Facility:	Turkey Point	Task No:	01046031100
Task Title:	Calculate Number of Gallons of Primary Water Required to Raise Power from 80% to 100%	JPM No:	01046031104
K/A Reference:	G2.1.25 RO 3.9 SRO 4.2		
Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
Method of Testing:	Classroom		
Simulated Performance		Actual Performance	Yes
Classroom	X	Simulator	Plant

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 has been at 80% Power for 96 hours.
- Rod Height: D-188
- Boron Concentration: 1200 ppm
- Core Burnup: 4,000 MWD/MTU

Desired Conditions after Power Increase:

- Reactor Power: 100%
- Rod Height: D-228

Initiating Cue:

- You have been directed to determine the desired boration or dilution for a Unit 3 power change from 80-100%.

Task Standard:

- Calculates Number of Gallons of Primary Water Required to Raise Power from 80%-100%. Final value must fall between **853** gallons and **1026** gallons. Actual value determined on a calculator is 1026 gallons.

Required Materials:

- Calculator
- Plant Curve Book, Section 2
- 0-OP-046, CVCS – Boron Concentration Control, Attachment 5 – Reactivity Worksheet

General References:

1. 3--GOP-305, *Hot Standby To Cold Shutdown*
2. Plant Curve Book
3. 0-OP-046, *CVCS – Boron Concentration Control*

Time Critical Task: No

Validation Time: 35 minutes

SIMULATOR SETUP

Not Applicable

Denote critical steps with a check mark (√)

Start Time ______

STEP 1	Obtain required reference materials.	____ SAT UNSAT
STANDARD	Applicant obtains a copy of 0-OP-046, *CVCS – Boron Concentration Control*, Attachment 5, and the Plant Curve Book, Section 2.	
CUE	Provide Applicant with a copy of 0-OP-046, *CVCS – Boron Concentration Control*, Attachment 5, and the Plant Curve Book, Section 2.	
COMMENT		

STEP 2 √	Calculate the Rod Worth (A). **<u>Rod Worth (A):</u>** • Plant Curve Book, Section 2, Figure 5 (Do not interpolate between graphs.) • For power changes in Mode 1, use Hot Full Power numbers (equilibrium xenon.) • For power changes in Mode 2, use Hot Zero Power numbers (no xenon.) • Withdrawal rods = plus (+) reactivity • Insert rods = minus (-) reactivity (0-OP-046, Attachment 5, Step 1)	SAT UNSAT
STANDARD	From Plant Curve Book, Section 2, Figure 5 (for 4,000 MWD/MTU): Determines 80% value (D-188) is **90** pcm for HFP. Enters **+90** pcm in the "Present Rod Worth" blank in Step 1 of Attachment 5. Determines 100% value (D-228) is 0 pcm. Enters **0** pcm in the "Desired Rod Worth" blank in Step 1 of Attachment 5. Applicant subtracts the "Desired Rod Worth" from the "Present Rod Worth" and enters the difference of **+90** pcm in the "(A)" blank in Step 1 of Attachment 5.	
CUE		
COMMENT		

STEP 3	Sign the "Performed By" blank	SAT UNSAT
STANDARD	Applicant signs name in the "Performed By" blank in Step 1 of Attachment 5.	
CUE	**EVALUATOR CUE:** Another operator will verify the calculations when you are complete.	
COMMENT		

STEP 4 √	Calculate the Power Defect (B). **<u>Power Defect (B):</u>** • Plant Curve Book, Section 2, Figure 6A • Raise Power = minus (-) reactivity • Lower Power = plus (+) reactivity (0-OP-046, Attachment 5, Step 2)	SAT UNSAT
STANDARD	From Plant Curve Book, Section 2, Figure 6A (for 4,000 MWD/MTU): Applicant determines 80% value (1200 ppm) is **1296**. Enters **1296** in the "Present Pwr Defect" blank in Step 2 of Attachment 5. Applicant determines 100% value (1200 ppm) is **1582**. Enters **1582** in the "Desired Pwr Defect" blank in Step 2 of Attachment 5. Applicant subtracts the "Desired Pwr Defect" from the "Present Pwr Defect" and enters the difference of **-286** in the "(B)" blank in Step 2 of Attachment 5.	
CUE		
COMMENT		

STEP 5	Sign the "Performed By" blank			SAT
				UNSAT
STANDARD	Applicant signs name in the "Performed By" blank in Step 2 of Attachment 5.			
CUE				
COMMENT				

STEP 6 √	Calculate the Desired Change in pcm (C). (0-OP-046, Attachment 5, Step 3)	SAT UNSAT
STANDARD	Applicant enters **+90** in the "(A)" blank in Step 3 of Attachment 5. Applicant enters **-286** in the "(B)" blank on Step 3 of Attachment 5. Applicant adds the "(A)" and "(B)" values and enters the sum of **-196** in the "(C) blank in Step 3 of Attachment 5.	
CUE		
COMMENT		

