(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis, instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the Sequoyah and Watts Bar Unit 1 Nuclear Plants.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The Tennessee Valley Authority is authorized to operate the facility at reactor core power levels not in excess of 3455 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. , are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Initial Test Program

The Tennessee Valley Authority shall conduct the post-fuel-loading initial test program (set forth in Section 14 of Tennessee Valley Authority's Final Safety Analysis Report, as amended), without making any major modifications of this program unless modifications have been identified and have received prior NRC approval. Major modifications are defined as:

a. Elimination of any test identified in Section 14 of TVA's Final Safety Analysis Report as amended as being essential;

b. Modification of test objectives, methods or acceptance criteria for any test identified in Section 14 of TVA's Final Safety Analysis Report as amended as being essential;

c. Performance of any test at power level different from there described; and

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

2.2.1 The reactor trip system instrumentation and interlocks setpoints shall be set consistent with the Nominal Trip Setpoint values shown in Table 2.2-1.

APPLICABILITY: As shown for each channel in Table 3.3-1.

ACTION:

With a reactor trip system instrumentation or interlock setpoint less conservative than the value shown in the Allowable Values column of Table 2.2-1, declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1 until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Nominal Trip Setpoint value.

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Power Range Neutron Flux	Low Setpoint - 25% of RATED THERMAL POWER	Low Setpoint - ≤ 27.4% of RATED THERMAL POWER
	High Setpoint - 109% of RATED THERMAL POWER	High Setpoint - ≤ 111.4% of RATED THERMAL POWER
3. Power Range Neutron Flux High Positive Rate	5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second
4. Power Range Neutron Flux, High Negative Rate	5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second
5. Intermediate Range, Neutron Flux	25% of RATED THERMAL POWER	≤ 45.20% of RATED THERMAL POWER
6. Source Range Neutron Flux	10^5 counts per second	≤ 1.45 x 10^5 counts per second
7. Overtemperature ΔT	See Note 1	See Note 3
8. Overpower ΔT	See Note 2	See Note 4
9. Pressurizer Pressure--Low	1970 psig	≥ 1964.8 psig
10. Pressurizer Pressure--High	2385 psig	≤ 2390.2 psig
11. Pressurizer Water Level—High	92% of instrument span	≤ 92.7% of instrument span
12. Loss of Flow	90% of design flow per loop*	≥ 89.6% of design flow per loop*

*Design flow is 90,045 (87,000 X 1.035) gpm per loop.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
13. Steam Generator Water Level--Low-Low		
a. RCS Loops ΔT Equivalent to Power $\leq$ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input $\leq$ nominal trip setpoint + 2.5% RTP
Coincident with Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	$\geq$ 14.4% of narrow range instrument span
and Containment Pressure (EAM)	0.5 psig	$\leq$ 0.6 psig
or Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	$\geq$ 10.1% of narrow range instrument span
with A time delay (T_S) if one Steam Generator is affected	T_S (Note 5)	$\leq$ (1.01) T_S (Note 5)
or A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5)	$\leq$ (1.01) T_M (Note 5)
b. RCS Loop ΔT Equivalent to Power > 50% RTP		
Coincident with Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	$\geq$ 14.4% of narrow range instrument span
and Containment Pressure (EAM)	0.5 psig	$\leq$ 0.6 psig
or Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	$\geq$ 10.1% of narrow range instrument

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES	
14. Deleted			
15. Undervoltage-Reactor Coolant Pumps	5022 volts-each bus	≥ 4739 volts-each bus	|
16. Underfrequency-Reactor Coolant Pumps	56.0 Hz - each bus	≥ 55.9 Hz - each bus	|
17. Turbine Trip			
A. Low Trip System Pressure	45 psig	≥ 43 psig *	|
B. Turbine Stop Valve Closure	1% open	≥ 1% open	|
18. Safety Injection Input from ESF	Not Applicable	Not Applicable	
19. Intermediate Range Neutron Flux - (P-6) Enable Block Source Range Reactor Trip	1×10^{-4}% of RATED THERMAL POWER	≥ 6×10^{-5}% of RATED THERMAL POWER	|
20. Power Range Neutron Flux (not P-10) Input to Low Power Reactor Trips Block P-7	10% of RATED THERMAL POWER	≤ 12.4% of RATED THERMAL POWER	|

