ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION

BROWNS FERRY NUCLEAR PLANT

UNITS 1, 2, AND 3

(TVA BFN TS 282)

UNIT 1
EFFECTIVE PAGE LIST

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*Denotes overleaf or spillover page.

TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - Reactor Low Water Level(6)	≥ 538" above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation (Groups 2, 3, and 6) c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	100 ± 15 psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D, SW #1)	≥ 378" above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PS-64-56A-D)	≤ 2.5 psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

TABLE 3.2.A (Continued)
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	3 times normal rated full power background (13)	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line	$\geq$ 825 psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line	$\leq$ 140% of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	$\leq$ 200°F	B	1. Above trip setting initiates Main Steam Line Isolation.
2(14)	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	$\leq$ 100 mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.

   A. Initiate an orderly shutdown and have the reactor in Cold Shutdown in 24 hours.

   B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.

   E. Initiate primary containment isolation within 24 hours.

   F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.

   G. Isolate the reactor building and start the standby gas treatment system.

   H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.

   I. Deleted

   J. Withdraw TIP.

   K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.

   L. If one SGTS train is inoperable take actions H or A and F. If two SGTS trains are inoperable take actions A and F.

2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.

3. There are four sensors per steam line of which at least one sensor per trip system must be operable.

NOTES FOR TABLE 3.2.A (Cont'd)

4. Only required in Run Mode (interlocked with Mode Switch).

5. Not required in Run Mode (bypassed by Mode Switch).

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.

7. A train is considered a trip system.

8. Two out of three SGTS trains required. A failure of more than one will require actions A and F.

9. Deleted

10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.

12. A channel contains four sensors, all of which must be operable for the channel to be operable.

    Power operations permitted for up to 30 days with 15 of the 16 temperature switches operable.

    In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.

14. Requires two independent channels from each physical location; there are two locations.

UNIT 2
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TABLE 3.2.A
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
* 2	Instrument Channel - Reactor Low Water Level(6) (LIS-3-203 A-D)	≥ 538" above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	100 ± 15 psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D)	≥ 378" above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PIS-64-56A-D)	≤ 2.5 psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

* The automatic initiation capability of this instrument channel is not required to be OPERABLE while the Reactor Vessel water level monitoring modification is being performed. Manual initiation capability of the associated systems will be available during that time the automatic initiation logic is out-of-service.

TABLE 3.2.A (Continued)
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	≤ 3 times normal rated full power background	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line (PIS-1-72, 76, 82, 86)	≥ 825 psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line (PdIS-1-13A-D, 25A-D, 36A-D, 50A-D)	≤ 140% of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	≤ 200°F	B	1. Above trip setting initiates Main Steam Line Isolation.
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	≤ 100 mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS. b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.

   A. Initiate an orderly shutdown and have the reactor in Cold Shutdown in 24 hours.

   B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.

   E. Initiate primary containment isolation within 24 hours.

   F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.

   G. Isolate the reactor building and start the standby gas treatment system.

   H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.

   I. Deleted

   J. Withdraw TIP.

   K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.

   L. If one SGTS train is inoperable take actions H or A and F. If two SGTS trains are inoperable take actions A and F.

2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.

3. There are four sensors per steam line of which at least one sensor per trip system must be OPERABLE.

NOTES FOR TABLE 3.2.A (Cont'd)

4. Only required in RUN Mode (interlocked with Mode Switch).

5. Not required in RUN Mode (bypassed by Mode Switch).

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.

7. A train is considered a trip system.

8. Two out of three SGTS trains required. A failure of more than one will require actions A and F.

9. Deleted

10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.

12. A channel contains four sensors, all of which must be OPERABLE for the channel to be OPERABLE.

    Power operations permitted for up to 30 days with 15 of the 16 temperature switches OPERABLE.

    In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.

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1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	100 ± 15 psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D, SW #1)	≥ 378" above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PS-64-56A-D)	≤ 2.5 psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

TABLE 3.2.A (Continued)
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	3 times normal rated full power background (13)	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line	≥ 825 psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line	≤ 140% of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	≤ 200°F	B	1. Above trip setting initiates Main Steam Line Isolation.
2(14)	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	≤ 100 mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE, there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.

