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Manual Title: TECHNICAL SPECIFICATION BASES UNIT 1 MANUAL

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9/21/05

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.8 Scram Discharge Volume (SDV) Vent and Drain Valves

BASES

BACKGROUND

The SDV vent and drain valves are normally open and discharge any accumulated water in the SDV to ensure that sufficient volume is available at all times to allow a complete scram. During a scram, the SDV vent and drain valves close to contain reactor water. The SDV is a volume of header piping that connects to each hydraulic control unit (HCU) and drains into an instrument volume. There are two SDVs (headers) and two instrument volumes, each receiving approximately one half of the control rod drive (CRD) discharges. The two instrument volumes are connected to a common drain line with two valves in series. Each header is connected to a common vent line with two valves in series. The header piping is sized to receive and contain all the water discharged by the CRDs during a scram. The design and functions of the SDV are described in Reference 1.

APPLICABLE SAFETY ANALYSES

The Design Basis Accident and transient analyses assume all of the control rods are capable of scramming. The acceptance criteria for the SDV vent and drain valves are that they operate automatically to:

a. Close during scram to limit the amount of reactor coolant discharged so that adequate core cooling is maintained and offsite doses remain within the limits of 10 CFR 100 (Ref. 2); and

b. Open on scram reset to maintain the SDV vent and drain path open so that there is sufficient volume to accept the reactor coolant discharged during a scram.

Isolation of the SDV can also be accomplished by manual closure of the SDV valves. Additionally, the discharge of reactor coolant to the SDV can be terminated by scram reset or closure of the HCU manual isolation valves. For a bounding leakage case, the offsite doses are well within the limits of 10 CFR 100 (Ref. 2), and adequate core cooling is maintained (Ref. 3). The SDV vent and drain valves allow continuous drainage of the SDV during normal plant operation

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	to ensure that the SDV has sufficient capacity to contain the reactor coolant discharge during a full core scram. To automatically ensure this capacity, a reactor scram (LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation") is initiated if the SDV water level in the instrument volume exceeds a specified setpoint. The setpoint is chosen so that all control rods are inserted before the SDV has insufficient volume to accept a full scram. SDV vent and drain valves satisfy Criterion 3 of the NRC Policy Statement (Ref. 4).
LCO	The OPERABILITY of all SDV vent and drain valves ensures that the SDV vent and drain valves will close during a scram to contain reactor water discharged to the SDV piping. The SDV vent and drain valves are required to be open to ensure the SDV is drained. Since the vent and drain lines are provided with two valves in series, the single failure of one valve in the open position will not impair the isolation function of the system. Additionally, the valves are required to open on scram reset to ensure that a path is available for the SDV piping to drain freely at other times.
APPLICABILITY	In MODES 1 and 2, scram may be required; therefore, the SDV vent and drain valves must be OPERABLE. In MODES 3 and 4, control rods are not able to be withdrawn (except as permitted by LCO 3.10.3 and LCO 3.10.4) since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate controls to ensure that only a single control rod can be withdrawn. Also, during MODE 5, only a single control rod can be withdrawn from a core cell containing fuel assemblies. Therefore, the SDV vent and drain valves are not required to be OPERABLE in these MODES since the reactor is subcritical and only one rod may be withdrawn and subject to scram.
ACTIONS	The ACTIONS table is modified by a Note 1 indicating that a separate Condition entry is allowed for the SDV vent line and the SDV drain line. This is acceptable, since the

(continued)

BASES

ACTIONS (continued)

Required Actions for each Condition provide appropriate compensatory actions for each inoperable SDV line. Complying with the Required Actions may allow for continued operation, and subsequent inoperable SDV lines are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS table is modified by a second note stating that a isolated line may be unisolated under administrative control to allow draining and venting of the SDV. When a line is isolated, the potential for an inadvertent scram due to high SDV level is increased. During these periods, the line may be unisolated under administrative control. This allows any accumulated water in the line to be drained, to preclude a reactor scram on high SDV level. This is acceptable since administrative controls ensure the valve can be closed quickly, if a scram occurs with the valve open.

