TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	VALVE GROUPS OPERATED BY SIGNAL (a)	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)	APPLICABLE OPERATIONAL CONDITION	ACTION
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION				
i. RHR Equipment Room Ambient Temperature - High	4	1/room	1, 2, 3	27
j. RHR Equipment Room Δ Temp. - High	4	1/room	1, 2, 3	27
k. RHR/RCIC Steam Line Flow - High	4	1	1, 2, 3	27
l. Manual Initiation	4(k)	1	1, 2, 3	26
m. Drywell Pressure-High (ECCS-Division 1 and Division 2)	9(m)	1	1, 2, 3	27
6. RHR SYSTEM ISOLATION				
a. RHR Equipment Room Ambient Temperature - High	3	1/room	1, 2, 3	28
b. RHR Equipment Room Δ Temp. - High	3	1/room	1, 2, 3	28
c. Reactor Vessel Water Level - ~~Low~~, Level 3	3	2	1, 2, 3	28
	3(p)	2(p)	4, 5	31
d. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	3(l)	2	1, 2, 3	28
e. Drywell Pressure - High	3(l)	2	1, 2, 3	28
f. Manual Initiation	3	2	1, 2, 3	26

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TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

ACTION

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 21 - Close the affected system isolation valve(s) within one hour or:
a. In OPERATIONAL CONDITION 1, 2, or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
b. In OPERATIONAL CONDITION *, suspend CORE ALTERATIONS, handling of irradiated fuel in the primary containment and operations with a potential for draining the reactor vessel.

ACTION 22 - Restore the manual initiation function to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

ACTION 23 - Be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 24 - Be in at least STARTUP within 6 hours.

ACTION 25 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within one hour.

ACTION 26 - Restore the manual initiation function to OPERABLE status within 8 hours or close the affected system isolation valves within the next hour and declare the affected system inoperable.

ACTION 27 - Close the affected system isolation valves within one hour and declare the affected system inoperable.

ACTION 28 - Within one hour lock the affected system isolation valves closed, or verify, by remote indication, that the valve is closed and electrically disarmed, or isolate the penetration(s) and declare the affected system inoperable.

ACTION 29 - Close the affected system isolation valves within one hour and declare the affected system or component inoperable or:
a. In OPERATIONAL CONDITION 1, 2 or 3 be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
b. In OPERATIONAL CONDITION # suspend CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

INSERT 1

ACTION 30 - Declare the affected SLCS pump inoperable.

NOTES

* When handling irradiated fuel in the primary or secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

** The low condenser vacuum MSIV closure may be manually bypassed during reactor SHUTDOWN or for reactor STARTUP when condenser vacuum is below the trip setpoint to allow opening of the MSIVs. The manual bypass shall be removed when condenser vacuum exceeds the trip setpoint.

\# During CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

(a) See Specification 3.6.4, Table 3.6.4-1 for valves in each valve group.

INSERT 1 TO TS TABLE 3.3.2-1

ACTION 31 - Implement the requirements of Specifications 3.3.2, 3.6.6.1, 3.6.6.2 and 3.6.6.3 for operations that have a potential for draining the reactor vessel.

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TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

NOTES (Continued)

(b) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one other OPERABLE channel in the same trip system is monitoring that parameter.
(c) Also actuates the standby gas treatment system.
(d) Also actuates the control room emergency filtration system in the isolation mode of operation.
(e) Two upscale-Hi Hi, one upscale-Hi Hi and one downscale, or two downscale signals from the same trip system actuate the trip system and initiate isolation of the associated containment and drywell isolation valves.
(f) Also trips and isolates the mechanical vacuum pumps.
(g) Deleted.
(h) Also actuates secondary containment ventilation isolation dampers and valves per Table 3.6.6.2-1.
(i) Closes only RWCU system isolation valves G33-F001, G33-F004, and G33-F251.
(j) Actuates the Standby Gas Treatment System and isolates Auxiliary Building penetration of the ventilation systems within the Auxiliary Building.
(k) Closes only RCIC outboard valves. A concurrent RCIC initiation signal is required for isolation to occur.
(l) Valves E12-F037A and E12-F037B are closed by high drywell pressure. All other Group 3 valves are closed by high reactor pressure.
(m) Valve Group 9 requires concurrent drywell high pressure and RCIC Steam Supply Pressure-Low signals to isolate.
(n) Valves E12-F042A and E12-F042B are closed by Containment Spray System initiation signals.
(o) Also isolates valves E61-F009, E61-F010, E61-F056, and E61-F057 from Valve Group 7.

