FAN COOLER 11C	C	START*	6.2.2-4	9V00016	Z41630
RCFC FAN 006	REACTOR CONTAINMENT FAN COOLER 12C	C	START*	6.2.2-4	9V00016	Z41630
EAB FAN 001	EAB HVAC RETURN AIR FAN 11A	A	START*	9.4.1-1	9V25000	Z41703
EAB FAN 002	EAB HVAC RETURN AIR FAN 11B	B	START*	9.4.1-1	9V25000	Z41703
EAB FAN 003	EAB HVAC RETURN AIR FAN 11C	C	START*	9.4.1-1	9V25000	Z41703
EAB FAN 010	EAB BATTERY ROOM EXHAUST FAN 11A	A	START	9.4.1-1	9V25000	Z41573
EAB FAN 011	EAB BATTERY ROOM EXHAUST FAN 11B	B	START	9.4.1-1	9V25000	Z41573
EAB FAN 012	EAB BATTERY ROOM EXHAUST FAN 11C	C	START	9.4.1-1	9V25000	Z41573
EAB FAN 014	EAB HVAC SUPPLY AIR FAN 11A	A	START*	9.4.1-1	9V25000	Z41572
EAB FAN 015	EAB HVAC SUPPLY AIR FAN 11B	B	START*	9.4.1-1	9V25000	Z41572

← ADD INSERT 1 (LAST PAGE) →

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TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
EAB FAN 016	EAB HVAC SUPPLY AIR FAN 11C	C	START*	9.4.1-1	9V25000	Z41572
EAB FAN 030	ELECTRICAL PENETRATION SPACE EMERGENCY FAN 11C	C	START	9.4.1-1	9V00020	Z41724
EAB FAN 031	ELECTRICAL PENETRATION SPACE EMERGENCY FAN 11B	B	START	9.4.1-1	9V00020	Z41724
EAB FAN 032	ELECTRICAL PENETRATION SPACE EMERGENCY FAN 11A	A	START	9.4.1-1	9V00020	Z41724
EAB HEATER	EAB SPACE HEATER BREAKER	A	TRIP	NONE	NONE	EVFAD01
EAB HEATER	EAB SPACE HEATER PANEL BREAKER	B	TRIP	NONE	NONE	EVFAD01
EAB HEATER	EAB SPACE HEATER PANEL BREAKER	C	TRIP	NONE	NONE	EVFAD01
EAB HX 009	EAB MAIN AIR HANDLING UNIT HEATING COIL 11A	A	TR	9.4.1-1	9V25000	Z41708
EAB HX 012	EAB MAIN AIR HANDLING UNIT HEATING COIL 11B	B	TR	9.4.1-1	9V25000	Z41708
EAB HX 015	EAB MAIN AIR HANDLING UNIT HEATING COIL 11C	C	TRIP	9.4.1-1	9V25000	Z41708
FV-9603	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	A	OPEN	9.4.1-2	9V25005	Z41702
FV-9603	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	B	OPEN	9.4.1-2	9V25005	Z41702
FV-9652	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	C	CLOSE**	9.4.1-1	9V25000	Z41581
FV-9653	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	C	OPEN**	9.4.1-1	9V25000	Z41581
FV-9654	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	B	CLOSE**	9.4.1-1	9V25000	Z41581
FV-9655	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	B	OPEN**	9.4.1-1	9V25000	Z41581
FV-9656	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	A	CLOSE**	9.4.1-1	9V25000	Z41581
FV-9657	EAB SUPPLY AIR HANDLING UNIT OUTLET DAMPER	A	OPEN**	9.4.1-1	9V25000	Z41581
FV-9699	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	A	OPEN	9.4.1-2	9V25005	Z41702
FV-9699	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	B	OPEN	9.4.1-2	9V25005	Z41702
FV-9700	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	A	OPEN	9.4.1-2	9V25005	Z41702
FV-9700	CONTROL ROOM HVAC HALON FIRE PROTECTION DAMPER	B	OPEN	9.4.1-2	9V25005	Z41702
REHEAT COIL	EAB REHEAT COILS BREAKER (1)	A	TRIP	9.4.1-1	9V25001	Z41704

TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
REHEAT COILS	EAB REHEAT COILS BREAKERS (6) ← add INSERT 2 (last page) →	A	TRIP	9.4.1-1	9V25002	Z41704
REHEAT COILS	EAB REHEAT COILS BREAKERS (4)	A	TRIP	9.4.1-2	9V25005	Z41704
FHB AHU 004	ESF PUMPS SUPPLEMENTARY COOLER 11A	A	START**	9.4.2-1	9V00012	Z41614
FHB AHU 005	ESF PUMPS SUPPLEMENTARY COOLER 11B	B	START**	9.4.2-1	9V00012	Z41614
FHB AHU 006	ESF PUMPS SUPPLEMENTARY COOLER 11C	C	START**	9.4.2-1	9V00012	Z41614
FHB AHU 012	SUPPLEMENTARY COOLER - SUMP ISOLATION VALVE CUBICLE	A	START**	9.4.2-1	9V00012	Z41741
FHB AHU 013	SUPPLEMENTARY COOLER - SUMP ISOLATION VALVE CUBICLE 11B	B	START**	9.4.2-1	9V00012	Z41741
FHB AHU 014	SUPPLEMENTARY COOLER - SUMP ISOLATION VALVE CUBICLE 11C	C	START**	9.4.2-1	9V00012	Z41741
DGB FAN 001	DIESEL GENERATOR ROOM EMERGENCY VENT FAN 11A	A	START**	9.4.6-1	9V00015	Z41621
DGB FAN 002	DIESEL GENERATOR ROOM EMERGENCY VENT FAN 11B	B	START**	9.4.6-1	9V00015	Z41621
DGB FAN 003	DIESEL GENERATOR ROOM EMERGENCY VENT FAN 11C	C	START**	9.4.6-1	9V00015	Z41621
TV-9743	DIESEL GENERATOR ROOM RECIRCULATION DAMPER	A	CLOSE**	9.4.6-1	9V00015	Z41622
TV-9743A	DIESEL GENERATOR ROOM INTAKE DAMPER	A	OPEN**	9.4.6-1	9V00015	Z41622
TV-9744	DIESEL GENERATOR ROOM RECIRCULATION DAMPER	B	CLOSE**	9.4.6-1	9V00015	Z41622
TV-9744A	DIESEL GENERATOR ROOM INTAKE DAMPER	B	OPEN**	9.4.6-1	9V00015	Z41622
TV-9745	DIESEL GENERATOR ROOM RECIRCULATION DAMPER	C	CLOSE**	9.4.6-1	9V00015	Z41622
TV-9745A	DIESEL GENERATOR ROOM INTAKE DAMPER	C	OPEN**	9.4.6-1	9V00015	Z41622
MAB AHU 001	CCW PUMP SUPPLEMENTARY COOLER 11A	A	START**	9.4.3-3	9V00008	Z41553
MAB AHU 002	CCW PUMP SUPPLEMEMTARY COOLER 11B	B	START**	9.4.3-3	9V00008	Z41553
MAB AHU 003	CCW PUMP SUPPLEMEMTARY COOLER 11C	C	START**	9.4.3-3	9V00008	Z41553
MAB AHU 007	CVCS VALVE CUBICLE ROOM 044 FAN COOLER	C	START	9.4.3-3	9V00008	Z41553
MAB AHU 010	CVCS VALVE CUBICLE ROOM 033 FAN COOLER 11A	A	START	9.4.3-3	9V00008	Z41553
MAB AHU 011	CVCS VALVE CUBICLE ROOM 033 FAN COOLER 11B	B	START	9.4.3-3	9V00008	Z41553