A.1

When one SDV vent or drain valve is inoperable but openin one or more lines, the associated line must be isolated to contain the reactor coolant during a scram. The 7 day Completion Time is reasonable, given the level of redundancy in the lines and the low probability of a scram occurring while the valve(s) are inoperable and the line is not isolated. The SDV is still isolable since the redundant valve in the affected line is OPERABLE. During these periods, the single failure criterion is not preserved, and a higher risk exists to allow reactor water out of the primary system during a scram.

B.1

If both valves in a line are inoperable, the line must be isolated to contain the reactor coolant during a scram.

The 8 hour Completion Time to isolate the line is based on the low probability of a scram occurring while the line is not isolated and unlikelihood of significant CRD seal leakage.

C.1

If any Required Action and associated Completion Time is not met, the plant must be brought to a MODE in which the LCO

(continued)

BASES

ACTIONS

C.1 (continued)

does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

During normal operation, the SDV vent and drain valves should be in the open position (except when performing SR 3.1.8.2) to allow for drainage of the SDV piping. Verifying that each valve is in the open position ensures that the SDV vent and drain valves will perform their intended functions during normal operation. This SR does not require any testing or valve manipulation; rather, it involves verification that the valves are in the correct position.

The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation, which ensure correct valve positions.

SR 3.1.8.2

During a scram, the SDV vent and drain valves should close to contain the reactor water discharged to the SDV piping. Cycling each valve through its complete range of motion (closed and open) ensures that the valve will function properly during a scram. The 92 day Frequency is based on operating experience and takes into account the level of redundancy in the system design.

SR 3.1.8.3

SR 3.1.8.3 is an integrated test of the SDV vent and drain valves to verify total system performance. After receipt of a simulated or actual scram signal, the closure of the SDV vent and drain valves is verified. The closure time of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.3 (continued)

30 seconds after receipt of a scram signal is based on the bounding leakage case evaluated in the accident analysis based on the requirements of Reference 2. Similarly, after receipt of a simulated or actual scram reset signal, the opening of the SDV vent and drain valves is verified. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1 and the scram time testing of control rods in LCO 3.1.3 overlap this Surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform portions of this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section 4.6.
2. 10 CFR 100.
3. NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," August 1981.
4. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
5. TSTF-404-A, Rev. 0.

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Title: RADIOACTIVE EFFLUENTS BASES INTERLABORATORY COMPARISON PROGRAM

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TRM1 text LOES
9/8/05

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES

TRO

The TRM Actuation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) (Reference 1). The TRM Isolation Actuation Instrument has been relocated from the Technical Specifications because the identified Function is not credited in the plant design basis to mitigate any plant event, but does provide a diverse means to initiate an Isolation Actuation.

The isolation instrumentation includes the sensors, relays, and instruments that are necessary to cause initiation of primary containment and Reactor Coolant Pressure Boundary (RCPB) isolation. When the setpoint is reached, the sensor actuates, which then outputs an isolation signal to the isolation logic. Monitoring a wide range of independent parameters provides functional diversity. The input parameters to the isolation logic are:

(a) Main steam line radiation,
(b) Reactor Building Main Steam Differential Temperature - High,
(c) Turbine Building Main Steam Line Tunnel Temperature - High,
(d) HPCI Pipe Routing Area Differential Temperature - High,
(e) HPCI Equipment Room Differential Temperature - High,
(f) RCIC Pipe Routing Area Differential Temperature - High,
(g) RCIC Equipment Room Differential Temperature - High,
(h) RWCU Penetration Area Differential Temperature - High,
(i) RWCU Pump Area Differential Temperature - High,
(j) RWCU Heat Exchanger Area Differential Temperature - High, and
(k) RHR Flow - High.

The valves associated with these trip channels are identified in Table B 3.3.6-1. Each of these valves is also associated with other trip channels as identified in LCO Bases B 3.6.1.3.

Functions (d) and (f) trips will occur only after a 15 minute time delay; the other trips occur after a one second delay. See Tech Spec Basis B 3.3.6-1.

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

ACTIONS

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components. The ACTIONS are modified by two Notes. Note 1 allows penetration flow path(s) to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated. Note 2 is provided to modify the ACTIONS for separate Condition entry, consistent with similar Note in the TS 3.3.6.1 Actions.