INSERT 2

INSERT 2 TO TS TABLE 3.3.2-1

(p) Only required to isolate RHR system isolation valve E12-F008 or E12-F009. Only one trip system is required OPERABLE.

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION (Continued)				
h. Main Steam Line Tunnel Temperature Timer	NA	M	Q	1, 2, 3
i. RHR Equipment Room Ambient Temperature - High	S	M	A	1, 2, 3
j. RHR Equipment Room Δ Temp. - High	S	M	A	1, 2, 3
k. RHR/RCIC Steam Line Flow - High	S	M	R(c)	1, 2, 3
l. Manual Initiation	NA	M(a)	NA	1, 2, 3
m. Drywell Pressure-High (ECCS Division 1 and Division 2)	S	M	R(c)	1, 2, 3
6. RHR SYSTEM ISOLATION				
a. RHR Equipment Room Ambient Temperature - High	S	M	A	1, 2, 3
b. RHR Equipment Room Δ Temp. - High	S	M	A	1, 2, 3
c. Reactor Vessel Water Level - Low, Level 3	S	M	R(c)	1, 2, 3, 4, 5
d. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	S	M	R(c)	1, 2, 3

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TABLE 3.3.7.1-1

RADIATION MONITORING INSTRUMENTATION

INSTRUMENTATION	MINIMUM CHANNELS OPERABLE	APPLICABLE CONDITIONS	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
1. Component Cooling Water Radiation Monitor	1	At all times	$\leq 1 \times 10^5$ cpm/NA	10 to 10^6 cpm	70
2. Standby Service Water System Radiation Monitor	1/heat exchanger train	1, 2, 3, and*	$\leq 1 \times 10^5$ cpm/NA	10 to 10^6 cpm	70
3. Plant Service Water System Radiation Monitor	1	##	$\leq 1 \times 10^5$ cpm/NA	10 to 10^6 cpm	70
4. [DELETED]					
5. Carbon Bed Vault Radiation Monitor	1	1, 2	$\leq$ 2 x full power background/NA	1 to 10^6 mR/hr	72
6. Control Room Ventilation Radiation Monitor	2/trip system(h)	1,2,3,5 and**	$\leq$4 mR/hr/ $\leq$5 mR/hr#	10^{-2} to 10^2 mR/hr	73
7. Containment and Drywell Ventilation Exhaust Radiation Monitor	2/trip system(h)	At all times	$\leq$2.0 mR/hr/ $\leq$4 mR/hr(b)#	10^{-2} to 10^2 mR/hr	74
8. Fuel Handling Area Ventilation Exhaust Radiation Monitor	2/trip system(h)	1,2,3,5 and**	$\leq$ 2mR/hr/ $\leq$4 mR/hr(d)#	10^{-2} to 10^2 mR/hr	75
9. Fuel Handling Area Pool Sweep Exhaust Radiation Monitor	2/trip system(h)	(c)	$\leq$ 18 mR/hr/ $\leq$35 mR/hr(d)#	10^{-2} to 10^2 mR/hr	75

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TABLE 3.3.7.1-1 (Continued)

RADIATION MONITORING INSTRUMENTATION

INSTRUMENTATION	MINIMUM CHANNELS OPERABLE	APPLICABLE CONDITIONS	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
10. Area Monitors					
a. Fuel Handling Area Monitors					
1) New Fuel Storage Vault	1	(e)	$\leq$2.5 mR/hr/NA	10^{-2} to 10^{3} mR/hr	72
2) Spent Fuel Storage Pool	1	(f)	$\leq$2.5 mR/hr/NA	10^{-2} to 10^{3} mR/hr	72
3) Dryer Storage Area	1	(g)	$\leq$2.5 mR/hr/NA	10^{-2} to 10^{3} mR/hr	72
b. Control Room Radiation Monitor	1	At all times	$\leq$0.5 mR/hr/NA	10^{-2} to 10^{3} mR/hr	72

