ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION

BROWNS FERRY NUCLEAR PLANT

UNIT 2

(TVA BFN TS 289)

UNIT 2
EFFECTIVE PAGE LIST

REMOVE	INSERT
3.2/4.2-7	3.2/4.2-7*
3.2/4.2-8	3.2/4.2-8
3.2/4.2-11	3.2/4.2-11*
-	3.2/4.2-11a
3.2/4.2-42	3.2/4.2-42*
3.2/4.2-43	3.2/4.2-43
3.2/4.2-67	3.2/4.2-67
3.2/4.2-68	3.2/4.2-68*
3.7/4.7-33	3.7/4.7-33*
3.7/4.7-34	3.7/4.7-34
3.7/4.7-35	3.7/4.7-35*
3.7/4.7-36	3.7/4.7-36*

*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) (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	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.

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
1	Reactor Building Isolation (refueling floor) Logic	N/A	H or F	
1	Reactor Building Isolation (reactor zone) Logic	N/A	H or G or A	
1(7) (8)	SGTS Train A Logic	N/A	L or (A and F)	
1(7) (8)	SGTS Train B Logic	N/A	L or (A and F)	
1(7) (8)	SGTS Train C Logic	N/A	L or (A and F)	

Refer to Table 3.2.B for RCIC and HPCI functions including Groups 4, 5, and 7 valves.

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

Minimum No. Instrument Channels Operable Per Trip Sys (1)(11)	Function	Allowable Value	Action (1)	Remarks
2	Instrument Channel Reactor Water Cleanup System Main Steam Valve Vault (TIS-069-834A-D)	≤ 201.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pipe Trench (TIS-069-835A-D)	≤ 135.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pump Room 2A (TIS-069-836A-D)	≤ 152.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pump Room 2B (TIS-069-837A-D)	≤ 152.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Heat Exchanger Room (TIS-069-838A-D)	≤ 143.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor

TABLE 4.2.A (Cont'd)
SURVEILLANCE REQUIREMENTS FOR PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Function	Functional Test	Calibration Frequency	Instrument Check
Group 1 (Initiating) Logic	Checked during channel functional test. No further test required.(11)	N/A	N/A
Group 1 (Actuation) Logic	Once/operating cycle (21)	N/A	N/A
Group 2 (Initiating) Logic	Checked during channel functional test. No further test required.	N/A	N/A
Group 2 (RHR Isolation-Actuation) Logic	Once/operating cycle (21)	N/A	N/A
Group 8 (Tip-Actuation) Logic	Once/operating cycle (21)	N/A	N/A
Group 2 (Drywell Sump Drains-Actuation) Logic	Once/operating cycle (21)	N/A	N/A
Group 2 (Reactor Building and Refueling floor, and Drywell Vent and Purge-Actuation) Logic	Once/operating cycle (21)	N/A	N/A
Group 3 (Initiating) Logic	Checked during channel functional test. No further test required.	N/A	N/A
Group 3 (Actuation) Logic	Once/operating cycle (21)	N/A	N/A

TABLE 4.2.A (Cont'd)
SURVEILLANCE REQUIREMENTS FOR PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Function	Functional Test	Calibration Frequency	Instrument Check
Group 6 Logic	Once/operating cycle (18)	N/A	N/A
Group 8 (Initiating) Logic	Checked during channel functional test. No further test required.	N/A	N/A
Reactor Building Isolation (refueling floor) Logic	Once/6 months (18)	(6)	N/A
Reactor Building Isolation (reactor zone) Logic	Once/6 months (18)	(6)	N/A
SGTS Train A Logic	Once/6 months (19)	N/A	N/A
SGTS Train B Logic	Once/6 months (19)	N/A	N/A
SGTS Train C Logic	Once/6 months (19)	N/A	N/A
Instrument Channel – Reactor Water Cleanup System Main Steam Valve Vault (TIS-069-834A-D)	(1)(27)	4 months	N/A
Instrument Channel – Reactor Water Cleanup System Pipe Trench (TIS-069-835A-D)	(1)(27)	4 months	N/A
Instrument Channel – Reactor Water Cleanup System Pump Room 2A (TIS-069-836A-D)	(1)(27)	4 months	N/A
Instrument Channel Reactor Water Cleanup System Pump Room 2B (TIS-069-837A-D)	(1)(27)	4 months	N/A
Instrument Channel Reactor Water Cleanup System Heat Exchanger Room (TIS-069-838A-D)	(1)(27)	4 months	N/A