STEP 7	Sign the "Performed By" blank	SAT UNSAT
STANDARD	Applicant signs name in the "Performed By" blank in Step 3 of Attachment 5.	
CUE		
COMMENT		

NOTE	**NOTE** *For at-power load changes, this step will produce boration or dilution required amounts that can deviate by a factor of two or more from the amounts given by the Reactivity Manipulation Table provided by Reactor Engineering. This is due to the inclusion of Xenon-135 effects in the Reactivity Manipulation Table which are not provided for the determination made in this step. Addition of the dilution or boration amounts is recommended to be done in an incremental fashion if no Reactivity Manipulation Table is provided by Reactor Engineering.*	
STEP 8 √	Calculate Integral Boron Worth. **Integral Boron Worth:** • Plant Curve Book, Section 2, Figure 7A • Boration = minus (-) reactivity • Dilution = plus (+) reactivity Calculate Desired Boron Concentration (CB) as follows: Check current boron concentration (C_B) (0-OP-046, Attachment 5, Step 4)	___ SAT ___ UNSAT
STANDARD	Applicant enters given value of **1200** in the blank beside "Check current boron concentration (C_B)."	
CUE		
COMMENT		

STEP 9 √	Determine Present boron worth. (0-OP-046, Attachment 5, Step 4)	SAT UNSAT
STANDARD	From Plant Curve Book, Section 2, Figure 7A (for 4,000 MWD/MTU): Applicant determines that the boron worth for 1200 ppm is **10674** and enters **10674** in the "Present boron worth from Sect. 2, Fig 7A" blank in Step 4 of Attachment 5.	
CUE		
COMMENT		

STEP 10 √	Calculate Desired boron worth. (0-OP-046, Attachment 5, Step 4)	SAT UNSAT
STANDARD	Applicant enters **-196** in the "(C)" blank in Step 4 of Attachment 5. Applicant determines Desired boron worth by subtracting the "(C)" value of **-196** from the "Present boron worth" of **-10674.** Applicant enters the difference of **-10478** in the "Desired boron worth" blank in Step 4 of Attachment 5.	
CUE		
COMMENT		

STEP 11 √	Determine Desired C_B. (0-OP-046, Attachment 5, Step 4)	SAT UNSAT
STANDARD	From Plant Curve Book, Section 2, Figure 7A (for 4,000 MWD/MTU): Applicant determines Desired boron concentration by interpolating between 10424 and 10507 on the table. Applicant enters **1176-1180** in the blank beside "Determine desired C_B from Section 2, Figure 7A" on Attachment 5.	
CUE		
COMMENT	• The Desired born worth, calculated in Step 4 of Attachment 5, is -10478. • On Figure 7A, this falls between the range of 10507 and 10424. • 10507 – 10424 = 83. • 10478 – 10424 = 54. • 54/83 = 0.6506. • 1180-1170 = 10. • 10 x 0.6506 = 6.506. • 1170 + 6.506 = 1176 <u>Calculation on Step 5 of Attachment 5 and Explanation of Tolerances:</u> $50{,}790 \times \ln\left[\frac{\text{Current } C_B \text{ in ppm}}{\text{Current } C_B \text{ in ppm}}\right] = 50{,}790 \times \ln\left[\frac{1200}{1176}\right]$ $= 50{,}790 \times \ln[1.0204081632] = 50{,}790 \text{ X } .0202027073175 =$ 1026.0955 gallons (rounded down to 1026)	

STEP 12	Sign the "Performed By" blank	SAT UNSAT
STANDARD	Applicant signs name in the "Performed By" blank in Step 4 of Attachment 5.	
CUE		
COMMENT		

NOTE	**NOTE** *50,790 is the nominal volume of the RCS and the CVCS. BAST ppm is the most recent BAST concentration or a nominal value of 5664 ppm.*	
STEP 13 √	Determine if a dilution or a boration is required.	SAT UNSAT
STANDARD	Applicant compares the Desired Boron Concentration to the Current Boron Concentration. Applicant determines that Desired Boron Concentration (1176 - 1180) is less than Current Boron Concentration (1200) and goes to Step 5 of Attachment 5.	
CUE		
COMMENT		

NOTE	**NOTE** *50,790 is the nominal volume of the RCS and the CVCS. BAST ppm is the most recent BAST concentration or a nominal value of 5664 ppm.*	
STEP 14 √	Calculate "Gallons of Primary Water" for the dilution. (0-OP-046, Attachment 5, Step 5)	SAT UNSAT
STANDARD	Applicant enters **1200** in the "Current CB in ppm" blank in the equation in Step 5 of Attachment 5. Applicant enters **1176 -1180** in the "Desired CB in ppm" in the equation in Step 5 of Attachment 5. Applicant then solves the equation for "Gallons." Enters **between 853 and 1026** gallons in the blank before "Gallons" in Step 5 of Attachment 5. (See Key for explanation of tolerances.)	
CUE		
COMMENT		

