REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards response to Generic Ltr 85-12 re TMI Action Item II.K.3.5,including plant-specific info necessary to document acceptable reactor coolant pump criteria.Info considered adequate to resolve SER Confirmatory Item 33.

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SEP 0 3 1985

SERIAL: NLS-85-302

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NO. 1 - DOCKET NO. 50-400
RESPONSE TO TMI ACTION ITEM II.K.3.5,
GENERIC LETTER 85-12

Dear Mr. Denton:

Carolina Power & Light Company (CP&L) hereby submits information in response to TMI Action Item II.K.3.5. The enclosure provides the plant specific information necessary to document an acceptable reactor coolant pump trip criteria. This information is provided as a item-by-item response to Section IV of the SER attached to Generic Letter 85-12.

The attached information is considered adequate to resolve SER Confirmatory Item 33. If you have any questions on this subject, please contact Mr. J. Eads at (919) 362-2985.

Yours very truly,

A. B. Cutter - Vice President
Nuclear Engineering & Licensing

ABC/JDK/rtj (1828JDK)

Attachment

cc: Mr. B. C. Buckley (NRC)
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ATTACHMENT TO NLS-85-302

Item:

A. Determination of RCP Trip Criteria

1. Identify the instrumentation to be used to determine the RCP trip setpoint, including the degree of redundancy of each parameter signal needed for the criterion chosen.

Response:

The RCP trip criterion chosen for SHNPP is RCS pressure, the instrumentation used is RCS Wide-Range Pressure, PT-440, and Redundant Instrument PT-441.

Item:

2. Identify the instrumentation uncertainties for both normal and adverse containment conditions. Describe the basis for the selection of the adverse containment parameters. Address, as appropriate, local conditions such as fluid jets or pipe whip which might influence the instrumentation reliability.

Response:

Calculation of instrument uncertainties for normal and adverse containment conditions is documented in the SHNPP Setpoint Study. The portion applicable to RCP trip criterion (RCS Wide-Range Pressure) is included as Attachment A.2. The SHNPP Setpoint Study basis is documented in Reference 6 to that study, Letter TMI-OG-132, dated December 27, 1979, "Justification of Instrument Setpoints Used in Emergency Operating Instruction Guidelines."

Item:

3. In addressing the selection of the criterion, consideration to uncertainties associated with the WOG-supplied analyses' values must be provided. These uncertainties include both uncertainties in the computer program results and uncertainties resulting from plant-specific features not representative of the generic data group.

   If a licensee determines that the WOG alternative criteria are marginal for preventing unneeded RCP trip, it is recommended that a more discriminating plant-specific procedure be developed. For example, use of the NRC-required inadequate core-cooling instrumentation may be useful to indicate the need for RCP trip. Licensees should take credit for all equipment (instrumentation) available to the operators for which the licensee has sufficient confidence that it will be operable during the expected conditions.

Response:

Calculation of RCP trip criterion for SHNPP is based on WOG Emergency Response Guidelines and is documented in the SHNPP Setpoint Study. The portion applicable to RCP trip criterion is included as Attachment A.3-1. The results of the WOG limiting parameters when compared against SHNPP calculated values is included as Attachment A.3-2. Finally, a summary of the basis for selection of a specific SHNPP RCP trip criterion is included as Attachment A.3-3.

3.1 Instrument: PT-440 RCS Wide Range Pressure (PI-440)

Range: 0 - 3000 PSIG   Smallest Graduation: 50 PSIG

Inside Containment? Yes   Transmitter: ITT Barton Model 763

PT-440 Instrument Uncertainties

3.1.1 Normal Transmitter Reference Accuracy (includes linearity, hysteresis, and repeatability) [Reference 2.1]

±0.5% of span = 0.005 x 3000 psi = ±15.0 psi

3.1.2 Accuracy of pressure gauge used in calibration [Reference 2.9]

±0.5% of span = 0.005 x 3000 psi = ±15 psi

3.1.3 Allowed Calibration Tolerance [Reference 2.9]

±0.21% of span = 0.0021 x 3000 psi = ±6.3 psi

3.1.4 Ambient Temperature Effect on Transmitter [Reference 2.3]

±0.5% of span/(from 40°F to 130°F) = (.005) (3000 psi) = ±15 psi

3.1.5 Maximum Transmitter Drift [Reference 2.3]

±1.0% of span = 0.01 x 3000 psi = ±30 psi

3.1.6 Normal Indicator Accuracy [Reference 2.4]

±2% of span = 0.02 x 3000 psi = ±60 psi

3.1.7 Indicator Reading Error

±1/4 of smallest graduation = 0.25 x 50 psi = ±12.5 psi

3.1.8 Normal Instrument Accuracy [Reference 2.4]

±0.5% of span = 0.005 x 3000 psi = ±15 psi

6.0 RCP Trip Criteria

6.1 Calculation For RCP Trip Based on RCS Pressure

Notes:

1. Decay heat two minutes following reactor trip is 3.5%
2. SHNPP - 2775 MW_T/100% steam flow = 12.2×10^6 lbm/hr
3. Three loop RCP heat input - 10 MW_T
4. S/G safety set pressure (lowest) = 1170 PSIG, capacity = 881, 980 lbm/hr.
5. 3.3 psid across S/G flow limiter at 100% steam flow.

Calculations:

1. Decay heat level = 3.5%
2. Steam flow rate

   Q (heat input/S/G) = (NSSS Power MW/number of loops) (Decay heat fraction) + (RCP heat input/number of loops)

   $Q = [(2775 \text{ MW}/3)\ (.035) + (10 \text{ MW}/3)]\ (3.412 \times 10^6 \text{ BTU/hr/MW})$

   $Q = 1.22 \times 10^8$ BTU/hr

   $$M \text{ (Steam flow rate/loop)} = \frac{Q}{\text{latent heat of vaporization (at 1185 PSIA)}}$$

   $M = 1.22 \times 10^8 \text{ BTU/hr}/615 \text{ BTU/lbm} = 1.98 \times 10^5 \text{ lbm/hr}$

3. Verification that only lowest S/G safety is adequate.

   $100\ (1.98 \times 10^5 \text{ lbm/hr}/8.81 \times 10^5 \text{ lbm/hr} = 22.5\%$ which is less than 60% capacity

   Therefore only using lowest safety valve provides acceptable capacity.

4. Three percent of lift pressure

   (1170 PSIG) (.03) = 35 psi

5. Differential pressure between S/G tube region and S/G safety valves.

- Assume maximum pressure drop from S/G tube region to S/G safeties steam flow limiter at entrance to steam pipe (3.3 psid at 100% steam flow)
- Make conservative assumption that 30 psi pressure drop exists between S/G tube region and S/G safeties.

The head loss (h_L) in a piping system is calculated as follows

$$h_L = k\frac{v^2}{2gc}$$

where - k is a constant dependent on piping configuration - gc is a physical constant

Therefore h_L is proportional to (velocity of steam)^2

h_L (at reduced flow) = h_L (rated flow) [Reduced steam flow velocity/ Rated steam flow velocity]^2

*Reduced flow (%) = (1.98×10^5 lbm/hr/4.1×10^6 lbm/hr) 100
approximately 5%

*Cross sectional area of steam pipe (32" diameter)

$A = \pi r^2 = \pi (16 \text{ in.}/12 \text{ in/ft})^2 = 5.6 \text{ ft}^2$

*For 5% flow, assume pressure is 1185 psia, vg = .3686 ft^3/lbm

*For 100% flow assume pressure is 964 psia, vg = .4657 ft^3/lbm

m = PAV = AV/v ; V = mv/A

Velocity at 5% = mv/A = (1.98×10^5 lbm/hr) $\left(\frac{.3686 \text{ ft}^3/\text{lbm}}{5.6 \text{ ft.}^2}\right)$ =
1.3×10^4 ft/hr

Velocity at 100% = $\frac{mv}{A}$ = (4.1×10^6 lbm/hr) $\left(\frac{.4657 \text{ ft}^3/\text{lbm}}{5.6 \text{ ft.}^2}\right)$

= 3.4×10^5 ft/hr

Therefore head loss at reduced flow

h_L (reduced flow) = h_L (rated flow) [Velocity reduced flow/Velocity rate flow]^2

$$h_L \text{ (reduced)} = 30 \text{ psid} \left(\frac{1.3 \times 10^4 \text{ ft/hr}}{3.4 \times 10^5 \text{ ft/hr}}\right)^2 = .04 \text{ psid}$$

Therefore the stated upper bound value of 1 psid is acceptable.