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TABLE 7.3-5 (Continue

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
MAB AHU 014	CVCS VALVE CUBICLE ROOM 226 FAN COOLER 11A	B	START	9.4.3-3	9V00008	Z41553
MAB AHU 015	CVCS VALVE CUBICLE ROOM 226 FAN COOLER 11B	C	START	9.4.3-3	9V00008	Z41553
MAB AHU 019	ESSENTIAL CHILLER AREA ROOM 067 FAN COOLER 11A	A	START	9.4.3-3	9V00008	Z41553
MAB AHU 020	ESSENTIAL CHILLER AREA ROOM 067E FAN COOLER 11B	B	START	9.4.3-3	9V00008	Z41553
MAB AHU 021	ESSENTIAL CHILLER AREA ROOM 067F FAN COOLER 11C	C	START	9.4.3-3	9V00008	Z41553
MAB AHU 022	RADIATION & HYDROGEN MONITORS ROOM FAN COOLER 11A	A	START	9.4.3-3	9V00008	Z41554
MAB AHU 023	RADIATION & HYDROGEN MONITORS ROOM FAN COOLER 11B	C	START	9.4.3-3	9V00008	Z41554
ECW FAN 001	ECW PUMP CUBICLE VENT FAN 11A	A	START**	9.4.7-1	9V00027	Z41674
ECW FAN 002	ECW PUMP CUBICLE VENT FAN 12A	A	START**	9.4.7-1	9V00027	Z41674
ECW FAN 003	ECW PUMP CUBICLE VENT FAN 11B	B	START**	9.4.7-1	9V00027	Z41674
ECW FAN 004	ECW PUMP CUBICLE VENT FAN 12B	B	START**	9.4.7-1	9V00027	Z41674
ECW FAN 005	ECW PUMP CUBICLE VENT FAN 11C	C	START**	9.4.7-1	9V00027	Z41674
ECW FAN 006	ECW PUMP CUBICLE VENT FAN 12C	C	START**	9.4.7-1	9V00027	Z41674
ECWIS HTR	ECW INTAKE STRUCTURE SPACE HEATER PANEL BKR	A	TRIP	NONE	NONE	EVFAC01
ECWIS HTR	ECW INTAKE STRUCTURE SPACE HEATER PANEL BKR	B	TRIP	NONE	NONE	EVFAC01
ECWIS HTR	ECW INTAKE STRUCTURE SPACE HEATER PANEL BKR	C	TRIP	NONE	NONE	EVFAC01
FV-9894	ECW PUMP CUBICLE INTAKE DAMPER	A	OPEN**	9.4.7-1	9V00027	Z41675
FV-9894A	ECW PUMP CUBICLE EXHAUST DAMPER	A	OPEN**	9.4.7-1	9V00027	Z41675
FV-9895	ECW PUMP CUBICLE INTAKE DAMPER	B	OPEN**	9.4.7-1	9V00027	Z41675
FV-9895A	ECW PUMP CUBICLE EXHAUST DAMPER	B	OPEN**	9.4.7-1	9V00027	Z41675
FV-9896	ECW PUMP CUBICLE INTAKE DAMPER	C	OPEN**	9.4.7-1	9V00027	Z41675
FV-9896A	ECW PUMP CUBICLE EXHAUST DAMPER	C	OPEN**	9.4.7-1	9V00027	Z41675
MCC 1A5	NON-CLASS 1E LOADS CONNECTED TO CLASS 1E BUS	A	TRIP	NONE	NONE	EPMAK01

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TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
MCC 1B5	NON-CLASS 1E LOADS CONNECTED TO CLASS 1E BUS	B	TRIP	NONE	NONE	EPMAL01
MCC 1C5	NON-CLASS 1E LOADS CONNECTED TO CLASS 1E BUS	C	TRIP	NONE	NONE	EPMAM01
PZR HTR 1A	PRESSURIZER HEATER BACKUP GROUP 1A	A	TRIP	NONE	NONE	Z42151
PZR HTR 1B	PRESSURIZER HEATER BACKUP GROUP 1B	C	TRIP	NONE	NONE	Z42151
RHR PUMP 1A	RESIDUAL HEAT REMOVAL PUMP 1A	A	STOP	5.4-6	9F20000	Z42180
RHR PUMP 1B	RESIDUAL HEAT REMOVAL PUMP 1B	B	STOP	5.4-6	9F20000	Z42180
RHR PUMP 1C	RESIDUAL HEAT REMOVAL PUMP 1C	C	STOP	5.4-6	9F20000	Z42180
FV-7659	REACTOR MAKEUP WATER NON-ESSENTIAL SERVICES ISOL. VALVE	C	CLOSE	9.2.7-1	9F05033	Z40072
FV-7663	REACTOR MAKEUP WATER NON-ESSENTIAL SERVICES ISOL. VALVE	B	CLOSE	9.2.7-1	9F05033	Z40072
FV-3936	RWST TO SFPCCS ISOLATION VALVE	A	CLOSE	6.3-1	9F05013	Z42008
FV-3937	RWST TO SFPCCS ISOLATION VALVE	B	CLOSE	6.3-1	9F05013	Z42008
HHSI PUMP 1A	HIGH HEAD SAFETY INJECTION PUMP 1A	A	START*	6.3-1	9F05013	Z42000
HHSI PUMP 1B	HIGH HEAD SAFETY INJECTION PUMP 1B	B	START*	6.3-2	9F05014	Z42000
HHSI PUMP 1C	HIGH HEAD SAFETY INJECTION PUMP 1C	C	START*	6.3-3	9F05015	Z42000
LHSI PUMP 1A	LOW HEAD SAFETY INJECTION PUMP 1A	A	START*	6.3-1	9F05013	Z42000
LHSI PUMP 1B	LOW HEAD SAFETY INJECTION PUMP 1B	B	START*	6.3-2	9F05014	Z42000
LHSI PUMP 1C	LOW HEAD SAFETY INJECTION PUMP 1C	C	START*	6.3-3	9F05015	Z42000
XSI0039A	ACCUMULATOR DISCHARGE ISOLATION VALVE	A	OPEN	6.3-4	9F05016	Z42028
XSI0039B	ACCUMULATOR DISCHARGE ISOLATION VALVE	B	OPEN	6.3-4	9F05016	Z42028
XSI0039C	ACCUMULATOR DISCHARGE ISOLATION VALVE	C	OPEN	6.3-4	9F05016	Z42028
DG 11 BRKR	STANDBY DIESEL GENERATOR FEEDER BREAKER	A	SEE FIG.	8.3-4SH3	NONE	Z42121
DG 12 BRKR	STANDBY DIESEL GENERATOR FEEDER BREAKER	B	SEE FIG.	8.3-4SH3	NONE	Z42121
DG 13 BRKR	STANDBY DIESEL GENERATOR FEEDER BREAKER	C	SEE FIG.	8.3-4SH3	NONE	Z42121

TABLE 7.3-5 (Continued)

Safety Injection Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
SEQUENCER 1A	ESF LOAD SEQUENCER	A	START	8.3-4SH2	NONE	Z42117
SEQUENCER 1B	ESF LOAD SEQUENCER	B	START	8.3-4SH2	NONE	Z42118
SEQUENCER 1C	ESF LOAD SEQUENCER	C	START	8.3-4SH2	NONE	Z42119

* Actuation is through the ESF load sequencer.

** Equipment not actuated directly by ESFAS signal. Actuation is from equipment directly actuated.

See also Tables 7.3-7, 7.3-9 to 7.3-11, 7.3-15, 7.3-17 and 7.3-18. Safety injection signal is used as an input to signals actuating the equipment listed in those tables.