flow instrumentation is a backup to the temperature instrumentation. In the event of a loss of the reactor building ventilation system, radiant heating in the vicinity of the main steam lines raises the ambient temperature above 200°F. The temperature increases can cause an unnecessary main steam line isolation and reactor scram. Permission is provided to bypass the temperature trip for four hours to avoid an unnecessary plant transient and allow performance of the secondary containment leak rate test or make repairs necessary to regain normal ventilation.

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure as in the control rod drop accident. With the established nominal setting of three times normal background and main steam line isolation valve closure, fission product release is limited so that 10 CFR 100 guidelines are not exceeded for this accident. Reference Section 14.6.2 FSAR. An alarm with a nominal setpoint of 1.5 x normal full-power background is provided also.

Pressure instrumentation is provided to close the main steam isolation valves in RUN Mode when the main steam line pressure drops below 825 psig.

The HPCI high flow and temperature instrumentation are provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation of HPCI isolation valves. Tripping logic for the high flow is a 1-out-of-2 logic, and all sensors are required to be OPERABLE.

High temperature in the vicinity of the HPCI equipment is sensed by four sets of four bimetallic temperature switches. The 16 temperature switches are arranged in two trip systems with eight temperature switches in each trip system.

The HPCI trip settings of 90 psi for high flow and 200°F for high temperature are such that core uncovery is prevented and fission product release is within limits.

The RCIC high flow and temperature instrumentation are arranged the same as that for the HPCI. The trip setting of 450" H_2O for high flow and 200°F for temperature are based on the same criteria as the HPCI.

High temperature at the Reactor Water Cleanup (RWCU) System in the main steam valve vault, RWCU pump room 2A, RWCU pump room 2B, RWCU heat exchanger room or in the space near the pipe trench containing RWCU piping could indicate a break in the cleanup system. When high temperature occurs, the cleanup system is isolated.

The instrumentation which initiates CSCS action is arranged in a dual bus system. As for other vital instrumentation arranged in this fashion, the specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. An exception to this is when logic functional testing is being performed.

3.2 BASES (Cont'd)

The control rod block functions are provided to prevent excessive control rod withdrawal so that MCPR does not decrease to 1.07. The trip logic for this function is 1-out-of-n: e.g., any trip on one of six APRMs, eight IRMs, or four SRMs will result in a rod block.

The minimum instrument channel requirements assure sufficient instrumentation to assure the single failure criteria is met. The minimum instrument channel requirements for the RBM may be reduced by one for maintenance, testing, or calibration. This does not significantly increase the risk of an inadvertent control rod withdrawal, as the other channel is available, and the RBM is a backup system to the written sequence for withdrawal of control rods.

The APRM rod block function is flow biased and prevents a significant reduction in MCPR, especially during operation at reduced flow. The APRM provides gross core protection; i.e., limits the gross core power increase from withdrawal of control rods in the normal withdrawal sequence. The trips are set so that MCPR is maintained greater than 1.07.

The RBM rod block function provides local protection of the core; i.e., the prevention of critical power in a local region of the core, for a single rod withdrawal error from a limiting control rod pattern.

If the IRM channels are in the worst condition of allowed bypass, the sealing arrangement is such that for unbypassed IRM channels, a rod block signal is generated before the detected neutrons flux has increased by more than a factor of 10.

A downscale indication is an indication the instrument has failed or the instrument is not sensitive enough. In either case the instrument will not respond to changes in control rod motion and thus, control rod motion is prevented.