STEP 15	Sign the "Performed By" blank.	SAT UNSAT
STANDARD	Applicant signs name in the "Performed By" blank in Step 5 of Attachment 5.	
CUE	**TERMINATING CUE:** **The JPM is complete when the Applicant returns the JPM Briefing Sheet to the Evaluator.**	
COMMENT		

Stop Time ________

Verification of Completion:

Job Performance Measure No. 01046031104

Examinee's Name: ______________________

Examiner's Name: ______________________

Date Performed: ______________________

Facility Evaluator: ______________________

Number of Attempts: ______________________

Time to Complete: ______________________

Question Documentation:

Question:

____

____

____

____

____

Response:

____

____

____

____

____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: ______________________ ______________

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 has been at 80% Power for 96 hours.
- Rod Height: D-188
- Boron Concentration: 1200 ppm
- Core Burnup: 4,000 MWD/MTU

Desired Conditions after Power Increase:

- Reactor Power: 100%
- Rod Height: D-228

Initiating Cue:

- You have been directed to determine the desired boration or dilution for a Unit 3 power change from 80-100%.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

• Unit 3 has been at 80% Power for 96 hours.	
• Rod Height:	D-188
• Boron Concentration:	1200 ppm
• Core Burnup:	4,000 MWD/MTU

Desired Conditions after Power Increase:

• Reactor Power:	100%
• Rod Height:	D-228

Initiating Cue:

- You have been directed to determine the desired boration or dilution for a Unit 3 power change from 80-100%.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

KEY

ATTACHMENT 5
(Page 1 of 3)

REACTIVITY WORKSHEET

PART 1: Power Change Only

1) **Rod Worth (A)**

Plant Curve Book, Section 2, Figure 5 (Do not interpolate between graphs.)
For power changes in Mode 1, use Hot Full Power numbers (equilibrium xenon.)
For power changes in Mode 2, use Hot Zero Power numbers (no xenon.)
Withdrawal rods = plus (+) reactivity
Insert rods = minus (-) reactivity

Calculate change in rod worth as follows:

[90 pcm] - [0 pcm] = (+/-) 90 pcm
Present Rod Worth - Desired Rod Worth = (+/-) (A)

_______________ _______________
Performed by *Verified by*

2) **Power Defect (B)**

Plant Curve Book, Section 2, Figure 6A
Raise Power = minus (-) reactivity
Lower Power = plus (+) reactivity

Calculate change in power defect as follows:

[1296 pcm] - [1582 pcm] = (+/-) 286 pcm
Present Pwr Defect - Desired Pwr Defect = (+/-) (B)

_______________ _______________
Performed by *Verified by*

3) **Calculate the Desired Change in pcm (C)**

[(+/-) 90 pcm] + [(+/-) 286 pcm] = (+/-) 196 pcm
(A) (B) (C)

_______________ _______________
Performed by *Verified by*

ATTACHMENT 5
(Page 2 of 3)

REACTIVITY WORKSHEET

NOTE

For at-power load changes, this step will produce boration or dilution required amounts that can deviate by a factor of two or more from the amounts given by the Reactivity Manipulation Table provided by Reactor Engineering. This is due to the inclusion of Xenon-135 effects in the Reactivity Manipulation Table which are not provided for the determination made in this step. Addition of the dilution or boration amounts is recommended to be done in an incremental fashion if no Reactivity Manipulation Table is provided by Reactor Engineering.

4) **Integral Boron Worth**

Plant Curve Book, Section 2, Figure 7A
Boration = minus (-) reactivity
Dilution = plus (+) reactivity
Calculate Desired Boron Concentration (C_B) as follows:

Check current boron concentration (C_B) = 1200 ppm

[(-) 10674 pcm] - [(+/-) 196 pcm] = (+/-) 10478 pcm
Present boron worth from Sect 2, Fig 7A; (C); = Desired boron worth

?

Determine desired C_B from Section 2, Figure 7A = 1176-1180 ppm

Performed By ____________ Verified By ____________

NOTE

50,790 is the nominal volume of the RCS and the CVCS. BAST ppm is the most recent BAST concentration or a nominal value of 5664 ppm.

5) <u>IF</u> desired Boron Concentration is less than the current Boron Concentration, <u>THEN</u> calculate the dilution required as follows:

$$50{,}790 \times \ln\left[\frac{\text{Current } C_B \text{ in ppm}}{\text{Desired } C_B \text{ in ppm}}\right] = \text{Gallons of Primary}$$

$$50{,}790 \times \ln\left[\frac{1200 \text{ ppm}}{1176-1180 \text{ ppm}}\right] = 853\text{-}1026 \text{ Gallons}$$

Gallons of Primary Water

Performed By ____________ Verified By ____________

ATTACHMENT 5
(Page 3 of 3)

