

TABLE 2.2-1

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Linear Power Level - High		
Four Reactor Coolant Pumps Operating	$\leq 110.1\%$ of RATED THERMAL POWER	$\leq 110.7\%$ of RATED THERMAL POWER
3. Logarithmic Power Level - High (1)	$\leq 0.257\%$ of RATED THERMAL POWER	$\leq 0.275\%$ of RATED THERMAL POWER
4. Pressurizer Pressure - High	≤ 2365 psia	≤ 2372 psia
5. Pressurizer Pressure - Low	≥ 1684 psia (2)	≥ 1644 psia (2)
6. Containment Pressure - High	≤ 17.1 psia	≤ 17.3 psia
7. Steam Generator Pressure - Low	≥ 764 psia (3)	≥ 748 psia (3)
8. Steam Generator Level - Low	$\geq 27.4\%$ (4)	$\geq 26.7\%$ (4)
9. Local Power Density - High	≤ 21.0 kW/ft (5)	≤ 21.0 kW/ft (5)
10. DMBR - Low	≥ 1.26 (5)	≥ 1.26 (5)
11. Steam Generator Level - High	$\leq 87.7\%$ (4)	$\leq 88.4\%$ (4)
12. Reactor Protection System Logic	Not Applicable	Not Applicable
13. Reactor Trip Breakers	Not Applicable	Not Applicable
14. Core Protection Calculators	Not Applicable	Not Applicable
15. CEA Calculators	Not Applicable	Not Applicable
16. Reactor Coolant Flow - Low	≥ 23.8 psid (7)	≥ 23.6 psid (7)

WATERFORD - UNIT 3

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AMENDMENT NO. 12

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TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

<u>FUNCTIONAL UNIT</u>	<u>TRIP VALUE</u>	<u>ALLOWABLE VALUES</u>
5. SAFETY INJECTION SYSTEM SUMP RECIRCULATION (RAS)		
a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
b. Refueling Water Storage Pool - Low	10.0% (57,967 gallons)	9.3% (53,910 gallons)
c. Automatic Actuation Logic	Not Applicable	Not Applicable
6. LOSS OF POWER		
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3245 volts	≥ 3245 volts
b. 480 V Emergency Bus Undervoltage	≥ 372 volts	≥ 354 volts
c. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	≥ 3875 volts	≥ 3860 volts
7. EMERGENCY FEEDWATER (EFAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Steam Generator (1&2) Level - Low	≥ 27.4% ^{(3) (4)}	≥ 26.7% ^{(3) (4)}
c. Steam Generator ΔP - High (SG-1 > SG-2)	≤ 127.6 psid	≤ 136.6 psid
d. Steam Generator ΔP - High (SG-2 > SG-1)	≤ 127.6 psid	≤ 136.6 psid
e. Steam Generator (1&2) Pressure - Low	≥ 764 psia ⁽²⁾	≥ 748 psia ⁽²⁾
f. Automatic Actuation Logic	Not Applicable	Not Applicable
g. Control Valve Logic (Wide Range SG Level - Low)	≥ 36.3% ^{(3) (5)}	≥ 35.3% ^{(3) (5)}

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AMENDMENT NO. 19, 74

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

BASES

Manual Reactor Trip

The Manual Reactor Trip is a redundant channel to the automatic protective instrumentation channels and provides manual reactor trip capability.

Linear Power Level - High

The Linear Power Level - High trip provides reactor core protection against rapid reactivity excursions which might occur as the result of an ejected CEA. This trip initiates a reactor trip at a linear power level of less than or equal to 110.1% of RATED THERMAL POWER.

Logarithmic Power Level - High

The Logarithmic Power Level - High trip is provided to protect the integrity of fuel cladding and the Reactor Coolant System pressure boundary in the event of an unplanned criticality from a shutdown condition. A reactor trip is initiated by the Logarithmic Power Level - High trip at a THERMAL POWER level of less than or equal to 0.257% of RATED THERMAL POWER unless this trip is manually bypassed by the operator. The operator may manually bypass this trip when the THERMAL POWER level is above 10⁻⁶% of RATED THERMAL POWER; this bypass is automatically removed when the THERMAL POWER level decreases to 10⁻⁶% of RATED THERMAL POWER.

Pressurizer Pressure - High

The Pressurizer Pressure - High trip, in conjunction with the pressurizer safety valves and main steam safety valves, provides Reactor Coolant System protection against overpressurization in the event of loss of load without reactor trip. This trip's setpoint is at less than or equal to 2365 psia which is below the nominal lift setting 2500 psia of the pressurizer safety valves and its operation avoids the undesirable operation of the pressurizer safety valves.