   A. Initiate an orderly shutdown and have the reactor in COLD SHUTDOWN CONDITION in 24 hours.

   B. Initiate an orderly load reduction and have main steam lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.

   E. Initiate primary containment isolation within 24 hours.

   F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.

   G. Isolate the reactor building and start the standby gas treatment system.

   H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.

   I. DELETED

   J. Withdraw TIP.

   K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.

   L. If one SGTS train is inoperable take action H or actions A and F. If two SGTS trains are inoperable take actions A and F.

2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.

3. There are four sensors per steam line of which at least one sensor per trip system must be operable.

NOTES FOR TABLE 3.2.A (Cont'd)

4. Only required in Run Mode (interlocked with Mode Switch).

5. Not required in Run Mode (bypassed by Mode Switch).

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.

7. A train is considered a trip system.

8. Two out of three SGTS trains required. A failure of more than one will require actions A and F.

9. DELETED

10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.

12. A channel contains four sensors, all of which must be operable for the channel to be operable.

    Power operations permitted for up to 30 days with 15 of the 16 temperature switches operable.

    In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.

14. Requires two independent channels from each physical location; there are two locations.

ENCLOSURE 2

SUMMARY OF CHANGES (UNITS 1, 2, AND 3)

1. Revision to Table 3.2.A.

   Add "(PS-68-93 & 94)" under the function called "Instrument Channel-Reactor High Pressure" on page 3.2/4.2-7.

2. Revision to Notes for Table 3.2.A.

   Existing note 1.D reads:

   "D. Isolate Shutdown Cooling."

   Revised note 1.D would read:

   "D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable."

ENCLOSURE 3

REASONS AND JUSTIFICATION FOR CHANGES

Reasons for Changes

The Browns Ferry Technical Specifications (BFN TSs) currently require isolation of the shutdown cooling mode of the Residual Heat Removal (RHR) system whenever the number of operable instrument channels per trip system (for Table 3.2.A functions "Instrument Channel-Reactor High Pressure" and "Group 2 [RHR Isolation-Actuation] Logic") decreases to zero and primary containment integrity is required. If only one trip system is inoperable, the trip system may be tripped or isolation implemented. If both trip systems are inoperable, there is no option, shutdown cooling must be isolated. The proposed TS changes would revise Table 3.2.A note 1.D to allow one hour before the affected system valves are administratively controlled in the closed position and the affected system is declared inoperable. An administrative change is also proposed to reference "PS-68-93&94" in Table 3.2.A. A detailed summary of the specific changes is provided by Enclosure 2.

Justification for Changes

The shutdown cooling mode of RHR is placed in operation during a normal reactor shutdown and cooldown. Shutdown cooling is comprised of a single suction line with two redundant pairs of RHR pumps and two redundant discharge lines. The initial phase of nuclear system cooldown is accomplished by dumping steam from the reactor vessel to the main condenser with the main condenser acting as the heat sink. When reactor water temperature has decreased to the point where the steam supply pressure is no longer necessary to maintain the turbine shaft gland seals, vacuum in the main condenser is no longer required. The RHR system is placed in the shutdown cooling mode of operation to complete the cooldown and provide for decay heat removal. The shutdown cooling mode alone is capable of completing cooldown to 125°F in less than 20 hours and maintaining the nuclear system at 125°F so that the reactor can be refueled and serviced.

Note 1.D of Table 3.2.A currently requires that the shutdown cooling mode of RHR be isolated if primary containment integrity is required and either the Reactor High Pressure instrument channel or the Group 2 (RHR Isolation-Actuation) Logic function is inoperable. The reactor high pressure instrument channel provides for automatic isolation of the shutdown cooling suction valves when the reactor pressure increases to 100 psig. Shutdown cooling is isolated to prevent low pressure portions of the RHR system from being overpressurized. The Group 2 RHR Isolation-Actuation logic provides for isolation on low reactor water level to maintain the primary containment pressure boundary.

In addition to the shutdown cooling suction valves, the following valves are automatically operated by the Group 2 (RHR Isolation - Actuation) Logic:

1. LPCI discharge valves (FCV-74-53, -67)
2. RHR flush and drain valves (FCV-74-102, -103, -119, -120) Units 1 and 3 only
3. Reactor vessel head spray isolation valves (FCV-74-77, -78) Unit 1 only

Each of these valves can be manually closed from the control room when the minimum number of operable instrument channels per trip system decreases below one.