The refueling interlocks also operate one logic channel, and are required for safety only when the mode switch is in the refueling position.

For effective emergency core cooling for small pipe breaks, the HPCI system must function since reactor pressure does not decrease rapid enough to allow either core spray or LPCI to operate in time. The automatic pressure relief function is provided as a backup to the HPCI in the event the HPCI does not operate. The arrangement of the tripping contacts is such as to provide this function when necessary and minimize spurious operation. The trip settings given in the specification are adequate to assure the above criteria are met. The specification preserves the effectiveness of the system during periods of maintenance, testing, or calibration, and also minimizes the risk of inadvertent operation; i.e., only one instrument channel out of service.

Two post treatment off-gas radiation monitors are provided and, when their trip point is reached, cause an isolation of the off-gas line. Isolation is initiated when both instruments reach their high trip point or one has an upscale trip and the other a downscale trip or both have a downscale trip.

TABLE 3.7.A (Continued)

Group	Valve Identification	Number of Power Operated Valves Inboard	Number of Power Operated Valves Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal	Notes
N/A	Demineralized water supply check valve (2-1192)		1	N/A	C	N/A	1
N/A	Demineralized water supply isolation valve (2-1383)		1	N/A	C	N/A	1, 4
N/A	Service air supply isolation valves (33-1070)		1	N/A	C	N/A	1
N/A	Service air supply check valve (33-785)		1	N/A	C	N/A	1, 4
N/A	Drywell control air inlet header check valves (32-2163, 32-336)	1	1	N/A	0	Process	1
N/A	Suppression chamber vacuum relief (64-20, 64-21)		2	N/A	C	N/A	1
N/A	Suppression chamber vacuum relief check valves (64-800, 64-801)		2	N/A	C	Process	1
N/A	Recirculation pump A seal injection check valves (68-508, 68-550)	1	1	N/A	0	Process	1
N/A	Recirculation pump B seal injection check valves (68-523, 68-555)	1	1	N/A	0	Process	1
N/A	Reactor water cleanup system discharge check valve (69-579)		1	N/A	0	Process	1
N/A	Reactor building closed cooling water drywell return isolation valve (70-47)		1	N/A	0	GC	1, 4

NOTES FOR TABLE 3.7.A

Key: 0 = Open
C = Closed
SC = Stays Closed
GC = Goes Closed

Note: Isolation groupings are as follows:

Group 1: The valves in Group 1 are actuated by any one of the following conditions:

1. Reactor Vessel Low Low Water Level (378")
2. Main Steamline High Radiation
3. Main Steamline High Flow
4. Main Steamline Space High Temperature
5. Main Steamline Low Pressure

Group 2: The valves in Group 2 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure.

Group 3: The valves in Group 3 are actuated by any of the following conditions:

1. Reactor Low Water Level (538")
2. Reactor Water Cleanup (RWCU) System High Temperature in the main steam valve vault,
3. RWCU System High Temperature in RWCU pump room 2A,
4. RWCU System High Temperature in the RWCU pump room 2B,
5. RWCU System High Temperature in RWCU heat exchanger room,
6. RWCU System High Temperature in the space near the pipe trench containing RWCU piping.

Group 4: The valves in Group 4 are actuated by any of the following conditions:

1. HPCI Steamline Space High Temperature
2. HPCI Steamline High Flow
3. HPCI Steamline Low Pressure
4. HPCI Turbine Exhaust Diaphragm High Pressure

Group 5: The valves in Group 5 are actuated by any of the following conditions:

1. RCIC Steamline Space High Temperature
2. RCIC Steamline High Flow
3. RCIC Steamline Low Pressure
4. RCIC Turbine Exhaust Diaphragm High Pressure

NOTES FOR TABLE 3.7.A (Continued)

Group 6: The valves in Group 6 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure
3. Reactor Building Ventilation High Radiation

Group 7: (Deleted)

Group 8: The valves in Group 8 are automatically actuated by only the following conditions:

1. High Drywell Pressure
2. Reactor Vessel Low Water Level (538")

Note 1: Primary containment isolation valve(s) requiring LLRT at not less than 49.6 psig.