REACTIVITY WORKSHEET

6) **IF** desired Boron Concentration is higher than the current Boron Concentration, **THEN** calculate the boration required as follows:

$$50{,}790 \times \ln\left[\frac{\text{[BAST ppm] - [Current RCS ppm]}}{\text{[BAST ppm] - [Desired RCS ppm]}}\right] = \text{Gal of Boric Acid}$$

$$50{,}790 \times \ln\left[\frac{\text{[\_\_\_\_\_ ppm] - [\_\_\_\_\_ RCS ppm]}}{\text{[\_\_\_\_\_ ppm] - [\_\_\_\_\_ RCS ppm]}}\right] = \frac{\text{\_\_\_\_\_ Gallons}}{\text{Gal of Boric Acid}}$$

______________________ ______________________
Performed By *Verified By*

PART 2: Temperature Change Only

1) **Temperature change requirements**

To raise temperature, refer to Plant Curve Book, Section 3, Figure 2B.
To lower temperature, refer to Plant Curve Book, Section 2, Figures 9 and 9A.

Determine desired temperature change: (+/-) _________ °F

To dilute: [________ °F] x [_______ gal/°F] = ___________ gal Water
Sect 3, Fig 2B

To borate: [________ °F] x [_______ pcm/°F] = __________ pcm
Sect 2, Fig 9/9A

[________ pcm] x [gal/pcm] = __________ gal of Boric Acid

______________________ ______________________
Performed By *Verified By*

ATTACHMENT 5
(Page 1 of 3)

REACTIVITY WORKSHEET

PART 1: Power Change Only

1) **Rod Worth (A)**

Plant Curve Book, Section 2, Figure 5 (Do not interpolate between graphs.)
For power changes in Mode 1, use Hot Full Power numbers (equilibrium xenon.)
For power changes in Mode 2, use Hot Zero Power numbers (no xenon.)
Withdrawal rods = plus (+) reactivity
Insert rods = minus (-) reactivity

Calculate change in rod worth as follows:

[_______ pcm] - [_______ pcm] = (+/-) _________ pcm
Present Rod Worth - Desired Rod Worth = (+/-) (A)

_________________________ _________________________
Performed by *Verified by*

2) **Power Defect (B)**

Plant Curve Book, Section 2, Figure 6A
Raise Power = minus (-) reactivity
Lower Power = plus (+) reactivity

Calculate change in power defect as follows:

[_______ pcm] - [_______ pcm] = (+/-) _________ pcm
Present Pwr Defect - Desired Pwr Defect = (+/-) (B)

_________________________ _________________________
Performed by *Verified by*

3) **Calculate the Desired Change in pcm (C)**

[(+/-) _______ pcm] + [(+/-) _______ pcm] = (+/-) _________ pcm
(A) (B) (C)

_________________________ _________________________
Performed by *Verified by*

ATTACHMENT 5
(Page 2 of 3)

REACTIVITY WORKSHEET

NOTE

For at-power load changes, this step will produce boration or dilution required amounts that can deviate by a factor of two or more from the amounts given by the Reactivity Manipulation Table provided by Reactor Engineering. This is due to the inclusion of Xenon-135 effects in the Reactivity Manipulation Table which are not provided for the determination made in this step. Addition of the dilution or boration amounts is recommended to be done in an incremental fashion if no Reactivity Manipulation Table is provided by Reactor Engineering.

4) **Integral Boron Worth**

Plant Curve Book, Section 2, Figure 7A
Boration = minus (-) reactivity
Dilution = plus (+) reactivity
Calculate Desired Boron Concentration (C_B) as follows:

Check current boron concentration (C_B) = _______ ppm

[(-) _______ pcm] - [(+/-) _______ pcm] = (+/-) _______ pcm
Present boron worth from Sect 2, Fig 7A   (C)   = Desired boron worth

Determine desired C_B from Section 2, Figure 7A = ____________ ppm

_______________________ *Performed By*   _______________________ *Verified By*

NOTE

50,790 is the nominal volume of the RCS and the CVCS. BAST ppm is the most recent BAST concentration or a nominal value of 5664 ppm.

5) **IF** desired Boron Concentration is less than the current Boron Concentration, **THEN** calculate the dilution required as follows:

$$50{,}790 \times \ln\left[\frac{\text{Current } C_B \text{ in ppm}}{\text{Desired } C_B \text{ in ppm}}\right] = \text{Gallons of Primary}$$

$$50{,}790 \times \ln\left[\frac{\_\_\_\_\_\_\ \text{ppm}}{\_\_\_\_\_\_\ \text{ppm}}\right] = \_\_\_\_\_\_\ \text{Gallons}$$

Gallons of Primary Water

_______________________ *Performed By*   _______________________ *Verified By*

ATTACHMENT 5
(Page 3 of 3)

REACTIVITY WORKSHEET

6) **IF** desired Boron Concentration is higher than the current Boron Concentration, **THEN** calculate the boration required as follows:

$$50{,}790 \times \ln\left[\frac{[\text{BAST ppm}] - [\text{Current RCS ppm}]}{[\text{BAST ppm}] - [\text{Desired RCS ppm}]}\right] = \text{Gal of Boric Acid}$$

$$50{,}790 \times \ln\left[\frac{[\_\_\_\_\_\ \text{ppm}] - [\_\_\_\_\_\ \text{RCS ppm}]}{[\_\_\_\_\_\ \text{ppm}] - [\_\_\_\_\_\ \text{RCS ppm}]}\right] = \_\_\_\_\_\ \text{Gallons Gal of Boric Acid}$$

______________________________ ______________________________
Performed By *Verified By*

PART 2: Temperature Change Only

1) **Temperature change requirements**

To raise temperature, refer to Plant Curve Book, Section 3, Figure 2B.
To lower temperature, refer to Plant Curve Book, Section 2, Figures 9 and 9A.