* The allowable value for the Turbine Trip – Low Trip System Pressure is ≥ 39.5 psig and expires at the end of the Unit 1 Cycle 15 Operating Cycle.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
21. Turbine Impulse Chamber Pressure - (P-13) Input to Low Power Reactor Trips Block P-7	10% Turbine Impulse Pressure Equivalent	≤ 12.4% Turbine Impulse Pressure Equivalent
22. Power Range Neutron Flux - (P-8) Low Reactor Coolant Loop Flow, and Reactor Trip	35% of RATED THERMAL POWER	≤ 37.4% of RATED THERMAL POWER
23. Power Range Neutron Flux - (P-10) - Enable Block of Source, Intermediate, and Power Range (low setpoint) Reactor Trips	10% of RATED THERMAL POWER	≥ 7.6% of RATED THERMAL POWER
24. Reactor Trip P-4	Not Applicable	Not Applicable
25. Power Range Neutron Flux - (P-9) - Blocks Reactor Trip for Turbine Trip Below 50% Rated Power	50% of RATED THERMAL POWER	≤ 52.4% of RATED THERMAL POWER

NOTATION

NOTE 1:

$$\text{Overtemperature } \Delta T \left(\frac{1 + \tau_4 S}{1 + \tau_5 S}\right) \leq \Delta T_0 \left\{K_1 - K_2 \left(\frac{1 + \tau_1 S}{1 + \tau_2 S}\right)[T - T'] + K_3 (P - P') - f_1(\Delta I)\right\}$$

Where:

$\frac{1+\tau_4 S}{1+\tau_5 S}$ = Lead-lag compensator on measured ΔT

τ_4, τ_5 = Time constants utilized in the lead-lag controller for ΔT, $\tau_4 \geq 5$ secs, $\tau_5 \leq 3$ sec.

ΔT_0 = Indicated ΔT at RATED THERMAL POWER

K_1 ≤ 1.15

K_2 ≥ 0.011

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

NOTE 1: (Continued)

$\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation

τ_1, & τ_2 = Time constants utilized in the lead-lag controller for T_{avg}, $\tau_1 \geq 33$ secs., $\tau_2 \leq 4$ secs.

T = Average temperature °F

T' ≤ 578.2°F (T_{avg} at RATED THERMAL POWER)

K_3 = 0.00055

P = Pressurizer pressure, psig

P' = 2235 psig (Nominal RCS operating pressure)

S = Laplace transform operator (sec^{-1})

and f_1 (ΔI) is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) for $q_t - q_b$ between QTNL* and QTPL* f_1 (ΔI) = 0 (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

NOTE 1: (Continued)

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds QTNL*, the ΔT nominal trip setpoint shall be automatically reduced by QTNS* of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of $(q_t - q_b)$ exceeds QTPL*, the ΔT nominal trip setpoint shall be automatically reduced by QTPS* of its value at RATED THERMAL POWER.

NOTE 2:

Overpower $$\Delta T\left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right) T - K_6 \left(T - T''\right) - f_2\left(\Delta I\right)\right\}$$

Where:

$\frac{1+\tau_4 S}{1+\tau_5 S}$	=	as defined in Note 1
τ_4, τ_5	=	as defined in Note 1
ΔT_0	=	as defined in Note 1
K_4	≤	1.087
K_5	≥	0.02/°F for increasing average temperature and 0 for decreasing average temperature
$\frac{\tau_3 S}{1 + \tau_3 S}$	=	The function generated by the rate-lag controller for T_{avg} dynamic compensation

* QTNL, QTPL, QTNS, and QTPS are specified in the COLR per Specification 6.9.1.14.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

NOTE 2: (Continued)

τ_3 = Time constant utilized in the rate-lag controller for T_{avg}, $\tau_3 \geq 10$ secs.

K_6 $\geq$ 0.0011 for $T > T''$ and $K_6 \geq 0$ for $T \leq T''$

T = as defined in Note 1

T" = Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, $\leq 578.2^{\circ}F$)

S = as defined in Note 1

and $f_2(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) for $q_t - q_b$ between QPNL* and QPPL* $f_2(\Delta I) = 0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds QPNL* the ΔT nominal trip setpoint shall be automatically reduced by QPNS* of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of $(q_t - q_b)$ exceeds QPPL* the ΔT nominal trip setpoint shall be automatically reduced by QPPS* of its value at RATED THERMAL POWER.