When primary containment is required, the limiting conditions for operation for the instrumentation that initiates primary containment isolation is given by Table 3.2.A. Primary containment integrity is required whenever the reactor is critical or when the reactor water temperature is above 212°F and fuel is in the reactor vessel except while performing "open vessel" physics tests at power levels not to exceed 5 MW(t) (TS 3.7.A.2.a). With less than the minimum number of instrument channels of Reactor High Pressure or Group 2 (RHR Isolation-Actuation) logic operable, Note 1.D directs the operator to isolate shutdown cooling. The action currently required by BFN TS Table 3.2.A, Note 1.D does not allow the plant operator any time to establish a means of alternative decay heat removal prior to isolating shutdown cooling. The proposed change would revise Table 3.2.A note 1.D to state the following: "Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable."

The Boiling Water Reactor Standard Technical Specifications (BWR STSs) state that if the number of operable channels is less than required, lock the affected system isolation valves closed within one hour and declare the affected system inoperable. The current BFN TS is more restrictive than the BWR STSs in that it requires isolation of the shutdown cooling mode of the RHR System with no time specified. The BWR STSs allow one hour to complete the isolation. The required action of controlling the affected system isolation valves in the closed position performs the intended safety function of the instrumentation. If the shutdown cooling is needed to provide core cooling, one hour allows time to restore the minimum required instrumentation to operable status or provide an alternate decay heat removal method.

Loss of shutdown cooling has been previously evaluated (BFN Final Safety Analysis Report [FSAR], Appendix G, Event 35). The evaluation concluded that for most single failures no unusual safety actions are required since cooling can be reestablished without alternative equipment. The RHR system has redundant pumps, heat exchangers and discharge piping pathways. In cases where the RHR shutdown cooling suction line becomes inoperable a unique requirement for cooling arises. If the reactor head is off, the RHR Low Pressure Coolant Injection (LPCI) mode can be used to maintain water level. In this mode, pressure control is not a problem. If the reactor pressure vessel head is on and the system can be pressurized, the main steam line relief valves (manually operated) can be used to maintain pressure, with core spray or RHR LPCI used to maintain water level.

The proposed revision to the BFN TS is justified because it allows plant operators time to establish alternate cooling prior to isolating shutdown cooling. This action is appropriate because operating procedures exist which provide various options to reestablish cooling. The revision is acceptable because the probability of an accident during the allowed one hour period is remote since the reactor vessel pressure is at or below 100 psig. Existing restrictions on reactor water level and reactor vessel pressure ensure that the primary containment integrity and reactor coolant pressure boundary are not compromised. Therefore, the proposed TS revision will allow operational flexibility without adversely affecting plant safety.

ENCLOSURE 4

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION
BROWNS FERRY NUCLEAR PLANT (BFN)

DESCRIPTION OF PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

The BFN TSs currently require isolation of the shutdown cooling mode of the Residual Heat Removal (RHR) system whenever the minimum number of operable instrument channels per trip system for Table 3.2.A functions "Instrument Channel-Reactor High Pressure" and "Group 2 [RHR Isolation-Actuation] Logic" decreases below one and primary containment integrity is required. If only one trip system is inoperable, the trip system may be tripped or isolation implemented. If both trip systems are inoperable, there is no option, shutdown cooling must be isolated.

The proposed changes to the BFN TSs for units 1, 2, and 3 would revise Table 3.2.A note 1.D to administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable. An administrative change is also proposed to reference "PS 68-93&94" in Table 3.2.A. A detailed summary of the specific changes is provided by Enclosure 2.

BASIS FOR PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92 (c). A proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or 3) involve a significant reduction in a margin of safety.

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The shutdown cooling mode of RHR is used during a normal reactor shutdown and cooldown. Shutdown cooling is comprised of a single suction line with two redundant pairs of RHR pumps and two redundant discharge lines. The initial phase of nuclear system cooldown is accomplished by dumping steam from the reactor vessel to the main condenser with the main condenser acting as the heat sink. When reactor water temperature has decreased to the point where the steam supply pressure is no longer necessary to maintain the turbine shaft gland seals, vacuum in the main condenser is no longer required. The RHR system is placed in the shutdown cooling mode of operation to complete the cooldown and provide for decay heat removal. The shutdown cooling mode alone is capable of completing cooldown to 125°F in less than 20 hours and maintaining the nuclear system at 125°F so that the reactor can be refueled and serviced.