Determine desired temperature change: (+/-) _________ °F

To dilute: [________ °F] x [________ gal/°F] = ___________ gal Water
Sect 3, Fig 2B

To borate: [________ °F] x [________ pcm/°F] = ___________ pcm
Sect 2, Fig 9/9A

[________ pcm] x [gal/pcm] = ___________ gal of Boric Acid

______________________________ ______________________________
Performed By *Verified By*

Facility:	Turkey Point	Task No:	01201001100
Task Title:	Evaluate Overtime Requirements	JPM No:	01201001102
K/A Reference:	G2.1.5 RO 2.9 SRO 3.9		
Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
Method of Testing:	Classroom		
Simulated Performance		Actual Performance	X
Classroom X	Simulator	Plant	

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Units 3 and 4 are both at 100%.
- It is 10/05/11 at 0530.
- The Field Supervisor is filling vacancies on shift and is evaluating the overtime requirements for two Reactor Operators.
- Both Reactor Operators had THREE (3) days off prior to 10/02/11.
- Their normal work schedule is 8 hr day shift.
- Average previous rolling work is 8.00 hours/shift.
- EmpCenter is unavailable.

Initiating Cues:

- Refer to the attached proposed work schedules.
- Based on the work hours provided, identify the work hour limitations violated, if any.
- Prior to the proposed schedules, assume these covered workers have maintained status as Operations covered workers and have maintained minimum days off.
- No waivers are permitted.

Question 1: Based on the work hours provided, identify the work hour limitations violated, if any by RO #1 between 9/30/11 through 10/05/11?

Question 2:

Based on the work hours provided, identify the work hour limitations violated, if any, for RO#2 between 10/06/11 and 10/07/11?

Task Standard:

- The Applicant identifies the limitations for Reactor Operator #1 and Reactor Operator #2 in accordance with AD-AA-101-1004, *Work Hour Controls.*

Required Materials:

- AD-AA-101-1004, *Work Hour Controls*

General References:

- AD-AA-101-1004, *Work Hour Controls*

Time Critical Task: No

Validation Time: 30 minutes

SIMULATOR SETUP

NOT Applicable

Denote critical steps with a check mark (√)

Start Time ______

STEP 1 √	**Question 1:** Based on the work hours provided, identify the work hour limitations violated, if any by RO #1 between 9/30/11 through 10/05/11?	SAT UNSAT
STANDARD	For Reactor Operator #1, the candidate identifies the work hours were violated due to: • At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.	
CUE	**EVALUATOR CUE:** Provide the Applicant with a copy of AD-AA-101-1004, Work Hour Controls.	
COMMENT		
NOTE	**EVALUATOR NOTE:** See worksheet for schedule calculations.	

STEP 2 √	**Question 2:** Does RO #2 meet work hour limitations to cover the shifts between 10/06/11 and 10/07/11?	SAT UNSAT	
STANDARD	For Reactor Operator #2, Applicant identifies that the proposed schedule would exceed the limit of 72 hours in a 7 day (168 hours) period.		
CUE			
COMMENT			
NOTE	**EVALUATOR NOTE:** See worksheet for schedule calculations.		

Stop Time ________

KEY TO FOLLOW-UP QUESTIONS:

Question 1:

Based on the work hours provided, identify the work hour limitations violated, if any by RO #1 between 9/30/11 through 10/05/11?

The work hour limitation violated is:

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- No more than 72 work hours in any 7 day (168 hour) period.
- **At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.**
- A 34 hour break in any 216 hour period.

Question 2:

Based on the work hours provided, identify the work hour limitations violated, if any by RO # 2 between 9/30/11 through 10/05/11?

The work hour limitation violated is:

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- **No more than 72 work hours in any 7 day (168 hour) period.**
- At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34 hour break in any 216 hour period.

Verification of Completion:

Job Performance Measure No. 01201001102

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: Satisfactory/Unsatisfactory

Examiner's signature and date:

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Units 3 and 4 are both at 100%.
- It is 10/05/11 at 0530.
- The Field Supervisor is filling vacancies on shift and is evaluating the overtime requirements for two Reactor Operators.
- Both Reactor Operators had THREE (3) days off prior to 10/02/11.
- Their normal shift is 8 hours day shift.
- Average previous rolling work is 8.00 hours/shift.
- EmpCenter is unavailable.