Condition C applies if the channel is not restored to OPERABLE status or placed in trip, or isolation capability is not restored, within the allowed Completion Time. If inoperable channels should not be placed in trip (e.g., might result in a undesirable transient) Action C may be intentionally entered as a result of not meeting Required Action A.1 in its required Completion Time. Required Action C.1 requires appropriate compensatory measures be in place within the following 24 hours. Examples of appropriate compensatory measures may consist of verifying that diverse isolation functions remain OPERABLE (e.g., area high temperature functions remain OPERABLE when differential temperature Functions are inoperable). Furthermore, isolating the penetration (e.g., as may be required by TS Actions for an inoperability affecting both the TRM Function and a required TS Function) also provides adequate compensatory actions since isolating the affected penetration flow path(s) accomplishes the safety function of the inoperable channels. If it is not desired to isolate the affected penetration flow path(s) (e.g., as in the case where isolating the penetration flow path(s) could result in a reactor scram or disabling HPCI, RCIC, RWCU or RHR-SDC), alternate compensatory measures should be pursued. The 24 hour Completion Time is acceptable due to the fact that these Functions are not assumed in any accident or transient analysis in the FSAR.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the TRM Isolation Actuation Instrumentation Functions are maintained OPERABLE. TRM Isolation Actuation Instrumentation Surveillances are performed consistent with the Bases for LCO 3.3.6.1 "Isolation Activation Instrumentation."

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

TRS 3.3.6.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs in LCO 3.6.1.3 overlaps this surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform portions of this surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the surveillance when performed at the 24 month Frequency.

TRS 3.3.6.6

Response time testing for the Function 1.a and Function 2.a ≤ 10 second requirement per FSAR Table 7.3-29 is met by testing the channel for the ≤ 1 second channel response time requirement per FSAR Table 7.3-29 for Function 1.a.

REFERENCES

1. FSAR Section 7.3.1

2. NRC Inspection and Enforcement Manual, Part 9900: Technical Guidance, Standard Technical Specification Section 1.0 Definitions, Issue dated 12/8/96.

Table B 3.3.6-1

Primary Containment Isolation Valves

Plant systems	Valve Number	Valve Description	Isolation Signal Function No. (Table 3.3.6-1)
Nuclear Boiler	HV-141F022A	MSIV	1.a, 1.b
	HV-141F022B	MSIV	1.a, 1.b
	HV-141F022C	MSIV	1.a, 1.b
	HV-141F022D	MSIV	1.a, 1.b
	HV-141F028A	MSIV	1.a, 1.b
	HV-141F028B	MSIV	1.a, 1.b
	HV-141F028C	MSIV	1.a, 1.b
	HV-141F028D	MSIV	1.a, 1.b
	HV-141F016	MSL Drain Isolation Valve	1.a, 1.b
	HV-141F019	MSL Drain Isolation Valve	1.a, 1.b
Reactor Recirculation	HV-143F019	Reactor Coolant Sample Valve	2.a
	HV-143F020	Reactor Coolant Sample Valve	2.a
HPCI	HV-155F002	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F003	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F100	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F042	HPCI Suction Valve	3.a, 3.b
RCIC	HV-149F007	RCIC Steam Supply Valve	4.a, 4.b
	HV-149F008	RCIC Steam Supply Valve	4.a, 4.b
	HV-149F088	RCIC Steam Supply Valve	4.a, 4.b
RWCU	HV-144F001	RWCU Suction Valve	5.a, 5.b, 5.c
	HV-144F004	RWCU Suction Valve	5.a, 5.b, 5.c
RHR	HV-151F022	RHR - Reactor Vessel Head Spray Valve	6.a
RHR	HV-151F022	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-151F023	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-151F008	RHR Shutdown Cooling Valve	6.a
	HV-151F009	RHR Shutdown Cooling Valve	6.a

3.3 Instrumentation

3.3.6 TRM Isolation Actuation Instrumentation

TRO 3.3.6 The TRM containment isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: As specified in Table 3.3.6-1

ACTIONS

------------------------------ NOTES ------------------------------

1. Penetration flow paths isolated to comply with Action C may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours for Function 1.a and 2.a AND 24 hours for Functions other than Functions 1.a and 2.a
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Initiate appropriate compensatory measures for the degraded condition.	24 hours

TECHNICAL REQUIREMENT SURVEILLANCE

NOTES

1. Refer to Table 3.3.6-1 to determine which TRSs apply for each TRM Isolation Actuation Instrumentation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated function maintains isolation capability.