6. Delta temperature across S/G tubes

Step 1 - Calculate T_{COLD} Value

$T_{COLD} = T_{SEC} =$ (Delta $T_{(full\ power)}$ x Power Fraction)

where

$T_{SEC} = T_{SAT}$ (1200 PSIA) = 569.4°F

Delta $T_{(full\ power)}$ = 618°F - 556°F = 62°F

Power Fraction = (2775 MW) (.035) + 10MW/2785 MW = .0385

T_{COLD} = 569.4°F + (62°F x .0385) = 571.8°F

Step 2 - Calculate T_{HOT} Value

$T_{HOT} = T_{COLD}$ + (Delta $T_{(full\ range)}$ x Power Fraction)

T_{HOT} = 571.8°F + (62°F x .0385) = 574.2°F

Step 3 Calculate LMTD

$$LMTD = \frac{(574.2°F - 571.8°F)}{\ln \frac{574.2°F - 569.4°F}{571.8°F - 569.4°F}} = 3.5°F$$

For S/G set at 1185 psia gives a T_{sat} of 565.7°F

565.7°F + LMTD = 565.7°F + 3.5°F = 569.2°F

P_{SAT} (569.2°F) = 1217.5 PSIA

Therefore pressure correction error = 1217.5 PSIA - 1185 PSIA
= 32.5 PSIA

7. Delta pressure between RCS wide range instrument and top of S/G U-tubes

- Dynamic

  Delta P = Primary pressure drop across S/G/2 + RCS hot leg pressure drop

  Delta P = 39.8 psi/2 + 1.4 psi = 21.3 psi

- Static

Vertical distance from top of RCS hot leg (RCS wide range pressure) to top of U-tubes

(From SHNPP FSAR fig. 5.1.3-1 make conservative assumption that bottom of S/G is at same elevation as ℄ of hot leg)

(Hot leg outer diameter is approximately 34 inches)

SHNPP Setpoint Study

Therefore vertical distance = 34 inches/2 + 386 inches estimated from S/G Tech. Manual for SHNPP W 16-S120-3005 = 402 inches = approximately 33.6 FT.

Therefore static Delta P = (33.6 ft) (.491 psi/ft) (.8 density correction) = 13.2 psi

Therefore total Delta P = Dynamic + static = 21.3 psi + 13.2 psi + 34.5 psi

Therefore, RCP trip pressure is

1.	3% accumulated pressure	35
2.	Steam line differential pressure	1
3.	Primary to secondary Delta T effect	32.5
4.	Dynamic and static primary Delta P	34.5
		103 psi

From section 3.0 the following uncertainties are obtained:

RCS wide range pressure errors (normal CV) ±80.6 psi
(adverse CV) ± 309.9 psi

RCS trip pressure is

(Normal CV) 1170 psig + 103 psi + 80.6 psi = 1354 psig (rounded to 1360 PSIG for use in EOP's)

(Adverse CV) 1170 psig + 103 psi = 309.9 psi = 1583 psig (rounded to 1600 PSIG for use in EOP's)

3.1.9 Maximum Instrument Drift [Reference 2.6]

$\pm 1\%$ of span = 0.01 x 3000 psi = ± 30 psi

Therefore, Maximum Normal Instrument Error is:

$$[4(15)^2 + (6.3)^2 + (60)^2 + (12.5)^2 + 2(30)^2]^{1/2} = 80.6 \text{ psi}$$

Adverse CV effects on PT-440

Ref. 2.3 gives value of transmitter accuracy within $\pm 10\%$ after Loss of Coolant Accident. To calculate adverse CV effects on RCS wide range pressure, the "normal" CV reference transmitter error (0.5%) and the ambient temp. effects on transmitter (0.5%) will be replaced by $\pm 10\%$ [(0.1) (3000 psi)] = ± 300 PSI for adverse CV effects on transmitter.

Therefore, maximum total adverse CV errors on RCS wide range pressure is:

$$[(300)^2 + 2(15)^2 + (6.3)^2 + (60)^2 + (12.5)^2 + 2(30)^2]^{1/2} = 309.9 \text{ psi}$$

6.2 Calculation For RCP Trip Based on RCS Subcooling

Minimum pressure for SGTR and non-LOCA events is specified in the WOG ERG Executive Volume.

Use 1300 PSIA to calculate subcooling errors.