* With RHR heat exchangers in operation.
** When irradiated fuel is being handled in the [illegible]ary or secondary containment.
\# Initial setpoint. Final Setpoint to be determined during startup test program. Any required change to this setpoint shall be submitted to Commission within 90 days after test completion.
With ADHR heat exchangers in operation.
(a) Trips system with 2 channels upscale-Hi Hi Hi, or one channel upscale Hi Hi Hi and one channel downscale or 2 channels downscale.
(b) Isolates containment/drywell purge penetrations.
(c) With irradiated fuel in spent fuel storage pool.
(d) Also isolates the Auxiliary Building and Fuel Handling Area Ventilation Systems.
(e) With fuel in the new fuel storage vault.
(f) With fuel in the spent fuel storage pool.
(g) With fuel in the dryer storage area.
(h) Two upscale Hi Hi, one upscale Hi Hi and one downscale, or two downscale signals from the same trip system actuate the trip system and initiate isolation of the associated isolation valves.

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TABLE 4.3.7.1-1

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENTATION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1.	Component Cooling Water Radiation Monitor	S	M	A	At all times
2.	Standby Service Water System Radiation Monitor	S	M	A	1, 2, 3, and*
3.	Plant Service Water System Radiation Monitor	S	M	A	#
4.	[DELETED]				
5.	Carbon Bed Vault Radiation Monitor	S	M	A	1, 2
6.	Control Room Ventilation Radiation Monitor	S	M(a)	A	1, 2, 3, 5 and**
7.	Containment and Drywell Ventilation Exhaust Radiation Monitor	S	M	A	At all times
8.	Fuel Handling Area Ventilation Radiation Monitor	S	M	A	1, 2, 3, 5 and**
9.	Fuel Handling Area Pool Sweep Exhaust Radiation Monitor	S	M	A	(b)
10.	Area Monitors				
	a. Fuel Handling Area Monitors				
	1) New Fuel Storage Vault	S	M	R	(c)
	2) Spent Fuel Storage Pool	S	M	R	(d)
	3) Dryer Storage Area	S	M	R	(e)
	b. Control Room Radiation Monitor	S	M	R	At all times

* With RHR heat exchangers in operation.

** When irradiated fuel is being handled in the primary or secondary containment.

(a) The CHANNEL FUNCTIONAL TEST shall demonstrate that control room annunciation occurs if any of the following conditions exist.
1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not in Operate mode.

(b) With irradiated fuel in the spent fuel storage pool.

(c) With fuel in the new fuel storage vault.

(d) With fuel in the spent fuel storage pool.

(e) With fuel in the dryer storage area.

\# With ADHR heat exchangers in operation.

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REACTOR COOLANT SYSTEM

COLD SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.9.2 Two#,*** shutdown cooling mode loops of the residual heat removal (RHR) system shall be OPERABLE and, unless at least one recirculation pump is in operation, at least one shutdown cooling mode loop shall be in operation*,## with each loop consisting of at least:

RHR

or ADHRS

a. One OPERABLE RHR pump, and

b. One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATIONAL CONDITION 4.

ACTION:

a. With less than the above required RHR shutdown cooling mode loops OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the OPERABILITY of at least one alternate method**** capable of decay heat removal for each inoperable RHR shutdown cooling mode loop. ~~The provisions of Specifiction 3.0.4 are not applicable for entry into OPERATIONAL CONDITION 4 from 5.**~~

or ADHRS

b. With no RHR shutdown cooling mode loop in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature and pressure at least once per hour.

SURVEILLANCE REQUIREMENTS

, ADHRS

4.4.9.2 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

or ADHRS

#One RHR shutdown cooling mode loop may be inoperable for up to 2 hours for surveillance testing provided the other loop is OPERABLE and in operation.

or ADHRS

*The shutdown cooling pump may be removed from operation for up to 2 hours per 8 hour period provided the other loop is OPERABLE.