INSERT 1

PV-6854	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 11A	A	OPEN**	9.2.1-3	9F05D38	Z42084
PV-6864	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 11B	B	OPEN**	9.2.1-3	9F05D38	Z42084
PV-6874	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 11C	C	OPEN**	9.2.1-3	9F05D38	Z42084
PV-6904	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 12A	A	OPEN**	9.2.1-3	9F05D38	Z42084
PV-6905	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 12B	B	OPEN**	9.2.1-3	9F05D38	Z42084
PV-6906	ECW FLOW CONTROL VALVE TO ESSENTIAL CHILLER 12C	C	OPEN**	9.2.1-3	9F05D38	Z42084

INSERT 2

REHEAT COIL	CONTROL ROOM AND EAB HVAC OUTSIDE AIR REHEAT COIL BREAKER	A	TRIP**	9.4.1-2	9V25003	Z41770

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TABLE 7.3-6

CONTAINMENT SPRAY ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
1A	Containment spray pump	A	Start*	6.2.2-1	9F05037
1B	Containment spray pump	B	Start*	6.2.2-1	9F05037
1C	Containment spray pump	C	Start*	6.2.2-1	9F05037
XCS0001A	Containment spray pump discharge isolation valve	A	Open	6.2.2-1	9F05037
XCS0001B	Containment spray pump discharge isolation valve	B	Open	6.2.2-1	9F05037
XCS0001C	Containment spray pump discharge isolation valve	C	Open	6.2.2-1	9F05037
CS0015A	Spray additive tank discharge isolation valve	A	Open	6.2.2-1	9F05037
CS0015B	Spray additive tank discharge isolation valve	B	Open	6.2.2-1	9F05037
CS0015C	Spray additive tank discharge isolation valve	C	Open	6.2.2-1	9F05037

*Through ESF load sequences

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DELETE & USE REPLACEMENT TABLE

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TABLE 7.3-6

Containment Spray Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
CS0015A	SPRAY ADDITIVE TANK DISCHARGE ISOLATION VALVE	A	OPEN	6.2.2-1	9F05037	Z42131
CS0015B	SPRAY ADDITIVE TANK DISCHARGE ISOLATION VALVE	B	OPEN	6.2.2-1	9F05037	Z42131
CS0015C	SPRAY ADDITIVE TANK DISCHARGE ISOLATION VALVE	C	OPEN	6.2.2-1	9F05037	Z42131
CSS PUMP 1A	CONTAINMENT SPRAY PUMP 1A	A	START*	6.2.2-1	9F05037	Z42130
CSS PUMP 1B	CONTAINMENT SPRAY PUMP 1B	B	START*	6.2.2-1	9F05037	Z42130
CSS PUMP 1C	CONTAINMENT SPRAY PUMP 1C	C	START*	6.2.2-1	9F05037	Z42130
XCS0001A	CONTAINMENT SPRAY PUMP DISCHARGE VALVE	A	OPEN	6.2.2-1	9F05037	Z42132
XCS0001B	CONTAINMENT SPRAY PUMP DISCHARGE VALVE	B	OPEN	6.2.2-1	9F05037	Z42132
XCS0001C	CONTAINMENT SPRAY PUMP DISCHARGE VALVE	C	OPEN	6.2.2-1	9F05037	Z42132
FHB AHU 004	ESF PUMPS SUPPLEMENTARY COOLER 11A	A	START**	9.4.2-1	9V00012	Z41614
FHB AHU 005	ESF PUMPS SUPPLEMENTARY COOLER 11B	B	START**	9.4.2-1	9V00012	Z41614
FHB AHU 006	ESF PUMPS SUPPLEMENTARY COOLER 11C	C	START**	9.4.2-1	9V00012	Z41614
FHB AHU 012	SUPPLEMENTARY COOLER - SUMP ISOLATION VALVE CUBICLE 11A	A	START**	9.4.2-1	9V00012	Z41741
FHB AHU 013	SUPPLEMEMTARY COOLER - SUMP ISOLATION VALVE CUBICLE 11B	B	START**	9.4.2-1	9V00012	Z41741
FHB AHU 014	SUPPLEMENTARY COOLER - SUMP ISOLATION VALVE CUBICLE 11C	C	START**	9.4.2-1	9V00012	Z41741

* Actuation is through the ESF load sequencer.

** Equipment not actuated directly by ESFAS signal. Actuation is from equipment directly actuated.

DELETE & USE REPLACEMENT TABLE

TABLE 7.3-7

CONTAINMENT ISOLATION PHASE A ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
FV-4450	Pressurizer vapor sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4451	Pressurizer liquid sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4452	Pressurizer sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4454	RC hot leg #1 sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4455	RC hot leg #3 sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4456	Reactor coolant hot leg sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4458	RHR loop A sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4459	RHR loop B sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4460	RHR loop C sample isolation valve	B	Close	9.3.2-11	9Z00045
FV-4461	RHR sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4463	SI accumulator A sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4464	SI accumulator B sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4465	SI accumulator C sample isolation valve	C	Close	9.3.2-11	9Z00045
FV-4466	SI accumulator sample isolation valve	B	Close	9.3.2-11	9Z00045
XCV0023	CVCS letdown isolation valve	C	Close	9.3.4-1	9F05005
XCV0024	CVCS letdown isolation valve	B	Close	9.3.4-1	9F05005
XCV0025	CVCS charging isolation valve	B	Close	9.3.4-1	9F05005
XCV0077	RCP seal water leakoff return isolation valve	C	Close	9.3.4-1	9F05005
XCV0079	RCP seal water leakoff return isolation valve	B	Close	9.3.4-1	9F05005

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TABLE 7.3-7 (Continued)

CONTAINMENT ISOLATION PHASE A ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
XCV0033A	CVCS seal water injection isolation valve	B	Close*	9.3.4-1	9F05005
XCV0033B	CVCS seal water injection isolation valve	B	Close*	9.3.4-1	9F05005
XCV0033C	CVCS seal water injection isolation valve	B	Close*	9.3.4-1	9F05005
XCV0033D	CVCS seal water injection isolation valve	B	Close*	9.3.4-1	9F05005
WL0312	RCDT discharge isolation valve	A	Close	11.2-1	9F05022
FV-4920	RCDT vent isolation valve	A	Close	11.2-1	9F05022
FV-4913	RCDT discharge isolation valve	B	Close	11.2-1	9F05022
FV-4919	RCDT vent isolation valve	B	Close	11.2-1	9F05022
ED-0064	Containment normal sump discharge isolation valve	B	Close	9.3.3-1	9F05030
FV-7800	Containment normal sump discharge isolation valve	A	Close	9.3.3-1	9F05030
FV-8565	Containment instrument air supply isolation valve	B	Close	9.3.3-1	9F05040
FV-3970	SIS accumulator test line isolation valve	B	Close	6.3-4	9F05016
FV-3971	SIS accumulator test line isolation valve	A	Close	6.3-4	9F05016
FV-3983	Accumulator nitrogen supply isolation valve	A	Close	6.3-4	9F05016
FV-3651	Pressurizer relief tank makeup isolation valve	B	Close	5.1-4	9F05004
FV-3652	Pressurizer relief tank isolation valve	B	Close	5.1-4	9F05004
FV-3653	Pressurizer relief tank isolation valve	A	Close	5.1-4	9F05004
CHO-254	RCFC chilled water supply isolation valve	A	Close	9.4.4-5	9V00021
CHO-268	RCFC chilled water return isolation valve	A	Close	9.4.4-5	9V00021
CHO-269	RCFC chilled water return isolation valve	B	Close	9.4.5-5	9V00021

* Actuation signal in coincidence with low charging header pressure results in valve closure.

TABLE 7.3-7 (Continued)

CONTAINMENT ISOLATION PHASE A ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
FV-2454	RHR post accident sample isolation valve	A	Close	9.3.2-15	9Z47501
FV-2453	Containment sump post accident sample isolation valve	A	Close	9.3.2-15	9Z47501
LVC-0465	Letdown stop valve	A	Close	9.3.4-1	9F05005
LVC-0468	Letdown stop valve	C	Close	9.3.4-1	9F05005
FV-4100	Containment hydrogen monitoring sample select valve	A	Close	7.6-7	9Z00046
FV-4124	Containment hydrogen monitoring sample select valve	A	Close	7.6-7	9Z00046
FV-4125	Containment hydrogen monitoring sample select valve	A	Close	7.6-7	9Z00046
FV-4126	Containment hydrogen monitoring sample select valve	A	Close	7.6-7	9Z00046
FV-4101	Containment hydrogen monitoring isolation valve	A	Close	7.6-7	9Z00046
FV-4127	Containment hydrogen monitoring isolation valve	A	Close	7.6-7	9Z00046
FV-4128	Containment hydrogen monitoring isolation valve	A	Close	7.6-7	9Z00046
FV-4103	Containment hydrogen monitoring sample select valve	C	Close	7.6-7	9Z00046
FV-4129	Containment hydrogen monitoring sample select valve	C	Close	7.6-7	9Z00046
FV-4130	Containment hydrogen monitoring sample select valve	C	Close	7.6-7	9Z00046
FV-4131	Containment hydrogen monitoring sample select valve	C	Close	7.6-7	9Z00046
FV-4134	Containment hydrogen monitoring isolation valve	C	Close	7.6-7	9Z00046
FV-4104	Containment hydrogen monitoring isolation valve	C	Close	7.6-7	9Z00046
FV-4133	Containment hydrogen monitoring isolation valve	C	Close	7.6-7	9Z00046
FV-2455	RCS post-accident sample isolation valve	B	Close	9.3.2-15	9Z47501
FV-2458	Liquid post-accident sample discharge isolation valve	C	Close	9.3.2-15	9Z47501
FV-2457	Containment atmosphere post-accident sample discharge isolation valve	C	Close	9.3.2-15	9Z47501