$T_{(sat)}$ (1300 PSIA) = 577.60°F

From section 3 the following uncertainties are obtained:

	Normal CV	Adverse CV
RCS loop RTD (non-bypass) errors	17.3°F	18.2°F
Wide range RCS pressure instrument error	80.6 psi	309.9 psi

For normal CV, add temperature and pressure error in non-conservative direction (i.e. add temperature errors, subtract pressure errors)

$T_{(sat)}$ (1300PSIA - 80.6 psi) = T_{sat} (1219.4 PSIA) = 569.2°F

Therefore subcooling error due to RCS pressure error = 577..6 - 569.2 = 8.0°F

Subcooling error due to RTD instrument error = 17.3°F

Therefore subcooling error total = 8.0°F + 17.3°F = 25.3°F rounded to 25°F normal CV

For adverse CV, add temp. and pressure errors in non-conservative direction

T_{sat} (1300 PSIA - 309.9 psi) = T_{sat} (990.1 PSIA) = 543.5°F

Subcooling error due to RCS pressure error = 577.6°F - 543.5°F = 34.1°F

Subcooling error due to RTD inst. error = 18.2°F

Total subcooling error = 34.1°F + 18.2°F = 52.3°F rounded to 55°F adverse CV

6.3 Calculations For RCP Trip Based On RCS-To-Secondary Pressure Differential

1. S/G pressure - variable

2. Delta P between steam pressure measurement and S/G shell = 1 psi (see calculation for RCS pressure)

3. Delta P across the S/G tubes

   a. For lowest S/G safety valve set pressure value is 32.5 psi (see calculation for RCS pressure)

   b. For no-load pressure (assume 1100 PSIA)

   Step 1

   Tsec - Tsat (1100 PSIA) = 556.4°F

   Delta T full power = 62°F

   Power fraction = .0385

   $T_{COLD} = 556.4°F + (62°F \times .0385) = 558.8°F$

   Step 2

   $T_{HOT} = 558.8°F + (62°F \times .038) = 561.2°F$

   Step 3

   $$LMTD = \frac{(561.2°F - 558.8°F)}{\ln\left[\frac{561.2°F - 556.4°F}{558.8°F - 556.4°F}\right]} = 3.5°F$$

   Psat (556.4°F + 3.5°F) = Psat (559.9°F) = 1131.8 PSIA

   1131.8 PSIA - 1100 PSIA = 31.8 PSIA

   Therefore Delta P due to LMTD 32.5 (limiting case)

4. Delta P between wide range RCS pressure and top of S/G tubes = 34.5 psi (see calculations for RCS pressure)

1.	S/G pressure		Variable
2.	Steam line differential pressure		1 psi
3.	Primary to secondary delta pressure		32.5 psi
4.	Dynamic and static primary delta p		34.5 psi
		(total)	68 psi

5. From section 3.0 the following uncertainties are obtained:

	Normal CV	Adverse CV
RCS wide range pressure errors	80.6 psi	309.9 psi
S/G pressure errors	34.9 psi	34.9 psi

For normal cv total

Total instrument error = $[80.6^2 + 34.9^2]^{1/2}$ = 87.8 psi rounded to 88 psi

For adverse CV

Total instrument error = $[309.9^2 + 34.9^2]^{1/2}$ = 311.9 psi rounded to 312 psi

Therefore (normal CV) RCS to S/G pressure = 68 psi + 88 psi = 156 psi

(Adverse CV) RCS to S/G pressure = 68 psi + 312 psi = 380 psi

REF: WOG ERGs, Rev. 1, Executive Volume, Generic Issues; Section dealing with RCP Trip/Restart

TABLE 1 (Cont)

LIMITING RESULTS OF SGTR AND NON-LOCA ANALYSIS

PLANTS	MINIMUM RCS PRESSURE (PSIG)	MINIMUM RCS SUBCOOLING (°F)	MINIMUM RCS/SECONDARY DIFFERENTIAL PRESSURE (PSI)
Indian Point 2	1175	31	293
Indian Point 3	1196	32	315
Virgil Summer Shearon Harris 1 and 2	1421	51	549
Values from Attachment A.3-1:	1360[1600]	25[55]	156[380]
Farley 1 and 2 North Anna 1 and 2 Surry 1 and 2 Beaver Valley 1	1219	37	350
Beaver Valley 2	1132	30	278
Robinson 2 Turkey Point 3 and 4	1232	31	309
Prairie Island 1 and 2	1348	39	389
Kewaunee	1238	38	361
Ginna Point Beach 1 and 2	1166	29	305
Connecticut Yankee San Onofre Yankee Rowe	Results were not obtained for these plants		

A3. Specific SHNPP Parameter Used for RCP Pump Trip Criteria During SGTR Events

As mentioned previously, RCP pump trip criteria for SHNPP was calculated using the generic ERG Revision 1 guidelines as a basis for calculating plant specific RCP trip criteria. For SHNPP, all three RCP trip parameters, namely:

1. RCS Pressure
2. RCS Subcooling
3. RCS to Steam Generator Differential Pressure

were within the cutoff limits allowed by the generic analysis. (Operations Engineer has the calculations.) For SHNPP EOPs, RCS pressure has been chosen as the RCP trip criteria.