##The shutdown cooling mode loop may be removed from operation during hydrostatic testing.

or ADHRS

~~**This exception is applicable until startup from the third refueling outage.~~

~~***The alternate decay heat removal system (ADHRS) may be used as the alternate decay heat removal method for the third refueling outage only.~~

INSERT 1

INSERT 1 TO TS 3/4.4.9.2

** An OPERABLE alternate decay heat removal system (ADHRS) may be used in lieu of one shutdown cooling mode loop of RHR provided the remaining shutdown cooling mode loop of RHR and the associated diesel generator are OPERABLE.

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EMERGENCY CORE COOLING SYSTEMS

3/4 5.2 ECCS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.5.2 At least two of the following shall be OPERABLE: (#)

a. The low pressure core spray (LPCS) system with a flow path capable of taking suction from the suppression pool and transferring the water through the spray sparger to the reactor vessel.

b. Low pressure coolant injection (LPCI) subsystem "A" of the RHR system with a flow path capable of taking suction from the suppression pool ~~upon being manually realigned and~~ transferring the water to the reactor vessel.

c. Low pressure coolant injection (LPCI) subsystem "B" of the RHR system with a flow path capable of taking suction from the suppression pool ~~upon being manually realigned and~~ transferring the water to the reactor vessel.

d. Low pressure coolant injection (LPCI) subsystem "C" of the RHR system with a flow path capable of taking suction from the suppression pool ~~upon being manually realigned and~~ transferring the water to the reactor vessel.

e. The high pressure core spray (HPCS) system with a flow path capable of taking suction from one of the following water sources and transferring the water through the spray sparger to the reactor vessel:

1. From the suppression pool, or
2. When the suppression pool level is less than the limit or is drained, from the condensate storage tank containing at least 170,000 available gallons of water, equivalent to a level of 18 feet.

APPLICABILITY: OPERATIONAL CONDITION 4 and 5*.

ACTION:

a. With one of the above required subsystems/systems inoperable, restore at least two subsystems/systems to OPERABLE status within 4 hours or suspend all operations that have a potential for draining the reactor vessel. ~~The provisions of Specification 3.0.4 are not applicable for entry into OPERATIONAL CONDITION 5 from 5*.~~ (#)

INSERT 1

b. With both of the above required subsystems/systems inoperable, suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel. Restore at least one subsystem/system to OPERABLE status within 4 hours or establish SECONDARY CONTAINMENT INTEGRITY within the next 8 hours.

---

* The ECCS is not required to be OPERABLE provided that the reactor vessel head is removed, the cavity is flooded, the reactor cavity and transfer canal gates in the upper containment pool are removed, and water level is maintained within the limits of Specifications 3.9.8 and 3.9.9.

~~This exception is applicable until startup from the third refueling outage.~~

INSERT 2

INSERT 1 TO TS 3/4.5.2

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With the above required automatic subsystem/system inoperable, immediately suspend all operations that have a potential for draining the reactor vessel.

INSERT 2 TO TS 3/4.5.2

Page 3/4 5-6

One of the two shall be capable of automatic initiation and injection to the reactor vessel. The other required ECCS subsystem/system may require manual realignment prior to initiation and injection.

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CONTAINMENT SYSTEMS

3/4.6.4 CONTAINMENT AND DRYWELL ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.4 The containment and drywell isolation valves shown in Table 3.6.4-1 shall be OPERABLE with isolation times less than or equal to those shown in Table 3.6.4-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and #.

ACTION:

With one or more of the containment or drywell isolation valves shown in Table 3.6.4-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 4 hours either:

a. Restore the inoperable valve(s) to OPERABLE status, or

b. Isolate each affected penetration by use of at least one deactivated automatic valve secured in the isolated position,* ~~(the provisions of Specification 3.0.4 are not applicable for entry into condition # for a maximum of 10 inoperable containment and drywell isolation valves**),~~ or

c. Isolate each affected penetration by use of at least one closed manual valve or blind flange*; ~~(the provisions of Specification 3.0.4 are not applicable for entry into condition # for a maximum of 10 inoperable containment and drywell isolation valves**).~~

Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

(**)

*Isolation valves, except MSIVs, closed to satisfy these requirements may be reopened on an intermittent basis under administrative controls; ~~(OPERATIONAL CONDITION changes are not allowed while isolation valves are open under these administrative controls**).~~

#Isolation valves shown in Table 3.6.4-1 are also required to be OPERABLE when their associated actuation instrumentation is required to be OPERABLE per Table 3.3.2-1.