TABLE 7.3-7 (Continued)

CONTAINMENT ISOLATION PHASE A ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number	
FV-2456	Containment atmosphere post accident sample inlet isolation valve	C	Close	9.3.2-15	9Z47501	43
FP0756	Fire Protection containment isolation valve	C	Close	--	9F05047	

TABLE 7.3-7

Containment Isolation Phase A Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-2453	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	A	CLOSE	9.3.2-15	9Z47501	Z41894
FV-2454	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	A	CLOSE	9.3.2-15	9Z47501	Z41896
FV-2455	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-15	9Z47501	Z41925
FV-2455A	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-15	9Z47501	Z41925
FV-2456	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-15	9Z47501	Z41894
FV-2457	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-15	9Z47501	Z41894
FV-2458	POST ACCIDENT SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-15	9Z47501	Z41896
CH0254	RCB CHILLED WATER CONT. ISOL. VALVE	A	CLOSE	9.4.5-5	9V00021	Z41640
CH0268	RCB CHILLED WATER CONT. ISOL. VALVE	A	CLOSE	9.4.5-5	9V00021	Z41640
CH0269	RCB CHILLED WATER CONT. ISOL. VALVE	B	CLOSE	9.4.5-5	9V00021	Z41640
FV-4101	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	A	CLOSE	7.6-7	9Z00046	Z41502
FV-4104	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	C	CLOSE	7.6-7	9Z00046	Z41502
FV-4127	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	A	CLOSE	7.6-7	9Z00046	Z41502
FV-4128	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	A	CLOSE	7.6-7	9Z00046	Z41513
FV-4133	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	C	CLOSE	7.6-7	9Z00046	Z41502
FV-4134	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	C	CLOSE	7.6-7	9Z00046	Z41513
FV-4135	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	A	CLOSE	7.6-7	9Z00046	Z41513
FV-4136	CONT. HYDROGEN MONITORING CONT. ISOL. VALVE	C	CLOSE	7.6-7	9Z00046	Z41513
CV0033A	SEAL WATER INJECTION CONT. ISOL. VALVE	B	CLOSE*	9.3.4-1	9F05005	Z42413
CV0033B	SEAL WATER INJECTION CONT. ISOL. VALVE	B	CLOSE*	9.3.4-1	9F05005	Z42413

* Isolation signal is Containment isolation phase A signal concurrent with low charging header pressure.

TABLE 7.3-7 (Continued)

Containment Isolation Phase A Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
CV0033C	SEAL WATER INJECTION CONT. ISOL. VALVE	B	CLOSE*	9.3.4-1	9F05005	Z42413
CV0033D	SEAL WATER INJECTION CONT. ISOL. VALVE	B	CLOSE*	9.3.4-1	9F05005	Z42413
CV0077	SEAL WATER RETURN CONT. ISOL. VALVE	C	CLOSE	9.3.4-1	9F05005	Z42412
CV0079	SEAL WATER RETURN CONT. ISOL. VALVE	B	CLOSE	9.3.4-1	9F05005	Z42412
LCV-465	LETDOWN STOP VALVE	A	CLOSE	9.3.4-1	9F05005	Z42408
LCV-468	LETDOWN STOP VALVE	C	CLOSE	9.3.4-1	9F05005	Z42408
XCV0023	LETDOWN ISOLATION VALVE	C	CLOSE	9.3.4-1	9F05005	Z42410
XCV0024	LETDOWN ISOLATION VALVE	B	CLOSE	9.3.4-1	9F05005	Z42410
XCV0025	CHARGING CONT. ISOL. VALVE	A	CLOSE	9.3.4-1	9F05005	Z42416
ED0064	CONT. SUMP DISCHARGE CONT. ISOL. VALVE	B	CLOSE	9.3.3-1	9F05030	Z42317
FV-7800	CONT. SUMP DISCHARGE CONT. ISOL. VALVE	A	CLOSE	9.3.3-1	9F05030	Z42318
FP0756	FIRE PROTECTION SYSTEM CONT. ISOL. VALVE	C	CLOSE	9.5.1-55	9F05047	Z40061
FV-8565	INSTRUMENT AIR CONT. ISOL. VALVE	B	CLOSE	9.3.1-3	9F05040	Z40012
FV-4450	PRESSURIZER VAPOR SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41516
FV-4450A	PRESSURIZER VAPOR SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41516
FV-4451	PRESSURIZER LIQUID SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41516
FV-4451A	PRESSURIZER LIQUID SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41516
FV-4451B	PRESSURIZER LIQUID SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41509
FV-4452	PRESSURIZER VAPOR SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41509
FV-4454	REACTOR COOLANT HOT LEG SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41518
FV-4454A	REACTOR COOLANT HOT LEG SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41518
FV-4455	REACTOR COOLANT HOT LEG SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41518
FV-4455A	REACTOR COOLANT HOT LEG SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41518

* Isolation signal is Containment isolation phase A signal concurrent with low charging header pressure.

TABLE 7.3-7 (Continued)

Containment Isolation Phase A Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-4456	REACTOR COOLANT HOT LEG SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41509
FV-4461	RHR SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41509
FV-4466	ACCUMULATORS SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41509
FV-4823	RHR SAMPLING CONT. ISOL. VALVE	B	CLOSE	9.3.2-11	9Z00045	Z41515
FV-4824	ACCUMULATORS SAMPLING CONT. ISOL. VALVE	C	CLOSE	9.3.2-11	9Z00045	Z41517
FV-3651	PRESSURIZER RELIEF TANK CONT. ISOL. VALVE	B	CLOSE	5.1-4	9F05004	Z42157
FV-3652	PRESSURIZER RELIEF TANK CONT. ISOL. VALVE	B	CLOSE	5.1-4	9F05004	Z42157
FV-3653	PRT VENT CONT. ISOL. VALVE	A	CLOSE	5.1-4	9F05004	Z42158
FV-3970	SIS TEST LINE CONT. ISOL. VALVE	B	CLOSE	6.3-4	9F05016	Z42009
FV-3971	SIS TEST LINE CONT. ISOL. VALVE	A	CLOSE	6.3-4	9F05016	Z42009
FV-3983	SIS NITROGEN HEADER CONT. ISOL. VALVE	A	CLOSE	6.3-4	9F05016	Z42009
FV-4913	RCDT DISCHARGE CONT. ISOL. VALVE	B	CLOSE	11.2-1	9F05022	Z42272
FV-4919	RCDT VENT CONT. ISOL. VALVE	B	CLOSE	11.2-1	9F05022	Z42272
FV-4920	RCDT VENT CONT. ISOL. VALVE	A	CLOSE	11.2-1	9F05022	Z42271
WL0312	LWPS CONT. ISOL. VALVE	A	CLOSE	11.2-1	9F05022	Z42262

DELETE & USE REPLACEMENT TABLE

TABLE 7.3-9

CONTAINMENT VENTILATION ISOLATION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
HA0001	Containment supplementary purge supply isolation valve	A	Close	9.4.5-3	9V00019
HA0003	Containment supplementary purge supply isolation valve	C	Close	9.4.5-3	9V00019
HA0005	Containment supplementary purge exhaust isolation valve	B	Close	9.4.5-3	9V00019
HA0006	Containment supplementary purge exhaust isolation valve	C	Close	9.4.5-3	9V00019
HA0007	Containment normal purge supply isolation valve	A	Close	9.4.5-2	9V00018
HA0008	Containment normal purge supply isolation valve	B	Close	9.4.5-2	9V00018
HA0009	Containment normal purge supply isolation valve	A	Close	9.4.5-2	9V00018
HA0010	Containment normal purge supply isolation valve	B	Close	9.4.5-2	9V00018
RP0001	Containment atmosphere radiation monitor isolation valve	B	Close	9.4.5-1	9V00017
RP0003	Containment atmosphere radiation monitor isolation valve	B	Close	9.4.5-1	9V00017
RP0004	Containment atmosphere radiation monitor isolation valve	A	Close	9.4.5-1	9V00017
RP0006	Containment atmosphere radiation monitor isolation valve	A	Close	9.4.5-1	9V00017