SURVEILLANCE	FREQUENCY
TRS 3.3.6.1 Perform CHANNEL CHECK	12 hours
TRS 3.3.6.2 Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.3.6.3 Perform CHANNEL CALIBRATION	92 days
TRS 3.3.6.4 Perform CHANNEL CALIBRATION	24 months
TRS 3.3.6.5 Perform LOGIC SYSTEM FUNCTIONAL TEST	24 months
TRS 3.3.6.6 Perform RESPONSE TIME TEST	24 months on a staggered test basis

TABLE 3.3.6-1 (Page 1 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation				
a. Main Steam Line Radiation - High	1,2,3	2	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5 TRS 3.3.6.6[a]	≤ 21 x full power background without hydrogen injection
ba. Reactor Building Main Steam Tunnel Δ Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 108°F
cb. Turbine Building Main Steam Line Tunnel Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 200°F
2. Primary Containment Isolation				
a. Main Steam Line Radiation — High, High	1,2,3	2	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5 TRS 3.3.6.6[a]	≤ 21 x full power background without hydrogen injection
3. High Pressure Coolant Injection (HPCI) System Isolation				
a. HPCI Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. HPCI Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F

(continued)

[a] Radiation detectors are exempt from response time testing.

TABLE 3.3.6-1 (Page 2 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Core Isolation Cooling (RCIC) System Isolation				
a. RCIC Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. RCIC Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
5. Reactor Water Cleanup (RWCU) System Isolation				
a. RWCU Penetration Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
b. RWCU Pump Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
c. RWCU Heat Exchanger Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
6. Shutdown Cooling System Isolation (a)(a)				
a. RHR Flow - High	3,4,5	1	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5	≤ 26,000 gpm

(a) Not required when the penetration is isolated from the reactor vessel via manual isolation valve, blind flange, or deactivated auto isolation valve.(a) Not required when the penetration is isolated from the reactor vessel via manual
isolation valve, blind flange, or deactivated auto isolation valve.

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SUSQUEHANNA STEAM ELECTRIC STATION
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TSB2 LOES
9/21/05

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.8 Scram Discharge Volume (SDV) Vent and Drain Valves

BASES

BACKGROUND

The SDV vent and drain valves are normally open and discharge any accumulated water in the SDV to ensure that sufficient volume is available at all times to allow a complete scram. During a scram, the SDV vent and drain valves close to contain reactor water. The SDV is a volume of header piping that connects to each hydraulic control unit (HCU) and drains into an instrument volume. There are two SDVs (headers) and two instrument volumes, each receiving approximately one half of the control rod drive (CRD) discharges. The two instrument volumes are connected to a common drain line with two valves in series. Each header is connected to a common vent line with two valves in series. The header piping is sized to receive and contain all the water discharged by the CRDs during a scram. The design and functions of the SDV are described in Reference 1.

APPLICABLE SAFETY ANALYSES

The Design Basis Accident and transient analyses assume all of the control rods are capable of scramming. The acceptance criteria for the SDV vent and drain valves are that they operate automatically to:

a. Close during scram to limit the amount of reactor coolant discharged so that adequate core cooling is maintained and offsite doses remain within the limits of 10 CFR 100 (Ref. 2); and

b. Open on scram reset to maintain the SDV vent and drain path open so that there is sufficient volume to accept the reactor coolant discharged during a scram.

Isolation of the SDV can also be accomplished by manual closure of the SDV valves. Additionally, the discharge of reactor coolant to the SDV can be terminated by scram reset or closure of the HCU manual isolation valves. For a bounding leakage case, the offsite doses are well within the limits of 10 CFR 100 (Ref. 2), and adequate core cooling is maintained (Ref. 3). The SDV vent and drain valves allow continuous drainage of the SDV during normal plant operation