Note 2: Primary containment isolation valve(s) which may be LLRT with water and not included in the 60-percent L_a tabulation, provided a sufficient fluid inventory is available to ensure the sealing function for at least 30 days at a pressure of 54.6 psig.

Note 3: Primary containment isolation valves that are in closed loop, seismic Class 1 lines that will be water sealed during a DBA. These valves will be tested but not included in the 60-percent L_a tabulation.

Note 4: Primary containment isolation valves that are manually operated.

Note 5: Primary containment isolation valves 74-661/662 are considered as a single containment boundary and LLRT as such.

Note 6: Analyzers are such that one is sampling drywell hydrogen and oxygen (valves from drywell open, valves from torus close), while the other is sampling torus hydrogen and oxygen (valves from torus open, valves from drywell close).

Note 7: Primary containment isolation valves requiring LLRT at not less than 25-psig.

3.7.A & 4.7.A Primary Containment

The integrity of the primary containment and operation of the core standby cooling system in combination, ensure that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR Part 100 during accident conditions.

During initial core loading and while the low power test program is being conducted and ready access to the reactor vessel is required, there will be no pressure on the system thus greatly reducing the chances of a pipe break. The reactor may be taken critical during this period; however, restrictive operating procedures will be in effect to minimize the probability of an accident occurring.

The limitations on primary containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure of 49.6 psig, P_a. As an added conservatism, the measured overall integrated leakage rate is further limited to 0.75 L_a during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leakage tests.

The surveillance testing for measuring leakage rates are consistent with the requirements of Appendix J of 10 CFR Part 50 (type A, B, and C tests).

The pressure suppression pool water provides the heat sink for the reactor primary system energy release following a postulated rupture of the system. The pressure suppression chamber water volume must absorb the associated decay and structural sensible heat release during primary system blowdown from 1,035 psig. Since all of the gases in the drywell are purged into the pressure suppression chamber air space during a loss of coolant accident, the pressure resulting from isothermal compression plus the vapor pressure of the liquid must not exceed 62 psig, the suppression chamber maximum pressure. The design volume of the suppression chamber (water and air) was obtained by considering that the total volume of reactor coolant to be condensed is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber.

Using the minimum or maximum water levels given in the specification, containment pressure during the design basis accident is approximately 49 psig, which is below the maximum of 62 psig. The maximum water level indications of -1 inch corresponds to a downcomer submergence of three feet seven inches and a water volume of 127,800 cubic feet with or 128,700 cubic feet without the drywell-suppression chamber differential pressure control. The minimum water level indication of -6.25 inches with differential pressure control and -7.25 inches without differential pressure control corresponds to a downcomer submergence of approximately three feet and a water volume of approximately 123,000 cubic feet.

ENCLOSURE 2

SUMMARY OF CHANGES TO UNIT 2 TECHNICAL SPECIFICATIONS (TSs)

1. Delete the following from Table 3.2.A on page 3.2/4.2-8.

   a. Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature

   b. Instrument Channel - Reactor Water Cleanup System Space High Temperature

   c. Instrument Channel - Reactor Water Cleanup System Pipe Trench

2. Delete note 14 of the Notes for Table 3.2.A.

3. Add the following to Table 3.2.A.

Minimum No. Instrument Channels Operable Per Trip Sys (1)(11)	Function	Allowable Value	Action (1)	Remarks
2	Instrument Channel Reactor Water Cleanup System Main Steam Valve Vault (TIS-069-834A-D)	≤ 201.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pipe Trench (TIS-069-835A-D)	≤ 135.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pump Room 2A (TIS-069-836A-D)	≤ 152.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Pump Room 2B (TIS-069-837A-D)	≤ 152.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor
2	Instrument Channel Reactor Water Cleanup System Heat Exchanger Room (TIS-069-838A-D)	≤ 143.0°F	C	Above Trip Setting initiates Isolation of Reactor Water Cleanup Lines to and from the Reactor