The decision to chose RCS Pressure for SHNPP EOPs was based on the following items:

- RCS to Steam Generator Differential Pressure

  This parameter requires the operator to continuously read two MCB indications and then perform mental subtraction. This places an additional requirement on the operator during a high stress situation and is, therefore, not desirable.

- RCS Subcooling

  This parameter was not selected since there are non-LOCA situations where the operator could lose RCS subcooling and not need to trip RCPs thereby losing the preferred means of core heat removal (i.e., forced circulation).

- RCS Pressure

  This parameter was selected since it:

1. Is a concept that is already familiar to personnel with previous Westinghouse PWR experience.

2. Requires the operator to monitor only one indication on MCB (RCS Pressure).

3. Is a parameter that the operator normally monitors following a reactor trip or safety injection.

Item:

B. Potential Reactor Coolant Pump Problems

1. Assure that containment isolation, including inadvertent isolation, will not cause problems if it occurs for non-LOCA transient and accidents.

   a. Demonstrate that, if water services needed for RCP operations are terminated, they can be restored fast enough once a non-LOCA situation is confirmed to prevent seal damage or failure.

   b. Confirm that containment isolation with continued pump operation will not lead to seal or pump damage or failure.

Response:

a. RCP seal injection is continuously maintained during accident conditions; thus, any containment isolation signal will not damage RCP seals.

b. There are two isolation signals to be discussed which could affect RCPs.

The first is Containment Isolation Phase A which is generated by either of the following:

- Safety Injection Actuation Signal (SIAS)
- Manual from MCB

On a Containment Isolation Phase A signal, no RCP services are interrupted, therefore, continued RCP operation can occur without damage to seals or pump failure.

The second is Containment Isolation Phase B which is generated by either of the following:

- Containment pressure above High-3 (10 psig)
- Manual from MCB

On a Containment Isolation Phase B signal, CCW to RCP motor-oil coolers and thermal barrier heat exchangers isolates. The RCP seals will be maintained since seal injection flow from the charging safety injection pumps is not isolated. However, loss of CCW to the motor-oil coolers requires the RCPs to be tripped due to inability to adequately cool the RCP motor oil. For this reason, the SHNPP EOPs call for tripping of all RCPs whenever any Phase B isolation signal is received. Also, Abnormal Operating Procedures call for tripping of affected RCPs (1) whenever any bearing or motor-winding temperatures exceed alarm limits, or (2) within 10 minutes if CCW flow to either RCP motor oil cooler is lost.

Item:

2. Identify the components required to trip the RCPs, including relays, power supplies, and breakers. Assure that RCP trip, when determined to be necessary, will occur. If necessary, as a result of the location of any critical component, include the effects of adverse containment conditions on RCP trip reliability. Describe the basis for the adverse containment parameters selected.

Response:

Components required for RCP trip:

MCB Control Switch	102SA	104SA	106SA
6.9kV Auxiliary Bus Breaker	Bus A, Cub 5	Bus B, Cub 9	Bus C, Cub 2
RCP Trip Coil No. 1	TC1-102	TC1-104	TC1-106
125V DC Control Power	DP-1A-SA	DP-1A-SA	DP-1A-SA

All components are located in the Reactor Auxiliary Building and, thus, are not affected by adverse containment conditions.

Item:

C. Operator Training and Procedures (RCP Trip)

1. Describe the operator training program for RCP trip. Include the general philosophy regarding the need to trip pumps versus the desire to keep pumps running.

Response:

Candidates for RO or SRO level licenses receive classroom instruction on RCP trip criteria, including: 1) basis for requiring RCP trip under small-break LOCA conditions, 2) transient analyses for RCP trip at varying times before and after RCP trip criteria are met, 3) methodology for calculating RCP trip criteria and selection of SHNPP specific criterion, and 4) RCP trip parameters and bases for nonaccident conditions. In addition, plant-specific simulator instruction provides an opportunity to practice implementation of RCP trip criterion under both accident and nonaccident conditions.