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	to ensure that the SDV has sufficient capacity to contain the reactor coolant discharge during a full core scram. To automatically ensure this capacity, a reactor scram (LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation") is initiated if the SDV water level in the instrument volume exceeds a specified setpoint. The setpoint is chosen so that all control rods are inserted before the SDV has insufficient volume to accept a full scram. SDV vent and drain valves satisfy Criterion 3 of the NRC Policy Statement (Ref. 4).
LCO	The OPERABILITY of all SDV vent and drain valves ensures that the SDV vent and drain valves will close during a scram to contain reactor water discharged to the SDV piping. The SDV vent and drain valves are required to be open to ensure the SDV is drained. Since the vent and drain lines are provided with two valves in series, the single failure of one valve in the open position will not impair the isolation function of the system. Additionally, the valves are required to open on scram reset to ensure that a path is available for the SDV piping to drain freely at other times.
APPLICABILITY	In MODES 1 and 2, scram may be required; therefore, the SDV vent and drain valves must be OPERABLE. In MODES 3 and 4, control rods are not able to be withdrawn (except as permitted by LCO 3.10.3 and LCO 3.10.4) since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate controls to ensure that only a single control rod can be withdrawn. Also, during MODE 5, only a single control rod can be withdrawn from a core cell containing fuel assemblies. Therefore, the SDV vent and drain valves are not required to be OPERABLE in these MODES since the reactor is subcritical and only one rod may be withdrawn and subject to scram.
ACTIONS	The ACTIONS table is modified by a Note 1 indicating that a separate Condition entry is allowed for the SDV vent line and the SDV drain line. This is acceptable, since the

(continued)

BASES

ACTIONS (continued)

Required Actions for each Condition provide appropriate compensatory actions for each inoperable SDV line. Complying with the Required Actions may allow for continued operation, and subsequent inoperable SDV lines are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS table is modified by a second note stating that a isolated line may be unisolated under administrative control to allow draining and venting of the SDV. When a line is isolated, the potential for an inadvertent scram due to high SDV level is increased. During these periods, the line may be unisolated under administrative control. This allows any accumulated water in the line to be drained, to preclude a reactor scram on high SDV level. This is acceptable since administrative controls ensure the valve can be closed quickly, if a scram occurs with the valve open.

A.1

When one SDV vent or drain valve is inoperable in one or more lines, the associated line must be isolated to contain the reactor coolant during a scram. The 7 day Completion Time is reasonable, given the level of redundancy in the lines and the low probability of a scram occurring while the valve(s) are inoperable and the line is not isolated. The SDV is still isolable since the redundant valve in the affected line is OPERABLE. During these periods, the single failure criterion is not preserved, and a higher risk exists to allow reactor water out of the primary system during a scram.

B.1

If both valves in a line are inoperable, , automatic isolation capability and the ability to contain the reactor coolant during a scram is lost. If one or both valves in a vent line or drain line is closed, the potential for an inadvertent scram due to high SDV level is increased. Therefore, both venting and draining capability and isolation capability must be restoredthe line must be isolated to contain the reactor coolant during a scram. .

The 8 hour Completion Time to restore venting and draining capability and automatic isolation capability isolate the line is based on the low probability of a scram occurring while the line is not isolated and unlikelihood of significant CRD seal leakage.

C.1

If any Required Action and associated Completion Time is not met, the plant must be brought to a MODE in which the LCO

(continued)

BASES

ACTIONS

C.1 (continued)

does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

During normal operation, the SDV vent and drain valves should be in the open position (except when performing SR 3.1.8.2) to allow for drainage of the SDV piping. Verifying that each valve is in the open position ensures that the SDV vent and drain valves will perform their intended functions during normal operation. This SR does not require any testing or valve manipulation; rather, it involves verification that the valves are in the correct position.

The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation, which ensure correct valve positions.

SR 3.1.8.2

During a scram, the SDV vent and drain valves should close to contain the reactor water discharged to the SDV piping. Cycling each valve through its complete range of motion (closed and open) ensures that the valve will function properly during a scram. The 92 day Frequency is based on operating experience and takes into account the level of redundancy in the system design.

SR 3.1.8.3

SR 3.1.8.3 is an integrated test of the SDV vent and drain valves to verify total system performance. After receipt of a simulated or actual scram signal, the closure of the SDV vent and drain valves is verified. The closure time of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.3 (continued)

30 seconds after receipt of a scram signal is based on the bounding leakage case evaluated in the accident analysis based on the requirements of Reference 2. Similarly, after receipt of a simulated or actual scram reset signal, the opening of the SDV vent and drain valves is verified. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1 and the scram time testing of control rods in LCO 3.1.3 overlap this Surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform portions of this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section 4.6.
2. 10 CFR 100.
3. NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," August 1981.
4. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).
5. TSTF-404-A, Rev. 0.