~~**This exception is applicable until startup from the third refueling outage.~~

INSERT 1

INSERT 1 TO TS 3/4.6.4

** Except for E12-F008 and E12-F009 in OPERATIONAL CONDITIONS 4 and 5 take ACTION 31 per Specification 3.3.2, Table 3.3.2-1.

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TABLE 3.8.4.2-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

VALVE NUMBER	BYPASS DEVICE (CONTINUOUS) (ACCIDENT CONDITIONS) (NO)	SYSTEM(S) AFFECTED
Q1E12F074A	Continuous	RHR System
Q1E12F026A	Continuous	RHR System
Q1E12F082A	No	RHR System
Q1E12F082B	No	RHR System
Q1E12F290A	Continuous	RHR System
Q1E12F047A	Continuous	RHR System
Q1E12F027A	Continuous	RHR System
Q1E12F073A	Continuous	RHR System
Q1E12F346	Continuous	RHR System
Q1E12F024A	Continuous	RHR System
Q1E12F087A	Continuous	RHR System
Q1E12F048A	Continuous	RHR System
Q1E12F042A	Continuous	RHR System
Q1E12F004A	Continuous	RHR System
Q1E12F003A	Continuous	RHR System
Q1E12F011A	Continuous	RHR System
Q1E12F053A	Continuous	RHR System
Q1E12F037A	Continuous	RHR System
Q1E12F028A	Continuous	RHR System
Q1E12F064A	Continuous	RHR System
Q1E12F066A	Continuous	RHR System
Q1E12F290B	Continuous	RHR System
Q1E12F004C	Continuous	RHR System
Q1E12F021	Continuous	RHR System
Q1E12F064C	Continuous	RHR System
Q1E12F042C	Continuous	RHR System
Q1E12F048B	Continuous	RHR System
Q1E12F049	Continuous	RHR System
Q1E12F037B	Continuous	RHR System
Q1E12F053B	Continuous	RHR System
Q1E12F074B	Continuous	RHR System
Q1E12F042B	Continuous	RHR System
Q1E12F064B	Continuous	RHR System
Q1E12F096	Continuous	RHR System
Q1E12F094	Continuous	RHR System
Q1E12F006B	Continuous	RHR System
Q1E12F011B	Continuous	RHR System
Q1E12F052B	Continuous	RHR System
Q1E12F047B	Continuous	RHR System
Q1E12F027B	Continuous	RHR System
Q1E12F004B	Continuous	RHR System
Q1E12F087B	Continuous	RHR System
Q1E12F003B	Continuous	RHR System
Q1E12F026B	Continuous	RHR System
Q1E12F024B	Continuous	RHR System
Q1E12F028B	Continuous	RHR System
Q1E12F009	Continuous	RHR System
Q1E12F073B	Continuous	RHR System
Q1E12F066B	Continuous	RHR System

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REFUELING OPERATIONS

3/4.9.11 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.11.1 At least one shutdown cooling mode train of the residual heat removal (RHR) system shall be OPERABLE and in operation* with at least:

(#) (INSERT 1) (INSERT 2)

a. One OPERABLE RHR pump, and

b. One OPERABLE RHR heat exchanger train.

APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated fuel is in the reactor vessel and the water level is greater than or equal to 22 feet 8 inches above the top of the reactor pressure vessel flange.

ACTION:

a. With no RHR shutdown cooling mode train OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the OPERABILITY of at least one alternate method** capable of decay heat removal. Otherwise, suspend all operations involving an increase in the reactor decay heat load and establish SECONDARY CONTAINMENT INTEGRITY within 4 hours.

b. With no RHR shutdown cooling mode train (or ADHRS) in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

~~c. The provisions of Specification 3.0.4 are not applicable.#~~

SURVEILLANCE REQUIREMENTS

4.9.11.1 At least one shutdown cooling mode train of the residual heat removal system (or ADHRS) or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

(or ADHRS)

*The shutdown cooling (or ADHRS) pump may be removed from operation for up to 2 hours per 8-hour period.