Pressurizer Pressure - Low

The Pressurizer Pressure - Low trip is provided to trip the reactor and to assist the Engineered Safety Features System in the event of a Loss of Coolant Accident. During normal operation, this trip's setpoint is set at greater than or equal to 1684 psia. This trip's setpoint may be manually decreased, to a minimum value of 100 psia, as pressurizer pressure is reduced during plant shutdowns, provided the margin between the pressurizer pressure and this trip's setpoint is maintained at less than or equal to 400 psi; this setpoint increases automatically as pressurizer pressure increases until the trip setpoint is reached.

NPF-38-152

Attachment B

TABLE 2.2-1
 REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Linear Power Level - High Four Reactor Coolant Pumps Operating	\leq 108% of RATED THERMAL POWER	\leq 108.76% of RATED THERMAL POWER
3. Logarithmic Power Level - High (1)	\leq 0.257% of RATED THERMAL POWER	\leq 0.275% of RATED THERMAL POWER
4. Pressurizer Pressure - High	\leq 2350 psia	\leq 2359 psia
5. Pressurizer Pressure - Low	\geq 1684 psia (2)	\geq 1644 psia (2)
6. Containment Pressure - High	\leq 17.1 psia	\leq 17.3 psia
7. Steam Generator Pressure - Low	\geq 764 psia (3)	\geq 748 psia (3)
8. Steam Generator Level - Low	\geq 27.4% (4)	\geq 26.7% (4)
9. Local Power Density - High	\leq 21.0 kW/ft (5)	\leq 21.0 kW/ft (5)
10. DNBR - Low	\geq 1.26(5)	\geq 1.26 (5)
11. Steam Generator Level - High	\leq 87.7% (4)	\leq 88.4% (4)
12. Reactor Protection System Logic	Not Applicable	Not Applicable
13. Reactor Trip Breakers	Not Applicable	Not Applicable
14. Core Protection Calculators	Not Applicable	Not Applicable
15. CEA Calculators	Not Applicable	Not Applicable
16. Reactor Coolant Flow - Low	\geq 23.8 psid (7)	\geq 23.6 psid (7)

TABLE 3.3-4
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

<u>FUNCTIONAL UNIT</u>	<u>TRIP VALUE</u>	<u>ALLOWABLE VALUES</u>
5. SAFETY INJECTION SYSTEM SUMP RECIRCULATION (RAS)		
a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
b. Refueling Water Storage Pool - Low	10.0% (57,967gallons)	9.3%(53,910gallons)
c. Automatic Actuation Logic	Not Applicable	Not Applicable
6. LOSS OF POWER		
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3245 volts	≥ 3245 volts
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7. EMERGENCY FEEDWATER (EFAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Steam Generator (1&2) Level - Low	≥ 27.4% (3) (4)	≥ 26.7% (3) (4)
c. Steam Generator ΔP - High (SG-1 > SG-2)	≤ <u>123</u> psid	≤ <u>134</u> psid
d. Steam Generator ΔP - High (SG-2 > SG-1)	≤ <u>123</u> psid	≤ <u>134</u> psid
e. Steam Generator (1&2) Pressure - Low	≥ 764 psia (2)	≥ 748 psia (2)
f. Automatic Actuation Logic	Not Applicable	Not Applicable
g. Control Valve Logic (Wide Range SG Level - Low)	≥ 36.3% (3) (5)	≥ 35.3% (3) (5)

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

BASES

Manual Reactor Trip

The Manual Reactor Trip is a redundant channel to the automatic protective instrumentation channels and provides manual reactor trip capability.

Linear Power Level - High

The Linear Power Level - High trip provides reactor core protection against rapid reactivity excursions which might occur as the result of an ejected CEA. This trip initiates a reactor trip at a linear power level of less than or equal to 108% of RATED THERMAL POWER.

Logarithmic Power Level - High

The Logarithmic Power Level - High trip is provided to protect the integrity of fuel cladding and the Reactor Coolant System pressure boundary in the event of an unplanned criticality from a shutdown condition. A reactor trip is initiated by the Logarithmic Power Level - High trip at a THERMAL POWER level of less than or equal to 0.257% of RATED THERMAL POWER unless this trip is manually bypassed by the operator. The operator may manually bypass this trip when the THERMAL POWER level is above 10^{-4} % of RATED THERMAL POWER; this bypass is automatically removed when the THERMAL POWER level decreases to 10^{-4} % of RATED THERMAL POWER.

Pressurizer Pressure - High

The Pressurizer Pressure - High trip, in conjunction with the pressurizer safety valves and main steam safety valves, provides Reactor Coolant System protection against over pressurization in the event of loss of load without reactor trip. This trip's setpoint is at less than or equal to 2350 psia which is below the nominal lift setting of 2500 psia ~~of~~ for the pressurizer safety valves and its operation avoids the undesirable operation of the pressurizer safety valves.

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