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FROM: NUCLEAR RECORDS DOCUMENT CONTROL CENTER (NUCSA-2)
THE FOLLOWING CHANGES HAVE OCCURRED TO THE HARDCOPY OR ELECTRONIC MANUAL ASSIGNED TO YOU:

TRM2 - TECHNICAL REQUIREMENTS MANUAL UNIT 2

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ADD: REV: 3

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B 3.3.6 TRM Isolation Actuation Instrumentation

BASES

TRO

The TRM Actuation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) (Reference 1). The TRM Isolation Actuation Instrument has been relocated from the Technical Specifications because the identified Function is not credited in the plant design basis to mitigate any plant event, but does provide a diverse means to initiate an Isolation Actuation.

The isolation instrumentation includes the sensors, relays, and instruments that are necessary to cause initiation of primary containment and Reactor Coolant Pressure Boundary (RCPB) isolation. When the setpoint is reached, the sensor actuates, which then outputs an isolation signal to the isolation logic. Monitoring a wide range of independent parameters provides functional diversity. The input parameters to the isolation logic are:

(a) Main steam line radiation,
(b) Reactor Building Main Steam Differential Temperature - High,
(c) Turbine Building Main Steam Line Tunnel Temperature - High,
(d) HPCI Pipe Routing Area Differential Temperature - High,
(e) HPCI Equipment Room Differential Temperature - High,
(f) RCIC Pipe Routing Area Differential Temperature - High,
(g) RCIC Equipment Room Differential Temperature - High,
(h) RWCU Penetration Area Differential Temperature - High,
(i) RWCU Pump Area Differential Temperature - High,
(j) RWCU Heat Exchanger Area Differential Temperature - High, and
(k) RHR Flow - High.

The valves associated with these trip channels are identified in Table B 3.3.6-1. Each of these valves is also associated with other trip channels as identified in LCO Bases B 3.6.1.3.

Functions (d) and (f) trips will occur only after a 15 minute time delay; the other trips occur after a one second delay. See Tech Spec Basis B 3.3.6-1.

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

ACTIONS

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components. The ACTIONS are modified by two Notes. Note 1 allows penetration flow path(s) to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated. Note 2 is provided to modify the ACTIONS.

Condition C applies if the channel is not restored to OPERABLE status or placed in trip, or isolation capability is not restored, within the allowed Completion Time. If inoperable channels should not be placed in trip (e.g., might result in a undesirable transient) Action C may be intentionally entered as a result of not meeting Required Action A.1 in its required Completion Time. Required Action C.1 requires appropriate compensatory measures be in place within the following 24 hours. Examples of appropriate compensatory measures may consist of verifying that diverse isolation functions remain OPERABLE (e.g., area high temperature functions remain OPERABLE when differential temperature Functions are inoperable). Furthermore, isolating the penetration (e.g., as may be required by TS Actions for an inoperability affecting both the TRM Function and a required TS Function) also provides adequate compensatory actions since isolating the affected penetration flow path(s) accomplishes the safety function of the inoperable channels. If it is not desired to isolate the affected penetration flow path(s) (e.g., as in the case where isolating the penetration flow path(s) could result in a reactor scram or disabling HPCI, RCIC, RWCU or RHR-SDC), alternate compensatory measures should be pursued. The 24 hour Completion Time is acceptable due to the fact that these Functions are not assumed in any accident or transient analysis in the FSAR.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the TRM Isolation Actuation Instrumentation Functions are maintained OPERABLE. TRM Isolation Actuation Instrumentation Surveillances are performed consistent with the Bases for LCO 3.3.6.1 "Isolation Activation Instrumentation."

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

TRS 3.3.6.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs in LCO 3.6.1.3 overlaps this surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform portions of this surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the surveillance when performed at the 24 month Frequency.

TRS 3.3.6.6

Response time testing for the Function 1.a and Function 2.a ≤ 10 second requirement per FSAR Table 7.3-29 is met by testing the channel for the ≤ 1 second channel response time requirement per FSAR Table 7.3-29 for Function 1.a.