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TABLE 7.3-9

Containment Ventilation Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
HC0001	RCB SUPPLEMENTARY PURGE CONT. ISOL. VALVE	A	CLOSE	9.4.5-3	9V00019	Z41644
HC0003	RCB SUPPLEMENTARY PURGE CONT. ISOL. VALVE	B	CLOSE	9.4.5-3	9V00019	Z41644
HC0005	RCB SUPPLEMENTARY PURGE CONT. ISOL. VALVE	B	CLOSE	9.4.5-3	9V00019	Z41644
HC0006	RCB SUPPLEMENTARY PURGE CONT. ISOL. VALVE	A	CLOSE	9.4.5-3	9V00019	Z41644
HC0007	RCB NORMAL PURGE CONT. ISOL. VALVE	A	CLOSE	9.4.5-2	9V00018	Z41648
HC0008	RCB NORMAL PURGE CONT. ISOL. VALVE	B	CLOSE	9.4.5-2	9V00018	Z41648
HC0009	RCB NORMAL PURGE CONT. ISOL. VALVE	A	CLOSE	9.4.5-2	9V00018	Z41648
HC0010	RCB NORMAL PURGE CONT. ISOL. VALVE	B	CLOSE	9.4.5-2	9V00018	Z41648
RA0001	RCB ATMOS. RAD MONITOR CONT. ISOL. VALVE	B	CLOSE	9.4.5-1	9V00017	Z41911
RA0003	RCB ATMOS. RAD MONITOR CONT. ISOL. VALVE	B	CLOSE	9.4.5-1	9V00017	Z41911
RA0004	RCB ATMOS. RAD MONITOR CONT. ISOL. VALVE	A	CLOSE	9.4.5-1	9V00017	Z41911
RA0006	RCB ATMOS. RAD MONITOR CONT. ISOL. VALVE	A	CLOSE	9.4.5-1	9V00017	Z41911

DELETE & USE REPLACEMENT TABLE

TABLE 7.3-10

STEAM LINE ISOLATION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
FV-7412	Main steam isolation bypass valve	A&B	Close	10.3-1	9F00016
FV-7422	Main steam isolation bypass valve	A&B	Close	10.3-1	9F00016
FV-7432	Main steam isolation bypass valve	A&B	Close	10.3-1	9F00016
FV-7442	Main steam isolation bypass valve	A&B	Close	10.3-1	9F00016
FSV-7414	Main steam isolation valve	A&B	Close	10.3-1	9F00016
FSV-7424	Main steam isolation valve	A&B	Close	10.3-1	9F00016
FSV-7434	Main steam isolation valve	A&B	Close	10.3-1	9F00016
FSV-7444	Main steam isolation valve	A&B	Close	10.3-1	9F00016
FV-7900A	Isolation valve for MSIV above seat drains	A&B	Close	10.3-1	9F00016
FV-7901A	Isolation valve for MSIV above seat drains	A&B	Close	10.3-1	9F00016
FV-7902A	Isolation valve for MSIV above seat drains	A&B	Close	10.3-1	9F00016
FV-7903A	Isolation valve for MSIV above seat drains	A&B	Close	10.3-1	9F00016

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TABLE 7.3-10

Steam Line Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FSV-7414	MAIN STEAM ISOLATION VALVE	A	CLOSE	10.3-1	9F00016	Z40076
FSV-7414	MAIN STEAM ISOLATION VALVE	B	CLOSE	10.3-1	9F00016	Z40076
FSV-7424	MAIN STEAM ISOLATION VALVE	A	CLOSE	10.3-1	9F00016	Z40076
FSV-7424	MAIN STEAM ISOLATION VALVE	B	CLOSE	10.3-1	9F00016	Z40076
FSV-7434	MAIN STEAM ISOLATION VALVE	A	CLOSE	10.3-1	9F00016	Z40076
FSV-7434	MAIN STEAM ISOLATION VALVE	B	CLOSE	10.3-1	9F00016	Z40076
FSV-7444	MAIN STEAM ISOLATION VALVE	A	CLOSE	10.3-1	9F00016	Z40076
FSV-7444	MAIN STEAM ISOLATION VALVE	B	CLOSE	10.3-1	9F00016	Z40076
FV-7412	MAIN STEAM ISOLATION BYPASS VALVE	A	CLOSE	10.3-1	9F00016	Z40078
FV-7412	MAIN STEAM ISOLATION BYPASS VALVE	B	CLOSE	10.3-1	9F00016	Z40078
FV-7422	MAIN STEAM ISOLATION BYPASS VALVE	A	CLOSE	10.3-1	9F00016	Z40078
FV-7422	MAIN STEAM ISOLATION BYPASS VALVE	B	CLOSE	10.3-1	9F00016	Z40078
FV-7432	MAIN STEAM ISOLATION BYPASS VALVE	A	CLOSE	10.3-1	9F00016	Z40078
FV-7432	MAIN STEAM ISOLATION BYPASS VALVE	B	CLOSE	10.3-1	9F00016	Z40078
FV-7442	MAIN STEAM ISOLATION BYPASS VALVE	A	CLOSE	10.3-1	9F00016	Z40078
FV-7442	MAIN STEAM ISOLATION BYPASS VALVE	B	CLOSE	10.3-1	9F00016	Z40078
FV-7900A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	A	CLOSE	10.3-1	9F00016	Z40270
FV-7900A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	B	CLOSE	10.3-1	9F00016	Z40270
FV-7901A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	A	CLOSE	10.3-1	9F00016	Z40270
FV-7901A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	B	CLOSE	10.3-1	9F00016	Z40270

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TABLE 7.3-10 (Continued)

Steam Line Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-7902A	MSIV ABOVE SEAT DRAINS CONT. ISOL VALVE	A	CLOSE	10.3-1	9F00016	Z40270
FV-7902A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	B	CLOSE	10.3-1	9F00016	Z40270
FV-7903A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	A	CLOSE	10.3-1	9F00016	Z40270
FV-7903A	MSIV ABOVE SEAT DRAINS CONT. ISOL. VALVE	B	CLOSE	10.3-1	9F00016	Z40270

DELETE & USE REQUIREMENT TABLE

TABLE 7.3-11

FEEDWATER ISOLATION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure Number	P&ID Number
FCV-551	Feedwater control valve	A&B	Close	10.4.7-4	9F00063
FCV-552	Feedwater control valve	A&B	Close	10.4.7-4	9F00063
FCV-553	Feedwater control valve	A&B	Close	10.4.7-4	9F00063
FCV-554	Feedwater control valve	A&B	Close	10.4.7-4	9F00063
FV-7141	Feedwater isolation valve	A&B	Close	10.4.7-4	9F00063
FV-7142	Feedwater isolation valve	A&B	Close	10.4.7-4	9F00063
FV-7143	Feedwater isolation valve	A&B	Close	10.4.7-4	9F00063
FV-7144	Feedwater isolation valve	A&B	Close	10.4.7-4	9F00063
FV-7145A	Feedwater isolation valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7146A	Feedwater isolation valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7147A	Feedwater isolation valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7148A	Feedwater isolation valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7151	Feedwater control valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7152	Feedwater control valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7153	Feedwater control valve bypass valve	A&B	Close	10.4.7-4	9F00063
FV-7154	Feedwater control valve bypass valve	A&B	Close	10.4.7-4	9F00063