Initiating Cues:

- Refer to the attached proposed work schedules.
- Given the proposed work schedules for Reactor Operator #1 and Reactor Operator #2, answer the questions below.
- Prior to these proposed schedules, assume these covered workers have maintained status as Operations covered workers and have maintained minimum days off.
- No waivers are permitted.

Question 1: Based on the work hours provided, identify the work hour limitations violated, if any by RO #1 between 9/30/11 through 10/05/11?

Question 2:

Based on the work hours provided, identify the work hour limitations violated, if any, for RO#2 between 10/06/11 and 10/07/11?

REACTOR OPERATOR #1

Date	Hours Worked	Applicant Notes	Notes
9/27/11	OFF		
9/28/11	OFF		
9/29/11	OFF		
9/30/11	0630-1900		• 30 minute turnover • Forced OT to cover 1st half of Peakshift
10/1/11	0630-1500		• 30 minute turnover . **After Shift:** • At 1930, the RO was called at home to answer other questions relating to the investigation. • The call lasted 15 minutes.
10/2/11	0630-1900		• 30 minute turnover • Forced OT to cover 1st half of Peakshift
10/3/11	0630-1500		• 30 minute turnover
10/4/11	0630-2300		• 30 minute turnover • Forced OT to cover Peakshift
10/5/11	0630-1500		• 30 minute turnover.
10/6/11	0630-1500		• 30 minute turnover • Voluntary OT to cover Dayshift
10/7/11	0630-1500		• 30 minute turnover • Voluntary OT to cover Dayshift

REACTOR OPERATOR #2

Date	Hours Worked	Applicant Notes	Notes
9/27/11	OFF		
9/28/11	OFF		
9/29/11	OFF		
9/30/11	0630-1500		• 30 minute turnover
10/1/11	0230-1530		• 30 minute turnover • Forced OT to cover Midshift • Relief showed up 30 minutes late **After Shift:** • Between 1600 and 2030, received 2 phone call related to an event investigation. • The phone calls were 15 minutes and 10 minutes in duration.
10/2/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/3/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/4/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/5/11	OFF		
10/6/11	0630-1900		• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift
10/7/11	0630-1900		• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Units 3 and 4 are both at 100%.
- It is 10/05/11 at 0530.
- The Field Supervisor is filling vacancies on shift and is evaluating the overtime requirements for two Reactor Operators.
- Both Reactor Operators had THREE (3) days off prior to 10/02/11.
- Their normal shift is 8 hours day shift.
- Average previous rolling work is 8.00 hours/shift.
- EmpCenter is unavailable.

Initiating Cues:

- Refer to the attached proposed work schedules.
- Given the proposed work schedules for Reactor Operator #1 and Reactor Operator #2, answer the questions below.
- Prior to these proposed schedules, assume these covered workers have maintained status as Operations covered workers and have maintained minimum days off.
- No waivers are permitted.

Question 1: Based on the work hours provided, identify the work hour limitations violated, if any by RO #1 between 9/30/11 through 10/05/11?

The work hour limitation violated, if any, is:

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- No more than 72 work hours in any 7 day (168 hour) period.
- At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34 hour breaks in any 216 hour period.

Key

Question 2:

Based on the work hours provided, identify the work hour limitations violated, if any, for RO#2 between 10/06/11 and 10/07/11?

The work hour limitation violated, if any, is:

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- No more than 72 work hours in any 7 day (168 hour) period.
- At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34 hour breaks in any 216 hour period.

NOT Given to Applicant Only Question on Sheet 9/11

REACTOR OPERATOR #1

Date	Hours Worked	Applicant Notes	Notes
9/27/11	OFF		
9/28/11	OFF		
9/29/11	OFF		
9/30/11	0630-1900		• 30 minute turnover • Forced OT to cover 1st half of Peakshift
10/1/11	0630-1500		• 30 minute turnover **After Shift:** • At 1930, the RO was called at home to answer other questions relating to the investigation. • The call lasted 15 minutes.
10/2/11	0630-1900		• 30 minute turnover • Forced OT to cover 1st half of Peakshift
10/3/11	0630-1500		• 30 minute turnover
10/4/11	0630-2300		• 30 minute turnover • Forced OT to cover Peakshift
10/5/11	0630-1500		• 30 minute turnover.
10/6/11	0630-1500		• 30 minute turnover • Voluntary OT to cover Dayshift
10/7/11	0630-1500		• 30 minute turnover • Voluntary OT to cover Dayshift

REACTOR OPERATOR #2

Date	Hours Worked	Applicant Notes	Notes
9/27/11	OFF		
9/28/11	OFF		
9/29/11	OFF		
9/30/11	0630-1500		• 30 minute turnover
10/1/11	0230-1530		• 30 minute turnover • Forced OT to cover Midshift • Relief showed up 30 minutes late **After Shift:** • Between 1600 and 2030, received 2 phone call related to an event investigation. • The phone calls were 15 minutes and 10 minutes in duration.
10/2/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/3/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/4/11	0630-1900		• 30 minute turnover • Forced OT to cover first half of Peakshift
10/5/11	OFF		
10/6/11	0630-1900		• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift
10/7/11	0630-1900		• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