4. Delete the following from Table 4.2.A on page 3.2/4.2-43.

   a. Instrument Channel - Reactor Cleanup System Floor Drain High Temperature

   b. Instrument Channel - Reactor Cleanup System Space High Temperature

   c. Instrument Channel - Reactor Cleanup System System Pipe Trench High Temperature

5. Add the following to Table 4.2.A.

Function	Functional Test	Calibration Frequency	Instrument Check
Instrument Channel Reactor Water Cleanup System Main Steam Valve Vault (TIS-069-834A-D)	(1)(27)	4 months	NA
Instrument Channel Reactor Water Cleanup System Pipe Trench (TIS-069-835A-D)	(1)(27)	4 months	NA
Instrument Channel Reactor Water Cleanup System Pump Room.2A (TIS-069-836A-D)	(1)(27)	4 months	NA
Instrument Channel Reactor Water Cleanup System Pump Room 2B (TIS-069-837A-D)	(1)(27)	4 months	NA
Instrument Channel Reactor Water Cleanup System Heat Exchanger Room (TIS-069-838A-D)	(1)(27)	4 months	NA

6. Delete the following paragraph from Bases section 3.2.

   "High temperature at the Reactor Water Cleanup (RWCU) System floor drain in the space near the RWCU system or in the space near the pipe trench containing RWCU piping could indicate a break in the cleanup system. When high temperature occurs, the cleanup system is isolated."

7. Replace the paragraph deleted in (6) above with the following.

   "High temperature at the Reactor Water Cleanup (RWCU) System in the main steam valve vault, RWCU pump room 2A, RWCU pump room 2B, RWCU heat exchanger room or in the space near the pipe trench containing RWCU piping could indicate a break in the cleanup system. When high temperature occurs, the cleanup system is isolated."

8. Delete items 2 and 3 under Group 3 for the Notes for Table 3.7.A.

9. Add the following items under Group 3 for the Notes for Table 3.7.A.

   "2. Reactor Water Cleanup (RWCU) System High Temperature in the main steam valve vault,
   3. RWCU System High Temperature in RWCU pump room 2A,
   4. RWCU System High Temperature in RWCU pump room 2B,
   5. RWCU System High Temperature in RWCU heat exchanger room,
   6. RWCU System High Temperature in the space near the pipe trench containing RWCU piping."

ENCLOSURE 3

REASON AND JUSTIFICATION FOR THE PROPOSED CHANGES

Reason for Changes

An analysis of High Energy Line Breaks (HELBs) in the reactor building identified certain pipe breaks which could not be automatically detected and isolated in a reasonable timeframe using the presently installed temperature switches. These breaks were reactor water cleanup (RWCU) pipe critical cracks in the main steam valve vault, RWCU pump rooms, RWCU pipe trench, and RWCU heat exchanger room.

A modification is therefore being performed to remove from service the existing non-environmentally qualified temperature switches used to detect RWCU line breaks and replace them with new temperature loops consisting of environmentally qualified resistance temperature detectors (RTDs) and IEEE class 1E qualified analog trip units (ATUs) located to detect the pipe breaks listed above.

This technical specification change will delete from unit 2 Table 3.2.A and Table 4.2.A the temperature switches which are being removed from the plant or abandoned in place. It will add the environmentally qualified ATUs to the same tables. Note 14 is being deleted from Table 3.2.A because it only applies to the old temperature switches which are being removed from the table. Changes are also being made to Bases section 3.2 to give the location of the RTDs and to the Notes for Table 3.7.A to indicate that the new RTD/ATU temperature loops actuate Group 3 valves. The changes are described in Enclosure 2.