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TABLE 7.3-11

Feedwater Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FCV-551	MAIN FEEDWATER CONTROL VALVE	A	CLOSE	10.4.7-4	9F00063	Z40112
FCV-551	MAIN FEEDWATER CONTROL VALVE	B	CLOSE	10.4.7-4	9F00063	Z40112
FCV-552	MAIN FEEDWATER CONTROL VALVE	A	CLOSE	10.4.7-4	9F00063	Z40112
FCV-552	MAIN FEEDWATER CONTROL VALVE	B	CLOSE	10.4.7-4	9F00063	Z40112
FCV-553	MAIN FEEDWATER CONTROL VALVE	A	CLOSE	10.4.7-4	9F00063	Z40112
FCV-553	MAIN FEEDWATER CONTROL VALVE	B	CLOSE	10.4.7-4	9F00063	Z40112
FCV-554	MAIN FEEDWATER CONTROL VALVE	A	CLOSE	10.4.7-4	9F00063	Z40112
FCV-554	MAIN FEEDWATER CONTROL VALVE	B	CLOSE	10.4.7-4	9F00063	Z40112
FV-7141	MAIN FEEDWATER ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40116
FV-7141	MAIN FEEDWATER ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40116
FV-7142	MAIN FEEDWATER ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40116
FV-7142	MAIN FEEDWATER ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40116
FV-7143	MAIN FEEDWATER ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40116
FV-7143	MAIN FEEDWATER ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40116
FV-7144	MAIN FEEDWATER ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40116
FV-7144	MAIN FEEDWATER ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40116
FV-7145A	MAIN FEEDWATER ISOLATION BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40121
FV-7145A	MAIN FEEDWATER ISOLATION BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40121
FV-7146A	MAIN FEEDWATER ISOLATION BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40121
FV-7146A	MAIN FEEDWATER ISOLATION BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40121

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TABLE 7.3-11 (Continued)

Feedwater Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-7147A	MAIN FEEDWATER ISOLATION BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40121
FV-7147A	MAIN FEEDWATER ISOLATION BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40121
FV-7148A	MAIN FEEDWATER ISOLATION BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40121
FV-7148A	MAIN FEEDWATER ISOLATION BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40121
FV-7151	MAIN FEEDWATER CONTROL BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40117
FV-7151	MAIN FEEDWATER CONTROL BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40117
FV-7152	MAIN FEEDWATER CONTROL BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40117
FV-7152	MAIN FEEDWATER CONTROL BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40117
FV-7153	MAIN FEEDWATER CONTROL BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40117
FV-7153	MAIN FEEDWATER CONTROL BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40117
FV-7154	MAIN FEEDWATER CONTROL BYPASS VALVE	A	CLOSE	10.4.7-4	9F00063	Z40117
FV-7154	MAIN FEEDWATER CONTROL BYPASS VALVE	B	CLOSE	10.4.7-4	9F00063	Z40117
FV-7189	SG PREHEATER BYPASS ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40486
FV-7189	SG PREHEATER BYPASS ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40486
FV-7190	SG PREHEATER BYPASS ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40486
FV-7190	SG PREHEATER BYPASS ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40486
FV-7191	SG PREHEATER BYPASS ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40486
FV-7191	SG PREHEATER BYPASS ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40486
FV-7192	SG PREHEATER BYPASS ISOLATION VALVE	A	CLOSE	10.4.7-4	9F00063	Z40486
FV-7192	SG PREHEATER BYPASS ISOLATION VALVE	B	CLOSE	10.4.7-4	9F00063	Z40486

TABLE 7.3-11 (Continued)

Feedwater Isolation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
	Actuated only by safety injection, SG high-high water level, or excessive cooldown protection signals.					
SGFP 11	MAIN STEAM GENERATOR FEED PUMP 11	A	TRIP	10.4.7-3	9F00061	Z40482
SGFP 11	MAIN STEAM GENERATOR FEED PUMP 11	B	TRIP	10.4.7-3	9F00061	Z40482
SGFP 12	MAIN STEAM GENERATOR FEED PUMP	A	TRIP	10.4.7-3	9F00061	Z40482
SGFP 12	MAIN STEAM GENERATOR FEED PUMP 12	B	TRIP	10.4.7-3	9F00061	Z40482
SGFP 13	MAIN STEAM GENERATOR FEED PUMP 13	A	TRIP	10.4.7-3	9F00061	Z40482
SGFP 13	MAIN STEAM GENERATOR FEED PUMP 13	B	TRIP	10.4.7-3	9F00061	Z40482
ST-UP FW PMP	START-UP STEAM GENERATOR FEED PUMP	A	TRIP	10.4.7-3	9F00061	Z40483
ST-UP FW PMP	START-UP STEAM GENERATOR FEED PUMP	B	TRIP	10.4.7-3	9F00061	Z40483
PV-7174 &74A	MAIN STEAM TO DEAERATOR CONTROL VALVES	A	CLOSE	10.4.7-3	9F20009	Z40086
PV-7174 &74A	MAIN STEAM TO DEAERATOR CONTROL VALVES	B	CLOSE	10.4.7-3	9F20009	Z40086
TURBINE	MAIN TURBINE TRIP - AUTO STOP VALVES	A	TRIP	10.3-2	9F00017	Z40243
TURBINE	MAIN TURBINE TRIP - AUTO STOP VALVES	B	TRIP	10.3-2	9F00017	Z40243

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TABLE 7.3-15

AUXILIARY FEEDWATER INITIATION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure No.	P&ID Number
11	AFW pump	A	Start*	10.4.9-1	9F00024
12	AFW pump	B	Start*	10.4.9-1	9F00024
13	AFW pump	C	Start*	10.4.9-1	9F00024
FV-7518	AFW crossover valve	A	Close	10.4.9-1	9F00024
FV-7517	AFW crossover valve	A	Close	10.4.9-1	9F00024
FV-7516	AFW crossover valve	B	Close	10.4.9-1	9F00024
FV-7515	AFW crossover valve	C	Close	10.4.9-1	9F00024
FV-7523	AFW regulator valve	C	Open	10.4.9-1	9F00024
FV-7524	AFW regulator valve	B	Open	10.4.9-1	9F00024
FV-7525	AFW regulator valve	A	Open	10.4.9-1	9F00024
FV-7526	AFW regulator valve	A	Open	10.4.9-1	9F00024
MS0143	AFW pump turbine steam inlet valve	A	Open**	10.4.9-1	9F00024
XMS0514	AFW pump turbine trip and throttle valve	A	Open	10.4.9-1	9F00024
AF0019	AFW turbine pump isolation valve	A	Open	10.4.9-1	9F00024
AF0048	AFW pump isolation valve	A	Open	10.4.9-1	9F00024
AF0065	AFW pump isolation valve	B	Open	10.4.9-1	9F00024

**After a time delay to assure proper turbine speed control (see Section 10.4.9)

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TABLE 7.3-15 (Continued)

AUXILIARY FEEDWATER INITIATION ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure No.	P&ID Number
AF0085	AFW pump isolation valve	C	Open	10.4.9-1	9F00024
FV-0143	AFW pump turbine steam inlet bypass valve	A	Open	10.4.9-1	9F00024
FV-4150	Steam generator blowdown valve	A	Close	10.4.8-1	9F20001
FV-4151	Steam generator blowdown valve	C	Close	10.4.8-1	9F20001
FV-4152	Steam generator blowdown valve	B	Close	10.4.8-1	9F20001
FV-4153	Steam generator blowdown valve	A	Close	10.4.8-1	9F20001
FV-4186	Steam generator sample isolation valve	A	Close	10.4.8-1	9F20001
FV-4187	Steam generator sample isolation valve	C	Close	10.4.8-1	9F20001
FV-4188	Steam generator sample isolation valve	B	Close	10.4.8-1	9F20001
FV-4189	Steam generator sample isolation valve	A	Close	10.4.8-1	9F20001