NOTE 3: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.9 percent ΔT span.

NOTE 4: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.7 percent ΔT span.

*QPNL, QPPL, QPNS, and QPPS are specified in the COLR per Specification 6.9.1.14.

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Nominal Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel or interlock trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Nominal Trip Setpoint value.

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
e. Loss of Power Start					
1. Voltage Sensors	3/shutdown board**	2/shutdown board**	3/shutdown board**	1, 2, 3	35
2. Load Shed Timer	2/shutdown board**	1/shutdown board**	1/shutdown board**	1, 2, 3	35
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump	1, 2	20
g. Auxiliary Feedwater Suction Pressure- Low	3/pump	2/pump	3/pump	1, 2, 3	21
h. Auxiliary Feedwater Suction Transfer Time Delays					
1. Motor-Driven Pump	1/pump	1/pump	1/pump	1, 2, 3	21
2. Turbine-Driven Pump	2/pump	1/pump	2/pump	1, 2, 3	21

**Unit 1 shutdown boards only

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 6.9 kv Shutdown Board -- Loss of Voltage					
1. Voltage Sensors	3/shutdown board	2/shutdown board	3/shutdown board	1, 2, 3, 4 5[####], 6[####]	34
2. Diesel Generator Start and Load Shed Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4 5[####], 6[####]	34
b. 6.9 kv Shutdown Board Degraded Voltage					
1. Voltage Sensors	3/shutdown board	2/shutdown board	3/shutdown board	1, 2, 3, 4 5[####], 6[####]	34
2. Diesel Generator Start and Load Shed Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4 5[####], 6[####]	34
3. SI/Degraded Voltage Logic Enable Timer	2/shutdown board	1/shutdown board	1/shutdown board	1, 2, 3, 4	34
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure-P-11/Not P-11	3	2	2	1, 2, 3	22a
b. Deleted					
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c

TABLE 3.3-3 (Continued)

ACTION 21 - With less than the Minimum Number of Channels OPERABLE, declare the associated auxiliary feedwater pump inoperable, and comply with the ACTION requirements of Specification 3.7.1.2.

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:

a. Safety Injection
   Pressurizer Pressure
   Steam Line Pressure
   Negative Steam Line Pressure Rate

b. Deleted

c. Turbine Trip
   Steam Generator Level High-High
   Feedwater Isolation
   Steam Generator Level High-High

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

ACTION 25 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ACTION 34 - a. With the number of OPERABLE channels one less than the Total Number of Channels for voltage sensors, restore the inoperable channel to OPERABLE status within 6 hours or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated diesel generator set made inoperable by the channel.

b. With the number of OPERABLE channels less than the Total Number of Channels by more than one for voltage sensors or timers, restore all but one channel to OPERABLE status within 1 hour or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated diesel generator set made inoperable by the channels.

TABLE 3.3-3 (Continued)

ACTION 35 - a. With the number of OPERABLE channels one less than the Total Number of Channels for voltage sensors, restore the inoperable channel to OPERABLE status within 6 hours or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channel.

b. With the number of OPERABLE channels less than the Total Number of Channels by more than one for voltage sensors or timers, restore all but one channel to OPERABLE status within 1 hour or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channels.

ACTION 36 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M) within 4 hours.

c. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

ACTION 37 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure—High	1.54 psig	≤ 1.6 psig
d. Pressurizer Pressure--Low	1870 psig	≥ 1864.8 psig
e. Deleted		
f. Steam Line Pressure—Low	600 psig steam line pressure (Note 1)	≥ 592.2 psig steam line pressure (Note 1)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation logic	Not Applicable	Not Applicable
b. Phase "B" Isolation		
1. Manua1	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig
c. Containment Ventilation Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Isolation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
3. Containment Purge Air Exhaust Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3}$ μCi/cc	$\leq 8.5 \times 10^{-3}$ μCi/cc
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig
d. Steam Line Pressure--Low	600 psig steam line pressure (Note 1)	≥ 592.2 psig steam line pressure (Note 1)
e. Negative Steam Line Pressure Rate—High	100.0 psi (Note 2)	≤ 107.8 psi (Note 2)
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water level-- High-High	81% of narrow range instrument span each steam generator	≤ 81.7% of narrow range instrument span each steam generator
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
6. AUXILIARY FEEDWATER		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Main Steam Generator Water Level--Low-Low		
i. RCS Loop ΔT Equivalent to Power $\leq$ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input $\leq$ nominal trip setpoint +2.5% RTP
Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	$\geq$14.4% of narrow range instrument span
and		
Containment Pressure-EAM	0.5 psig	$\leq$ 0.6 psig
or		
Steam Generator Water Level--Low-Low (EAM)	10.7% of narrow range instrument span	$\geq$ 10.1% of narrow instrument span
with		
A time delay (T_S) if one Steam Generator is affected	T_S (Note 5, Table 2.2-1)	$\leq$ (1.01) T_S (Note 5, Table 2.2-1)
or		
A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5, Table 2.2-1)	$\leq$ (1.01) T_M (Note 5, Table 2.2-1)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
ii. RCS Loop ΔT Equivalent to Power > 50% RTP		
Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
and		
Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
or		
Steam Generator Water Level-- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument span
d. S.I.	See 1 above (all SI Setpoints)	
e. Loss of Power Start		
1. Voltage Sensors	5520 volts	≥ 5331 volts
2. Load Shed Timer	1.25 seconds	≥ 1.00 second and ≤ 1.50 seconds
f. Trip of Main Feedwater Pumps	N.A.	N.A.
g. Auxiliary Feedwater Suction Pressure-Low	3.21 psig (motor driven pump)	≥ 2.44 psig (motor driven pump)
	13.9 psig (turbine driven (pump)	≥ 12 psig (turbine driven pump)
h. Auxiliary Feedwater Suction Transfer Time Delays	4 seconds (motor driven pump)	≤ 4.4 seconds and ≥ 3.6 seconds (motor driven pump)
	5.5 seconds (turbine driven pump)	≤ 6.05 seconds and ≥ 4.95 seconds (turbine driven pump)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
7. LOSS OF POWER		
a. 6.9 kv Shutdown Board Undervoltage		
Loss of Voltage		
1. Voltage Sensors	5520 volts	≥ 5331 volts
2. Diesel Generator Start and Load Shed Timer	1.25 seconds	≥ 1.00 second and ≤ 1.50 seconds
b. 6.9 kv Shutdown Board-Degraded Voltage		
1. Voltage Sensors	6456 volts	≥ 6403.5 volts (dropout) ≤ 6595.5 volts (reset)
2. Diesel Generator Start and Load Shed Timer	300 seconds	≤ 370 seconds
3. SI/Degraded Voltage Logic Enable Timer	9.5 seconds	≥ 7.5 seconds and ≤ 11.5 seconds
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS		
a. Pressurizer Pressure		
1. Not P-11, Automatic Unblock of Safety Injection on Increasing Pressure	1970 psig	≤ 1975.2 psig
2. P-11, Enable Manual Block of Safety Injection on Decreasing Pressure	1962 psig	≥ 1956.8 psig

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS (Continued)		
b. Deleted		
c. Deleted		
d. Steam Generator Level Turbine Trip, Feedwater Isolation P-14	(See 5. above)	
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP		
a. RWST Level - Low	130" from tank base	≤ 132.71" and ≥ 127.29" from tank base
COINCIDENT WITH		
Containment Sump Level - High	30" above elev. 680'	≤ 31.68" and ≥ 28.32" above elev. 680'
AND		
Safety Injection	(See 1 above for all Safety Injection Setpoints/Allowable Values)	
b. Automatic Actuation Logic	N.A.	N.A.

Note 1: Time constants utilized in the lead-lag controller for Steam Pressure - Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds.

Note 2: Time constant utilized in the rate-lag controller for Negative Steam Line Pressure Rate - High is $\tau \geq 50$ seconds.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
1. AREA MONITOR					
a. Fuel Storage Pool Area	1	*	≤ 151 mR/hr	10^{-1} - 10^{4} mR/hr	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	≤ 8.5x 10^{-3} μ Ci/cc	10 - 10^{7} cpm	28
b. Containment					
i. Gaseous Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	10 - 10^{7} cpm	27
c. Control Room Isolation	2	ALL MODES and during movement of irradiated fuel assemblies	≤ 400 cpm**	10 - 10^{7} cpm	29

* With fuel in the storage pool or building

** Equivalent to 1.0 x 10^{-5} μCi/cc.