REFERENCES

1. FSAR Section 7.3.1

2. NRC Inspection and Enforcement Manual, Part 9900: Technical Guidance, Standard Technical Specification Section 1.0 Definitions, Issue dated 12/8/96.

Table B 3.3.6-1
Primary Containment Isolation Valves
(Page 1 of 1)

Plant systems	Valve Number	Valve Description	Isolation Signal Function No. (Table 3.3.6-1)
Nuclear Boiler	HV-241F022A	MSIV	1.a, 1.b
	HV-241F022B	MSIV	1.a, 1.b
	HV-241F022C	MSIV	1.a, 1.b
	HV-241F022D	MSIV	1.a, 1.b
	HV-241F028A	MSIV	1.a, 1.b
	HV-241F028B	MSIV	1.a, 1.b
	HV-241F028C	MSIV	1.a, 1.b
	HV-241F028D	MSIV	1.a, 1.b
	HV-241F016	MSL Drain Isolation Valve	1.a, 1.b
	HV-241F019	MSL Drain Isolation Valve	1.a, 1.b
Reactor Recirculation	HV-243F019	Reactor Coolant Sample Valve	2.a
	HV-243F020	Reactor Coolant Sample Valve	2.a
HPCI	HV-255F002	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F003	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F100	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F042	HPCI Suction Valve	3.a, 3.b
RCIC	HV-249F007	RCIC Steam Supply Valve	4.a, 4.b
	HV-249F008	RCIC Steam Supply Valve	4.a, 4.b
	HV-249F088	RCIC Steam Supply Valve	4.a, 4.b
RWCU	HV-244F001	RWCU Suction Valve	5.a, 5.b, 5.c
	HV-244F004	RWCU Suction Valve	5.a, 5.b, 5.c
RHR	HV-251F022	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-251F023	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-251F008	RHR – Shutdown Cooling Valve	6.a
	HV-251F009	RHR – Shutdown Cooling Valve	6.a

3.3 Instrumentation

3.3.6 TRM Isolation Actuation Instrumentation

TRO 3.3.6 The TRM containment isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: As specified in Table 3.3.6-1

ACTIONS

-----NOTES-----

1. Penetration flow paths isolated to comply with Action C may be unisolated intermittently under administrative controls.

1. 2. Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable	A.1 Place channel in trip.	12 hours for Function 1.a and 2.a. AND 24 hours for Functions other than Functions 1.a and 2.a
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Initiate appropriate compensatory measures for the degraded condition.	24 hours

TECHNICAL REQUIREMENT SURVEILLANCE

-----NOTES-----

1. Refer to Table 3.3.6-1 to determine which TRSs apply for each TRM Isolation Actuation Instrumentation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated function maintains isolation capability.

SURVEILLANCE		FREQUENCY
TRS 3.3.6.1	Perform CHANNEL CHECK	12 hours
TRS 3.3.6.2	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.3.6.3	Perform CHANNEL CALIBRATION	92 days
TRS 3.3.6.4	Perform CHANNEL CALIBRATION	24 months
TRS 3.3.6.5	Perform LOGIC SYSTEM FUNCTIONAL TEST	24 months
TRS 3.3.6.6	Perform RESPONSE TIME TEST	24 months on a staggered test basis

TABLE 3.3.6-1 (Page 1 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation				
ba. Reactor Building Main Steam Tunnel Δ Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 108°F
cb. Turbine Building Main Steam Line Tunnel Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 200°F
2. Primary Containment Isolation				
a. Main Steam Line Radiation - High High	1,2,3	2	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5 TRS 3.3.6.6[a]	≤ 21 x full power background without hydrogen injection
3. High Pressure Coolant Injection (HPCI) System Isolation				
a. HPCI Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. HPCI Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F

(continued)

[a] Radiation detectors are exempt from response time testing.

TABLE 3.3.6-1 (Page 2 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Core Isolation Cooling (RCIC) System Isolation				
a. RCIC Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. RCIC Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
5. Reactor Water Cleanup (RWCU) System Isolation				
a. RWCU Penetration Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
b. RWCU Pump Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
c. RWCU Heat Exchanger Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
6. Shutdown Cooling System Isolation (a)				
a. RHR Flow - High	3,4,5	1	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5	≤ 26,000 gpm

(a) Not required when the penetration is isolated from the reactor vessel via manual isolation valve, blind flange, or deactivated auto isolation valve.