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TABLE 7.3-15

Auxiliary Feedwater Initiation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
AF0019	AFW TURBINE TRAIN CONTAINMENT ISOLATION VALVE	A	OPEN	10.4.9-1	9F00024	Z40136
AF0048	AFW CONTAINMENT ISOLATION VALVE	A	OPEN	10.4.9-1	9F00024	Z40141
AF0065	AFW CONTAINMENT ISOLATION VALVE	B	OPEN	10.4.9-1	9F00024	Z40141
AF0085	AFW CONTAINMENT ISOLATION VALVE	C	OPEN	10.4.9-1	9F00024	Z40141
AFW PUMP 11	AFW MOTOR-DRIVEN PUMP 11	A	START*	10.4.9-1	9F00024	Z40131
AFW PUMP 12	AFW MOTOR-DRIVEN PUMP 12	B	START*	10.4.9-1	9F00024	Z40131
AFW PUMP 13	AFW MOTOR-DRIVEN PUMP 13	C	START*	10.4.9-1	9F00024	Z40131
FV-0143	AFW PUMP TURBINE STEAM INLET BYPASS VALVE	A	OPEN	10.4.9-1	9F00024	Z40132
FV-7515	AFW CROSSOVER VALVE	C	CLOSE	10.4.9-1	9F00024	Z40133
FV-7516	AFW CROSSOVER VALVE	B	CLOSE	10.4.9-1	9F00024	Z40133
FV-7517	AFW CROSSOVER VALVE	A	CLOSE	10.4.9-1	9F00024	Z40133
FV-7518	AFW CROSSOVER VALVE	A	CLOSE	10.4.9-1	9F00024	Z40134
FV-7523	AFW FLOW REGULATOR VALVE	C	CONTROL	10.4.9-1	9F00024	Z40142
FV-7524	AFW FLOW REGULATOR VALVE	B	CONTROL	10.4.9-1	9F00024	Z40142
FV-7525	AFW FLOW REGULATOR VALVE	A	CONTROL	10.4.9-1	9F00024	Z40142
FV-7526	AFW TURBINE TRAIN FLOW REGULATOR VALVE	A	CONTROL	10.4.9-1	9F00024	Z40140
MS0143	AFW PUMP TURBINE MAIN STEAM INLET VALVE	A	OPEN***	10.4.9-1	9F00024	Z40132
XMS0514	AFW PUMP TURBINE TRIP & THROTTLE VALVE	A	OPEN	10.4.9-1	9F00024	Z40135
IVC FAN 001	MSIVC VENT FAN FOR AFW PUMP (11A)	A	START**	9.4.8-1	9V25008	Z41634
IVC FAN 002	MSIVC VENT FAN FOR AFW PUMP (11B)	B	START**	9.4.8-1	9V25008	Z41634

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TABLE 7.3-15 (Continued)

Auxiliary Feedwater Initiation Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
IVC FAN 003	MSIVC VENT FAN FOR AFW PUMP (11C)	C	START**	9.4.8-1	9V25008	Z41634
IVC FAN 004	MSIVC VENT FAN FOR AFW TURBINE DRIVEN PUMP	A	START**	9.4.8-1	9V25008	Z41634
FV-4150	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40203
FV-4150	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40203
FV-4151	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40203
FV-4151	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	C	CLOSE	10.4.8-1	9F20001	Z40203
FV-4152	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40203
FV-4152	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	C	CLOSE	10.4.8-1	9F20001	Z40203
FV-4153	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40203
FV-4153	SG BLOWDOWN CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40203
FV-4186	SG SAMPLING CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40208
FV-4186A	SG SAMPLING CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40208
FV-4187	SG SAMPLING CONTAINMENT ISOLATION VALVE	C	CLOSE	10.4.8-1	9F20001	Z40208
FV-4187A	SG SAMPLING CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40208
FV-4188	SG SAMPLING CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40208
FV-4188A	SG SAMPLING CONTAINMENT ISOLATION VALVE	C	CLOSE	10.4.8-1	9F20001	Z40208
FV-4189	SG SAMPLING CONTAINMENT ISOLATION VALVE	A	CLOSE	10.4.8-1	9F20001	Z40208
FV-4189A	SG SAMPLING CONTAINMENT ISOLATION VALVE	B	CLOSE	10.4.8-1	9F20001	Z40208

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* Actuation is through the ESF load sequencer.

** Equipment not actuated directly by ESFAS signal. Actuation is from equipment directly actuated.

*** After a time delay to assure proper turbine speed control (see Section 10.4.9).

TABLE 7.3-16

SENSITIVITY AND RESPONSE TIMES OF
RADIATION MONITORS USED FOR ESFAS

Monitor Description	Sensitivity	Response Time*
Control Room/EAB Ventilation	5.3×10^{-8} μCi/cc ~~(later)~~	3 seconds ~~(later)~~ e
Spent Fuel Pool Ventilation	1.1×10^{-7} μCi/cc ~~(later)~~	3 seconds ~~(later)~~ e

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* Response time given includes ESFAS circuitry response time and radiation monitor response time for the design basis accident. Response time for radiation monitors is radiation-level dependent.

TABLE 7.3-17

CONTROL ROOM ENVELOPE HVAC ESFAS ACTUATED EQUIPMENT LIST

DELETE & USE REPLACEMENT TABLE

Equipment Identification	Description	ESF Train	Function	Figure No.	P&ID Number
11A	Control room makeup air fan	A	Start	9.4.1-2	9V25003
11B	Control room makeup air fan	B	Start	9.4-1-2	9V25003
11C	Control room makeup air fan	C	Start	9.4.1-2	9V25003
FV-9677	Control room cleanup unit return air filter damper	A	Open	9.4.1-2	9V25004
FV-9676	Control room cleanup unit return air filter damper	B	Open	9.4.1-2	9V25004
FV-9675	Control room cleanup unit return air filter damper	C	Open	9.4.1-2	9V25004
FV-9670	Control room envelope HVAC isolation damper	A	Close	9.4.1-2	9V25004
FV-9671	Control room envelope HVAC isolation damper	B	Close	9.4.1-2	9V25004
FV-9673	Control room envelope HVAC isolation damper	A	Close	9.4.1-2	9V25004
FV-9667	Control room envelope HVAC isolation damper	A	Close	9.4.1-2	9V25004
FV-9668	Control room envelope HVAC isolation damper	B	Close	9.4.1-2	9V25004
FV-9674	Control room envelope HVAC isolation damper	B	Close	9.4.1-2	9V25004
FV-9664	Control room envelope HVAC isolation damper	C	Close	9.4.1-2	9V25004
FV-9665	Control room envelope HVAC isolation damper	A	Close	9.4.1-2	9V25004
11A	Control room air cleanup unit fan	A	Start	9.4.1-1	9V25004
11B	Control room air cleanup unit fan	B	Start	9.4.1-1	9V25004
11C	Control room air cleanup unit fan	C	Start	9.4.1-1	9V25004

TABLE 7.3-17 (Continued)

CONTROL ROOM ENVELOPE HVAC ESFAS ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure No.	P&ID Number
FV-9339	Control room makeup unit air filter inlet damper	A	Open	9.4.1-2	9V25003
FV-9365	Control room makeup unit air filter inlet damper	B	Open	9.4.1-2	9V25003
FV-9391	Control room makeup unit air filter inlet damper	C	Open	9.4.1-2	9V25003
FV-9698	Control room envelope return air damper	A	Close	9.4.1-2	9V25004
FV-9697	Control room envelope return air damper	B	Close	9.4.1-2	9V25004
FV-9696	Control room envelope return air damper	C	Close	9.4.1-2	9V25004