Justification for the Changes

The RWCU system maintains high reactor water purity to limit chemical and corrosive action, thereby limiting fouling and deposition on heat transfer surfaces. The system also removes corrosion products to limit impurities available for activation by neutron flux and resultant radiation from the deposition of corrosion products. The system also provides a means for removal of reactor water.

The currently installed temperature switches are provided to indicate high temperature in the RWCU system space or floor drains which could be indicative of a break in the RWCU system. When a high temperature occurs, a primary containment isolation signal closes the RWCU suction line isolation valves (2-FCV-69-001 and 2-FCV-69-002) and the RWCU return line valve (2-FCV-69-012).

As discussed above, a modification is being performed to replace the existing non-environmentally qualified temperature switches with environmentally qualified temperature loops and to ensure certain HELBs can be automatically detected and isolated in a reasonable timeframe. Four existing temperature switches located in floor drains in the Backwash Receiving Room (elevation 593) and four existing temperature switches located in floor drains in the Backwash Receiving Room (elevation 621) will be abandoned in place. These will be replaced by a like number of RTDs located in RWCU pump rooms A and B.

The four existing temperature switches located in the RWCU pipe trench and the four existing temperature switches located in the RWCU heat exchanger rooms are being replaced by the same number of RTDs in each location. Four RTDs are being added to the main steam valve vault. No RWCU temperature switches are presently located in the vault.

The RWCU valves 2-FCV-69-001 and 2-FCV-69-002 provide isolation of the RWCU system from the reactor coolant pressure boundary. This change will provide a quicker means of detecting a high temperature due to a RWCU pipe break in the main steam valve vault (MSVV), RWCU pipe trench (PPTR), RWCU pump rooms (RWCUPR), or RWCU heat exchanger room (RWCUHER).

The setpoints for the new RTD/ATU temperature loops were chosen to decrease the time required to initiate valve closure. This improves the detection/isolation of RWCU breaks and helps to limit the reactor coolant lost, helps assure core cooling, and helps to ensure environmental conditions inside the reactor building are maintained within the limits stated on environmental drawings. The setpoints are set above the maximum expected room temperatures to avoid spurious actuations due to ambient conditions and below the analytical limits to ensure timely detection of a pipe break. The revision to Table 3.2.A gives the allowable value for each function. Trip settings have been chosen and will be established in plant instructions to ensure that the allowable values are not exceeded taking into account instrument drift and inaccuracies.

The following chart shows the RTDs being added and the respective divisional assignments.

TEMPERATURE MONITORING LOCATION					
POWER DIV.	RWCUHER	PPTR	RWCUPR2A	RWCUPR2B	MSVV
IA	TE-069-838A	TE-069-835A	TE-069-836A	TE-069-837A	TE-069-834A
IIA	TE-069-838C	TE-069-836C	TE-069-836C	TE-069-837C	TE-069-834C
IB	TE-069-838B	TE-069-835B	TE-069-836B	TE-069-837B	TE-069-834B
IIB	TE-069-838D	TE-069-835D	TE-069-836D	TE-069-837D	TE-069-834D

The instrument logic is such that high temperature signals from one of two RTDs in each division in a given area are required to provide an RWCU primary containment isolation signal. Because of this logic arrangement, the failure of a single RTD, ATU, or power feed will not prevent isolation nor will a single failure cause a spurious isolation. No new failure modes are introduced nor is there any effect on the operation of the end devices (2-FCV-069-001, -002, -012).

These changes will ensure that isolation of the RWCU system occurs as required if the appropriate high temperature signal is received. The changes will provide a quicker means of detecting RWCU pipe breaks and provide more accurate temperature measurement. The changes are therefore justified.

ENCLOSURE 4

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Description of Proposed Technical Specification (TS) Amendment

BFN unit 2 TSs are being revised as follows:

1. Delete existing reactor water cleanup (RWCU) system temperature switches from Table 3.2.A and add the new RWCU analog trip units (ATUs) to the table.