Item:

2. Identify those procedures which include RCP trip-related operations:

   a. RCP trip using WOG alternate criteria
   b. RCP restart
   c. Decay heat removal by natural circulation
   d. Primary System void Removal
   e. Use of steam generators with and without RCPs operating
   f. RCP trip for other reasons

Response:

SHNPP EOPs use RCP trip and restart criteria consistent with the WOG Emergency Response Guidelines (Items C.2a-e). RCP trip criteria during nonaccident conditions is covered in AOP-018, "Abnormal RCP Operation." Normal operation of RCPs is covered in OP-100, "Reactor Coolant System." See Attachment C.2 for a listing of SHNPP EOPs.

Attachment C.2

EOP Title Cross Reference

CP&L	WOG GUIDELINES	TITLE
EPP-1	ECA-0.0	Loss of AC Power to 1A-SA and 1B-SB Busses
EPP-2	ECA-0.1	Loss of All AC Power Recovery without SI Required
EPP-3	ECA-0.2	Loss of All AC Power Recovery with SI Required
EPP-4	ES-0.1	Reactor Trip Response
EPP-5	ES-0.2	Natural Circulation Cooldown
EPP-6	ES-0.3	Natural Circulation Cooldown with Steam Void in Vessel (With RVLIS)
EPP-7	ES-0.4	Natural Circulation Cooldown with Steam Void in Vessel (Without RVLIS)
EPP-8	ES-1.1	SI Termination
EPP-9	ES-1.2	Post-LOCA Cooldown and Depressurization
EPP-10	ES-1.3	Transfer to Cold Leg Recirculation
EPP-11	ES-1.4	Transfer to Hot Leg Recirculation
EPP-12	ECA-1.1	Loss of Emergency Coolant Recirculation
EPP-13	ECA-1.2	LOCA Outside Containment
EPP-14	E-2	Faulted Steam Generator Isolation
EPP-15	ECA-2.1	Uncontrolled Depressurization of All Steam Generators
EPP-16	N/A	SGTR Isolation
EPP-17	ES-3.1	Post-SGTR Cooldown Using Backfill
EPP-18	ES-3.2	Post-SGTR Cooldown Using Blowdown
EPP-19	ES-3.3	Post-SGTR Cooldown Using Steam Dump
EPP-20	ECA-3.1	SGTR With Loss of Reactor Coolant: Subcooled Recovery
EPP-21	ECA-3.2	SGTR With Loss of Reactor Coolant: Saturated Recovery
EPP-22	ECA-3.3	SGTR Without Pressurizer Pressure Control
FRP-S.1	FR-S.1	Response to Nuclear Power Generation/ATWS
FRP-S.2	FR-S.2	Response to Loss of Core Shutdown
FRP-C.1	FR-C.1	Response to Inadequate Core Cooling
FRP-C.2	FR-C.2	Response to Degraded Core Cooling
FRP-C.3	FR-C.3	Response to Saturated Core Cooling
FRP-H.1	FR-H.1	Response to Loss of Secondary Heat Sink
FRP-H.2	FR-H.2	Response to Steam Generator Overpressure
FRP-H.3	FR-H.3	Response to Steam Generator High Level
FRP-H.4	FR-H.4	Response to Loss of Normal Steam Release Capability
FRP-H.5	FR-H.5	Response to Steam Generator Low Level
FRP-P.1	FR-P.1	Response to Imminent Pressurized Thermal Shock Conditions
FRP-P.2	FR-P.2	Response to Anticipated Pressurized Thermal Shock Conditions
FRP-J.1	FR-Z.1	Response to High Containment Pressure
FRP-J.2	FR-Z.2	Response to Containment Flooding
FRP-J.3	FR-Z.3	Response to High Containment Radiation Level
FRP-I.1	FR-I.1	Response to High Pressurizer Level

Attachment C.2
EOP Title Cross Reference

CP&L	WOG GUIDELINES	TITLE
FRP-I.2	FR-I.2	Response to Low Pressurizer Level
FRP-I.3	FR-I.3	Response to Voids In Reactor Vessel
PATH-1	E-0 & E-1	Reactor Trip or Safety Injection/Loss of Reactor or Secondary Coolant
PATH-2	E-3	Steam Generator Tube Rupture

NOTE: This cross reference lists may change depending on future WOG ERG revisions and plant specific needs.