REACTOR OPERATOR #1

Date	Schedule	Notes	Comments
9/30/11	0630-1900	• 30 minute turnover • Forced OT to cover 1st half of Peakshift	12.0 hours 30 minute turnover does not count. (AD-AA-101-1004, Step 4.1.2.1) 12 hours in the last 24.
10/1/11	0630-1500	• 30 minute turnover **After Shift:** • At 1930, the RO was called at home to answer other questions relating to the investigation. • The call lasted 15 minutes.	9.0 hours 30 minute turnover does not count. 1 hour holdover counts Phone call does not count since it was less than 30 minutes. (AD-AA-101-1004, Step 4.1.2.4) 13 hours in last 24 (1500-1500) 21 hours in last 48
10/2/11	0630-1900	• 30 minute turnover • Forced OT to cover 1st half of Peakshift	12.0 hours 30 minute turnover does not count. 12 hours in last 24 (1900-1900) 21 hours in last 48
10/3/11	0630-1500	• 30 minute turnover	8.0 hours 30 minute turnover does not count. 13 hours in last 24 (1500-1500) 20 hours in last 48
10/4/11	0630-2300	• 30 minute turnover • Forced OT to cover Peakshift	16.0 hours. 30 minute turnover does not count. 16 hours in the 24 24 hours in last 48 **<10 hour break between 10/4 @ 2300 and 10/5 @ 0630. Must either be relieved at 2030 on 10/4 or come in no earlier than 0900 on 10/5, or process a Waiver.**
10/5/11	0630-1500	• 30 minute turnover.	6.0 hours 30 minute turnover does not count. If RO comes in at 0900 on 10/5: 0900-1500 = 6 hours 14 hours in last 24 22 hours in the last 48 63 in the last 7 days (9/29 was an off day)
10/6/11	0630-1500	• 30 minute turnover • Voluntary OT to cover Dayshift	
10/7/11	0630-1500	• 30 minute turnover • Voluntary OT to cover Dayshift	8.0 hours 30 minute turnover does not count. 8 hours in the last 24 8 hours in last 48 56 in the last 7 days

REACTOR OPERATOR #2

Date	Schedule	Notes	Comments
9/30/11	0630-1500	• 30 minute turnover	8.0 hours 30 minute turnover does not count. 8 hours in last 24 (1500-1500)
10/1/11	0230-1530	• 30 minute turnover • Forced OT to cover Midshift • Relief showed up 30 minutes late **After Shift:** • Between 1600 and 2030, received 2 phone call related to an event investigation. • The phone calls were 15 minutes and 10 minutes in duration.	12.5 hours Late relief counts 30 minute turnover does not count. Phones calls for event investigation do not count, since they totaled less than 30 minutes. Total 25 minutes. 12.5 hours in last 24 (1530-1530) 21.5 in last 48
10/2/11	0630-1900	• 30 minute turnover • Forced OT to cover first half of Peakshift	12.0 hours 30 minute turnover does not count. 12.0 hours in last 24 (1900-1900) 24.5 hours in last 48.
10/3/11	0630-1900	• 30 minute turnover • Forced OT to cover first half of Peakshift	12.0 hours 30 minute turnover does not count. 12.0 hours in last 24 (1900-1900) 24.5 hours in last 48
10/4/11	0630-1900	• 30 minute turnover • Forced OT to cover first half of Peakshift	12.0 hours 30 minute turnover does not count. 12.0 hours in last 24 (1900-1900) 24.0 hours in last 48
10/5/11	OFF		
10/6/11	0630-1900	• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift	12.0 hours 30 minute turnover does not count. 12.0 hours in last 24 (1900-1900) 12.0 hours in last 48 68.5 hours in last 7 days.
10/7/11	0630-1900	• 30 minute turnover • Voluntary OT to cover Dayshift and first half of Peakshift	12.0 hours 30 minute turnover does not count. 12 hours in last 24 (1900-1900) 24 in the last 48 **72.5 hours in last 7 days. Must arrive no earlier than 0800 or must leave no later than 1730.**

AD-AA-101-1004, Step 4.3.1:

NOTE

The periods of 24 hours, 48 hours and 72 hours are considered rolling time periods. Rolling means the period is not re-zeroed or reset following a day off or after obtaining authorization to exceed 10 CFR 26 overtime limits. The 24 hours, 48 hours, 7 days (168 hours), and 216 hours do not restart after a day off; the period continues to roll.

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- No more than 72 work hours in any 7 day (168 hour) period.
- At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34 hour break in any 216 hour period.

Minimum Days Off: Since both of the operators are on 8-hour shifts, Table 1, Online Minimum Days Off (Step 4.3.2) requires a minimum of 1 day off per week.