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TABLE 7.3-17

Control Room Envelope HVAC ESFAS Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
CR FAN 004	CONTROL ROOM MAKEUP AIR FAN 11A	A	START*	9.4.1-2	9V25003	Z41571
CR FAN 005	CONTROL ROOM MAKEUP AIR FAN 11B	B	START*	9.4.1-2	9V25003	Z41571
CR FAN 006	CONTROL ROOM MAKEUP AIR FAN 11C	C	START*	9.4.1-2	9V25003	Z41571
CR FAN 007	CONTROL ROOM CLEANUP AIR FAN 11A	A	START*	9.4.1-2	9V25004	Z41575
CR FAN 008	CONTROL ROOM CLEANUP AIR FAN 11B	B	START*	9.4.1-2	9V25004	Z41575
CR FAN 009	CONTROL ROOM CLEANUP AIR FAN 11C	C	START*	9.4.1-2	9V25004	Z41575
CR FAN 017	CONTROL ROOM SUPPLY AIR FAN 11A	A	START*	9.4.1-2	9V25004	Z41594
CR FAN 018	CONTROL ROOM SUPPLY AIR FAN 11B	B	START*	9.4.1-2	9V25004	Z41594
CR FAN 019	CONTROL ROOM SUPPLY AIR FAN 11C	C	START*	9.4.1-2	9V25004	Z41594
CR FAN 025	CONTROL ROOM RETURN AIR FAN 11A	A	START*	9.4.1-2	9V25004	Z41574
CR FAN 026	CONTROL ROOM RETURN AIR FAN 11B	B	START*	9.4.1-2	9V25004	Z41574
CR FAN 027	CONTROL ROOM RETURN AIR FAN 11C	C	START*	9.4.1-2	9V25004	Z41574
CR HX 004	CONTROL ROOM ENVELOPE MAKEUP UNIT HEATING COIL 11A	A	ON**	9.4.1-2	9V25003	Z41707
CR HX 005	CONTROL ROOM ENVELOPE MAKEUP UNIT HEATING COIL 11B	B	ON**	9.4.1-2	9V25003	Z41707
CR HX 006	CONTROL ROOM ENVELOPE MAKEUP UNIT HEATING COIL 11C	C	ON**	9.4.1-2	9V25003	Z41707
FCV-9584	CONTROL ROOM ENVELOPE MAKEUP FLOW CONTROL DAMPER	A	CONTROL**	9.4.1-2	9V25003	Z41706
FCV-9585	CONTROL ROOM ENVELOPE MAKEUP FLOW CONTROL DAMPER	B	CONTROL**	9.4.1-2	9V25003	Z41706
FCV-9586	CONTROL ROOM ENVELOPE MAKEUP FLOW CONTROL DAMPER	C	CONTROL**	9.4.1-2	9V25003	Z41706
FV-9339	CONTROL ROOM MAKEUP AIR DAMPER	A	OPEN*	9.4.1-2	9V25003	Z41587
FV-9365	CONTROL ROOM MAKEUP AIR DAMPER	B	OPEN*	9.4.1-2	9V25003	Z41587

TABLE 7.3-17 (Continued)

Control Room Envelope HVAC ESFAS Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FV-9391	CONTROL ROOM MAKEUP AIR DAMPER	C	OPEN*	9.4.1-2	9V25003	Z41587
FV-9664	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	C	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9665	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	A	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9667	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	A	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9668	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	B	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9670	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	A	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9671	CONTROL ROOM ENVELOPE INLET ISOLATION DAMPER	B	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9673	CONTROL ROOM HVAC TOILET & KITCHEN EXHAUST ISOL. DAMPER	A	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9674	CONTROL ROOM HVAC TOILET & KITCHEN EXHAUST ISOL. DAMPER	B	CLOSE*	9.4.1-2	9V25004	Z41597
FV-9675	CONTROL ROOM CLEANUP UNIT INLET DAMPER	C	OPEN*	9.4.1-2	9V25004	Z41595
FV-9676	CONTROL ROOM CLEANUP UNIT INLET DAMPER	B	OPEN*	9.4.1-2	9V25004	Z41595
FV-9677	CONTROL ROOM CLEANUP UNIT INLET DAMPER	A	OPEN*	9.4.1-2	9V25004	Z41595
FV-9696	CONTROL ROOM HVAC RETURN AIR DAMPER	C	CLOSE*	9.4.1-2	9V25004	Z41598
FV-9697	CONTROL ROOM HVAC RETURN AIR DAMPER	B	CLOSE*	9.4.1-2	9V25004	Z41598
FV-9698	CONTROL ROOM HVAC RETURN AIR DAMPER	A	CLOSE*	9.4.1-2	9V25004	Z41598

* Actuation is through the ESF load sequencer.

** Equipment not actuated directly by ESFAS signal. Actuation is from equipment directly actuated.

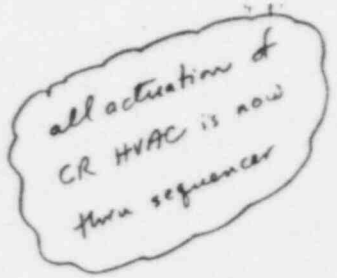

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TABLE 7.3-18

FUEL HANDLING BUILDING HVAC ESFAS ACTUATED EQUIPMENT LIST

Equipment Identification	Description	ESF Train	Function	Figure No.	P&ID Number
11A	FHB HVAC main exhaust fan	A	Start	9.4.2-2	9V00013
11B	FHB HVAC main exhaust fan	B	Start	9.4.2-2	9V00013
11C	FHB HVAC main exhaust fan	C	Start	9.4.2-2	9V00013
11A	FHB HVAC exhaust booster fan	A	Start	9.4.2-2	9V00013
11B	FHB HVAC exhaust booster fan	B	Start	9.4.2-2	9V00013
11C	FHB HVAC exhaust booster fan	C	Start	9.4.2-2	9V00013
FV-9500	FHB HVAC relief supply damper	A	Open	9.4.2-2	9V00012
FV-9500A	FHB HVAC relief supply damper	B	Open	9.4.2-2	9V00012
FV-9549D	FHB HVAC exhaust air bypass damper	A	Close	9.4.2-2	9V00013
FV-9549C	FHB HVAC exhaust air bypass damper	B	Close	9.4.2-2	9V00013
FV-9507	FHB HVAC exhaust filter outlet damper	A	Open	9.4.2-2	9V00013
FV-9507A	FHB HVAC exhaust filter outlet damper	B	Open	9.4.2-2	9V00013
FV-9549	FHB HVAC exhaust filter inlet damper	A	Open	9.4.2-2	9V00013
FV-9549A	FHB HVAC exhaust filter inlet damper	B	Open	9.4.2-2	9V00013

DELETE & USE REPLACEMENT TABLE

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TABLE 7.3-18

Fuel Handling Building HVAC ESFAS Actuated Equipment List

IDENT	DESCRIPTION	ESF TRAIN	FUNCTION	FIGURE	P&ID	LOGIC
FHB FAN 004	FHB MAIN EXHAUST FAN 11A	A	START	9.4.2-2	9V00013	Z41601
FHB FAN 005	FHB MAIN EXHAUST FAN 11B	B	START	9.4.2-2	9V00013	Z41601
FHB FAN 006	FHB HVAC MAIN EXHAUST FAN 11C	C	START	9.4.2-2	9V00013	Z41601
FHB FAN 007	FHB HVAC EXHAUST BOOSTER FAN 11A	A	START	9.4.2-2	9V00013	Z41602
FHB FAN 008	FHB HVAC EXHAUST BOOSTER FAN 11B	B	START	9.4.2-2	9V00013	Z41602
FHB FAN 009	FHB HVAC EXHAUST BOOSTER FAN 11C	C	START	9.4.2-2	9V00013	Z41602
FV-9500	FHB HVAC RELIEF SUPPLY DAMPER	A	OPEN	9.4.2-1	9V00012	Z41618
FV-9500A	FHB HVAC RELIEF SUPPLY DAMPER	B	OPEN	9.4.2-1	9V00012	Z41618
FV-9543	FHB HVAC EXHAUST FILTER INLET DAMPER	A	OPEN	9.4.2-2	9V00013	Z41609
FV-9543A	FHB HVAC EXHAUST FILTER INLET DAMPER	B	OPEN	9.4.2-2	9V00013	Z41609
FV-9543C	FHB HVAC EXHAUST AIR BYPASS DAMPER	B	CLOSE	9.4.2-2	9V00013	Z41617
FV-9543D	FHB HVAC EXHAUST AIR BYPASS DAMPER	A	CLOSE	9.4.2-2	9V00013	Z41617
HV-9507	FHB HVAC EXHAUST FILTER OUTLET DAMPER	A	OPEN	9.4.2-2	9V00013	Z41608
HV-9507A	FHB HVAC EXHAUST FILTER OUTLET DAMPER	B	OPEN	9.4.2-2	9V00013	Z41608
FHB FAN 001	FHB MAIN SUPPLY FAN 11A	N	STOP *	9.4.2-1	9V00012	Z41600
FHB FAN 002	FHB MAIN SUPPLY FAN 11B	N	STOP *	9.4.2-1	9V00012	Z41600
FHB FAN 003	FHB MAIN SUPPLY FAN 11C	N	STOP *	9.4.2-1	9V00012	Z41600

* The supply fans are tripped whenever either relief supply damper is open.

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