~~#This exception is applicable until startup from the second refueling outage.~~

~~**The alternate decay heat removal system (ADHRS) may be used as the alternate decay heat removal method for the third refueling outage only.~~

(INSERT 3)

INSERT 1 TO TS 3/4.9.11.1

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at least one train of RHR or ADHRS shall be

INSERT 2 TO TS 3/4.9.11.1

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each RHR train consisting of

INSERT 3 TO TS 3/4.9.11.1

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An OPERABLE alternate decay heat removal system (ADHRS) may be used in lieu of the shutdown cooling mode train of RHR provided one alternate method capable of decay heat removal and its associated diesel generator are OPERABLE.

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REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.11.2 Two shutdown cooling mode trains of the residual heat removal (RHR) system shall be OPERABLE and at least one train shall be in operation,* with each train consisting of at least:

a. One OPERABLE RHR pump, and

b. One OPERABLE RHR heat exchanger train.

APPLICABILITY: OPERATIONAL CONDITION 5, when irradiated fuel is in the reactor vessel and the water level is less than 22 feet 8 inches above the top of the reactor pressure vessel flange.

ACTION:

a. With less than the above required shutdown cooling mode trains of the RHR system OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the OPERABILITY of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode train.

b. With no RHR shutdown cooling mode train in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature at least once per hour.

~~c. The provisions of Specification 3.0.4 are not applicable for entry into OPERATIONAL CONDITION 5 from 4 or lowering reactor cavity water level.#~~

SURVEILLANCE REQUIREMENTS

4.9.11.2 At least one shutdown cooling mode train of the residual heat removal system or alternate method shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

---

*The shutdown cooling pump may be removed from operation for up to 2 hours per 8-hour period.

~~#This exception is applicable until startup from the third refueling outage.~~

~~**The alternate decay heat removal system (ADHRS) may be used as the alternate decay heat removal method for the third refueling outage only.~~

INSERT 1 TO TS 3/4.9.11.2

Page 3/4 9-19

Otherwise, raise water level to greater than or equal to 22 feet 8 inches above the top of the reactor pressure vessel flange within 12 hours of discovery of the inoperable system or alternate.

INSERT 2 TO TS 3/4.9.11.2

Page 3/4 9-19

An OPERABLE alternate decay heat removal system (ADHRS) may be used in lieu of one shutdown cooling mode train of RHR provided the remaining shutdown cooling mode train of RHR and its associated diesel generator are OPERABLE.

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PRESSURE/TEMPERATURE LIMITS (Continued)

The actual shift in RT_{NDT} of the vessel material will be established periodically during operation by removing and evaluating in accordance with ASTM E185-73 and 10 CFR 50, Appendix H, irradiated reactor vessel material specimens installed near the inside wall of the reactor vessel in the core area. The irradiated specimens can be used with confidence in predicting reactor vessel material transition temperature shift. The operating limit curves of Figure 3.4.6.1-1 shall be adjusted, as required, on the basis of the specimen data and recommendations of Regulatory Guide 1.99, Revision 1.

The pressure-temperature limit lines shown in Figures 3.4.6.1-1, curves C, C', and A, for reactor criticality and for inservice leak and hydrostatic testing, have been provided to assure compliance with the minimum temperature requirements of Appendix G to 10 CFR Part 50 for reactor criticality and for inservice leak and hydrostatic testing.

3/4.4.7 MAIN STEAM LINE ISOLATION VALVES

Double isolation valves are provided on each of the main steam lines to minimize the potential leakage paths from the containment in case of a line break. Only one valve in each line is required to maintain the integrity of the containment. The surveillance requirements are based on the operating history of this type valve. The maximum closure time has been selected to contain fission products and to ensure the core is not uncovered following line breaks.

3/4.4.8 STRUCTURAL INTEGRITY

The inspection programs for ASME Code Class 1, 2 and 3 components ensure that the structural integrity of these components will be maintained at an acceptable level throughout the life of the plant.