Note 1.D of Table 3.2.A currently requires that the shutdown cooling mode of RHR be isolated if primary containment integrity is required and either the Reactor High Pressure instrument channel or the Group 2 (RHR Isolation-Actuation) Logic function is inoperable. The reactor high pressure instrument channel provides for automatic isolation of the shutdown cooling suction valves when reactor pressure increases to 100 psig to prevent low pressure portions of the RHR system from being overpressurized. The Group 2 logic provides for isolation on a low reactor water level to maintain the primary containment pressure boundary. The proposed change would revise note 1.D to require administratively controlling the affected system isolation valves in the closed position within one hour and declaring the affected system inoperable.

The design basis events (DBEs) mitigated by the RHR System were reviewed to determine what impact these events could have if one were to occur while the RHR is in the shutdown cooling mode and both trip channels of the isolation instrumentation are inoperable.

The DBEs have little or no impact on the RHR System. The RHR shutdown cooling mode is used only during the low pressure (100 psig or less) portion of a normal reactor shutdown/cooldown. The events which were considered and have little or no impact include pipe breaks inside and outside containment, loss of feedwater flow, isolation of all main steam lines, loss of condenser vacuum, pressure regulator failure, inadvertent opening of a safety/relief valve, shutdown from outside the control room, inadvertent opening of all bypass valves, feedwater controller failure, fire, fuel handling accident, loss of fuel pool cooling, turbine generator trip, and an earthquake.

The DBEs which could have an impact on RHR shutdown cooling are as follows:

a. Shutdown Cooling Malfunction - This event results in a reactor water temperature decrease and thus contributes to shutdown cooling. The operator may turn off or reduce shutdown cooling to stop the undesired cooling.

b. Loss of Shutdown Cooling - The decay heat rate remains the same for this event. An increase in reactor temperature and possibly pressure will occur. Manual operation of the relief valves will limit the pressure and the RHR LPCI mode can be used for core cooling. No unique safety actions are required for this event.

c. Loss of Offsite AC Power - This event will have little or no effect since the diesel generators will start automatically to supply power to the RHR System. The decay heat rate is unaffected and the brief interruption of cooling will not result in a significant temperature or pressure increase.

d. Control Rod Drop Accident - This event will have little or no effect since the rods are inserted and the plant is already shutdown prior to the accident. Thus, should a rod drop occur, it will not result in criticality and no additional heat will be generated by the core. The core decay heat rate and the cooldown rate are unchanged and the pressure remains unaffected by this event.

It is concluded that the occurrence of a DBE while in the RHR shutdown cooling mode will have little or no effect on the RHR system pressure boundary integrity and will not significantly increase the probability or consequences of an accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed change does not involve any modification to plant equipment. No new failure modes are introduced by the change. The consequences of a loss of shutdown cooling or shutdown cooling malfunction remain the same. A loss of shutdown cooling would result in an increase in reactor temperature and a possible pressure increase. However, manual operation of the relief valves would limit the pressure and the RHR LPCI mode could be used for core cooling. No unique safety actions would be required.

3. The proposed change does not involve a significant reduction in a margin of safety.

   The proposed change allows operational flexibility without adversely affecting plant safety. The plant operators are allowed one hour on a loss of isolation instrumentation to administratively control the affected system isolation valves in the closed position and declare the affected system inoperable. This allows some time to restore the instrumentation to operable status or provide an alternate means of decay heat removal. During the one-hour period following the loss of trip channels the likelihood of an accident occurring which would require isolation of the shutdown cooling valves is small because the reactor vessel pressure is at or below 100 psig. The current action, isolation of shutdown cooling, would place the unit in an abnormal operating mode. The proposed change would allow one hour to restore the equipment or provide an alternate means of decay heat removal. A more controlled plant evolution is used to transition to this abnormal operating mode. Thus, the margin of safety is not reduced by this change.