2. Delete note 14 from Table 3.2.A.

3. Delete existing RWCU system temperature switches from Table 4.2.A and add the new RWCU ATUs to the table.

4. Revise Bases section 3.2 to describe the locations of the Resistance Temperature Detectors (RTDs).

5. Delete existing items 2 and 3 under Group 3 in the Notes for Table 3.7.A (existing RWCU high temperature conditions) and add the new RWCU high temperature conditions.

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 an accident previously evaluated, or (3) involve a significant reduction in margin of safety.

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

   An analysis of High Energy Line Breaks (HELBs) in the reactor building identified certain RWCU pipe breaks which could not be automatically detected and isolated in a reasonable timeframe. To resolve this, a modification is being performed to remove from service the existing non-environmentally qualified temperature switches used to detect RWCU line breaks and replace them with environmentally qualified RTDs and IEEE Class 1E qualified analog trip units (ATUs) located to detect and isolate the critical RWCU pipe breaks. This TS amendment adds the new ATUs function to Tables 3.2.A and 4.2.A and to the Notes for Table 3.7.A. It also deletes note 14 from Table 3.2.A. This note only applies to the old temperature switches which are being removed from the table.

   The safety function of the RTD/ATU temperature loops is to provide an isolation signal to close the RWCU suction line isolation valves (2-FCV-69-001 and 2-FCV-69-002) and RWCU return line valve (2-FCV-69-012) on a high area temperature. This ensures RWCU pipe breaks are isolated. No other RWCU safety functions are affected by the change.

The new RTD/ATU temperature loops were chosen to decrease the time required to initiate closure of the RWCU valves. This improves the detection/isolation of RWCU breaks and helps to limit the reactor coolant lost, helps ensure core cooling, and helps ensure that environmental conditions inside the reactor building are maintained within the required limits.

Components added by this change are qualified for the environment in which they will operate. This ensures that the system will perform its function in a post accident environment. No additional paths for the release of radiation or contamination are created.

The failure modes of the RTDs and ATUs are such that any single failure will result in a gross failure alarm and/or a channel trip. Because of the redundancy, separations, and logic designed into the system, a single failure of any part of the system will not prevent isolation of the primary containment isolation valves nor can spurious operation occur.

The RTDs will be located and the instrument setpoints will be set to preclude spurious trips due to ambient temperatures including localized hot areas while assuring a timely trip due to a pipe break.

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

This change is being made to improve the RWCU leak detection/isolation function of the RWCU Primary Containment Isolation System (PCIS). The PCIS will perform its intended safety function in the same manner as the previous installation. There is no affect on the function or operation of any other plant system.

Failure of the RTD/ATU temperature loops would be no different than failure of existing temperature switches. Since environmental qualification requirements, divisional separation, single failure requirements and one-out-of-two taken twice logic requirements are maintained, the possibility of a RWCU isolation failure on a RWCU line break or of a spurious isolation is no more likely after the change than before.

In the existing design, logic relays are powered from RPS Bus A or B. The new design uses RPS Bus A or B to feed the ATUs. Therefore, the consequence of a power failure is unchanged from the present design.

The seismic qualification and proper circuit coordination of the installation is maintained. The system functions and operates in the same manner as previously evaluated in the Safety Analysis Report. No new system interactions other than additional RTDs located in the main steam valve vault to input into the PCIS logic for isolation of the RWCU have been introduced by this activity.

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

   The margin of safety will be enhanced by installing instruments that provide quicker response to a temperature rise indicative of a pipe break. Calculations have been performed to determine the analytical limits for the RTD/ATU temperature loops in each of the monitored areas and to determine the setpoints for the ATUs in each area. The setpoints are set above the maximum expected room temperatures to avoid spurious actuations due to ambient conditions and below the analytical limits to ensure timely detection of a pipe break. This type of design utilizing ATUs has been analyzed by NRC (NEDO-21617, Analog Transmitter/Trip Unit System for Engineered Safeguard Sensor Trip Input) and has been found to be generically acceptable at BWR facilities.

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