Components of the reactor coolant system were designed to provide access to permit inservice inspections in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition, and Addenda through Summer 1978.

The inservice inspection program for ASME Code Class 1, 2 and 3 components will be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR Part 50.55a(g) except where specific written relief has been granted by the NRC pursuant to 10 CFR Part 50.55a(g)(6)(i).

3/4.4.9 RESIDUAL HEAT REMOVAL

A single shutdown cooling mode loop provides sufficient heat removal capability for removing core decay heat and mixing to assure accurate temperature indication; however, single failure considerations require that two loops be OPERABLE or that alternate methods capable of decay heat removal be demonstrated and that an alternate method of coolant mixing be in operation.

INSERT

INSERT TO BASES 3/4.4.9

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The alternate decay heat removal system (ADHRS) is designed for use in OPERATIONAL CONDITIONS 4 and 5 to provide decay heat removal when an OPERABLE residual heat removal shutdown cooling mode loop or its associated support systems are not available. ADHRS is capable of maintaining reactor coolant temperatures below technical specification limits during COLD SHUTDOWN and REFUELING operations. Additional specification requirements are imposed during ADHRS operation since ADHRS is not designed as a safety-related system and has no onsite power supply capability.

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ECCS-OPERATING and SHUTDOWN (Continued)

The capacity of the system is selected to provide the required core cooling. The HPCS pump is designed to deliver greater than or equal to 1650/7115 gpm at differential pressures of 1147/200 psid. Initially, water from the condensate storage tank is used instead of injecting water from the suppression pool into the reactor, but no credit is taken in the safety analyses for the condensate storage tank water.

With the HPCS system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the LPCS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the safety analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCS out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems.

The surveillance requirements provide adequate assurance that the HPCS system will be OPERABLE when required. Flow and total developed head values for surveillance testing include system losses to ensure design requirements are met. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCS system to function properly after a small break loss-of-coolant accident, the automatic depressurization system (ADS) automatically causes selected safety-relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 135 psig even though LPCS has incipient flow into the reactor pressure vessel at 295 psid and 7115 gpm rated flow at 128 psid, and LPCI has incipient flow into the reactor pressure vessel at 229 psid and 7450 gpm rated flow at 24 psid.

ADS automatically controls eight selected safety-relief valves although the safety analysis only takes credit for seven valves. It is therefore appropriate to permit one valve to be out-of-service for up to 14 days without materially reducing system reliability.

INSERT

3/4.5.3 SUPPRESSION POOL

The supression pool is required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCS, LPCS and LPCI systems in the event of a LOCA. This limit on suppression pool minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression pool in OPERATIONAL CONDITIONS 1, 2 or 3 is required by Specification 3.6.3.1.

Repair work might require making the suppression pool inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression pool must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

INSERT TO BASES 3/4.5.1 and 3/4.5.2

In OPERATIONAL CONDITIONS 4 and 5 this specification permits one ECCS to be capable of manual realignment in order to perform its vessel injection function. The ECCS requiring manual realignment shall be capable of being realigned from control room panels within 20 minutes. Thus adequate time is available to initiate ECCS in order to mitigate postulated vessel draindown events.

3/4.9.7 CRANE TRAVEL - SPENT FUEL AND UPPER CONTAINMENT FUEL STORAGE POOLS

The restriction on movement of loads in excess of the nominal weight of a fuel assembly over other fuel assemblies in the storage pools ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

3/4.9.8 and 3/4.9.9 WATER LEVEL - REACTOR VESSEL and WATER LEVEL - SPENT FUEL AND UPPER CONTAINMENT FUEL STORAGE POOLS

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. This minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.10 CONTROL ROD REMOVAL

These specifications ensure that maintenance or repair of control rods or control rod drives will be performed under conditions that limit the probability of inadvertent criticality. The requirements for simultaneous removal of more than one control rod are more stringent since the SHUTDOWN MARGIN specification provides for the core to remain subcritical with only one control rod fully withdrawn.

3/4.9.11 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal loop be OPERABLE and in operation or that an alternate method capable of decay heat removal be demonstrated and that an alternate method of coolant mixing be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during REFUELING, and (2) sufficient coolant circulation would be available through the reactor core to assure accurate temperature indication and to distribute and prevent stratification of the poison in the event it becomes necessary to actuate the standby liquid control system.

The requirement to have two shutdown cooling mode loops OPERABLE when there is less than 22 feet 8 inches of water above the reactor vessel flange ensures that a single failure of the operating loop will not result in a complete loss of residual heat removal capability. With the reactor vessel head removed and 22 feet 8 inches of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event a failure of the operating RHR loop, adequate time is provided to initiate alternate methods capable of decay heat removal or emergency procedures to cool the core.

INSERT

3/4.9.12 HORIZONTAL FUEL TRANSFER SYSTEM

The purpose of the horizontal fuel transfer system specification is to control personnel access to those potentially high radiation areas immediately adjacent to the system and to assure safe operation of the system.

INSERT TO BASES 3/4.9.11

The alternate decay heat removal system (ADHRS) is designed for use in OPERATIONAL CONDITIONS 4 and 5 to provide decay heat removal when an OPERABLE residual heat removal shutdown cooling mode loop or its associated support systems are not available. ADHRS is capable of maintaining reactor coolant temperatures below technical specification limits during COLD SHUTDOWN and REFUELING operations. Additional specification requirements are imposed during ADHRS operation since ADHRS is not designed as a safety-related system and has no onsite power supply capability.

RESOLUTIONS OF POTENTIAL ADHRS ADVERSE SYSTEM INTERACTIONS

1. As identified in SERI submittal dated March 3, 1989 (AECM-89/0051) and noted in the Safety Evaluations for OL Amendment 58, dated March 16, 1989 and OL Amendment 59, dated March 27, 1989, the potential exists during OCs 4 and 5 for the operation of the ADHRS to impact the operation of two safety related systems. The potential adverse interactions involve the operability of the LPCI "A" and LPCI "B" subsystems and one division of suppression pool water level instrumentation. The NRC determined, as documented in the Safety Evaluation for OL Amendments 58 and 59, that prior to long term licensing of the ADHRS these potential interactions must be resolved.

LPCI "A" and LPCI "B" Subsystem Operability

2. During ADHRS operation with low reactor cavity water level, the potential exists for the LPCI "A" or LPCI "B" keep fill low pressure alarm to come on, thus making the LPCI "A" or LPCI "B" subsystems inoperable.

   During RF03 operation of ADHRS, the keep fill low pressure alarm did not occur. Although the interaction did not occur in RF03, there does exist some potential for occurrence during future operations under certain combinations of ADHRS operating parameters coincident with hypothetical LPCI "A" or LPCI "B" keep fill low pressure alarm setpoint drift.

   SERI considers the ADHRS system to be acceptable since (1) the probability of achieving the combination of parameters required to cause this interaction is low (as evidenced by RF03 operations), (2) the Operations Annunciator Response Instruction adequately addresses actions to be taken if the keep fill low pressure alarm comes on, and (3) sufficient flexibility exists in the ADHRS, LPCI "A" and LPCI "B" subsystems to promptly restore and maintain LPCI "A" or LPCI "B" operability if the adverse interaction does occur. Also, SERI will revise the proper procedure to place a warning for the operator that during certain conditions of ADHRS operation the LPCI "A" or LPCI "B" keep fill low pressure alarm may occur.

Suppression Pool Water Level Instrumentation Operability

3. The LPCI "C" jockey pump keeps the reference leg filled with water for one division of suppression pool water level instrumentation. The jockey pump must be turned off when the ADHRS is operating because a valve upstream of the suction to the jockey pump must be closed.

   The design and operational characteristics of the ADHRS have been reviewed. The ADHRS while operating does produce sufficient pressure to keep the reference leg of the affected division of suppression pool water level instrumentation filled. The jockey pump is not needed to maintain the instrumentation operable during ADHRS operation.

Conclusion

4. Based on the above, SERI believes the potential adverse system interactions created by the ADHRS have been satisfactorily evaluated and resolved to permit long term ADHRS licensing.