NEXTera ENERGY	# NUCLEAR FLEET **PROCEDURE** NON-SAFETY RELATED **INFORMATION USE**	Procedure No. **AD-AA-101-1004** Revision No. **7**

Title:

WORK HOUR CONTROLS

Responsible Department: **LICENSING**

Special Considerations:

FOR INFORMATION ONLY
Before use, verify revision and change documentation (if applicable) with a controlled index or document.
DATE VERIFIED_________ INITIAL__________

Revision	Approved By	Approval Date
0	Pete Wells	1/22/09
7	James Peschel	05/11/11

UNIT #	
DATE	
DOCT	PROCEDURE
DOCN	AD-AA-101-1004
SYS	
STATUS	COMPLETED
REV	7
# OF PGS	

REVISION SUMMARY	
Rev. No.	**Description**
7	Revises Steps 4.1.1.3/.4 associated with holdover time and early arrivals to align with 10 CFR 26.205(b)(1) - Work Hours. (AR01645435 M. Dryden)
6	Corrected references.
5	This revision incorporates editorial changes, lessons learned, and operating experience for clarification of 10 CFR 26 Subpart I requirements.
4	This revision incorporates lessons learned from the Fatigue Rule Pilot program for clarification of 10 CFR 26 Subpart I requirements.
3	Editorial to add NOTE regarding Pilot Waiver statement in section 4.4. Placed on HOLD during Pilot Program.
2	This revision is a complete rewrite of procedure to comply with 10 CFR 26 Subpart I. No revision bars used according to AD-AA-100-1003 (rewrite)
1	Editorial to delete reference to St. Lucie procedure ADM-15.04, Fitness For Duty - Call Out And For Cause Testing, in section 6.4 and add reference to FFD-12, For Cause Drug And Alcohol Testing, and FFD-14, Call In Testing to section 6.4. This is necessary due to cancellation of ADM-15.04
0	Initial Issuance.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 General

1. This procedure implements the requirements of 10 CFR 26 Subpart I for controlling work hours to prevent situations in which fatigue could reduce the mental alertness or decision-making capability of personnel.

2. This procedure does not apply during declared emergencies as defined in any FPL / NextEra Energy emergency plan. FPL / NextEra Energy will hereafter be referred to as NextEra.

3. Work hour requirements can be suspended when informed in writing by the NRC that these requirements, or any subset of, are waived for security personnel in order to assure the common defense and security, for the duration of the period defined by the NRC.

1.2 Scope

NOTE

For workers who normally perform the following duties, all work hours will be calculated as time worked. Workers will not typically move in or out of a Covered Worker status except for extended work assignments such as shared resources during outages.

Work Hour Controls shall apply to workers who perform the following duties: (Attachment 1 provides additional guidance on determination of this population):

1. Operating or on-site directing of the operation of structures, systems or components (SSC) determined to be of high safety significance. The determination of the safety significance of an SSC shall be determined using the Maintenance Rule risk assessment process.

2. Radiation Protection or Chemistry duties required as a member of the on-site emergency response organization minimum shift complement.

3. Directing or performing maintenance of structures, systems or components (SSC) determined to be of high safety significance. The determination of the safety significance of an SSC shall be determined using the Maintenance Rule risk assessment process described in each site's procedures. The personnel who perform these duties may include contractors with unescorted access, radiation protection, and Chemistry personnel.

4. Fire Brigade member responsible for understanding the effects of fire and fire suppressants on safe shutdown capability (Fire Brigade Leader).

5. Armed security force officer, alarm station operator, response team leader or watchperson (i.e. Security Personnel).

2.0 TERMS AND DEFINITIONS

1. Acute fatigue: Fatigue from causes (e.g., restricted sleep, sustained wakefulness, task demands) occurring within the past 24 hours.

2. Conditions Adverse to Safety or Security: – Unforeseen conditions which, in the informed opinion of the duty Shift Manager, could jeopardize the safety of the public, station, personnel, or environment. Waivers are considered appropriate if required to mitigate conditions adverse to safety. If rule compliance would result in the following type conditions, it would be appropriate to consider using the waiver process:

   - Compliance with the work hour requirement would violate other NRC requirements such as minimum on-site staffing.
   - Compliance with the work hour requirement would delay recovery from any situation that has placed the unit in an orange or red risk classification as determined by the 10CFR50.65 program..
   - Compliance with the work hour requirement would cause a forced Reactor shutdown, power reduction, or similar action as a result of exceeding a time limit for a Technical Specifications Limiting Condition for Operation.
   - Compliance with the work hour requirement would cause or prevent mitigation of an environmental permit violation.
   - Compliance with the work hour requirement would cause delay in recovering from actual or potential loss of reactor core cooling capability during outages.
   - Compliance with the work hour requirement would compromise the industrial or radiological safety of the public or plant personnel.
   - Compliance with the work hour requirement would compromise the ability to maintain the site secure from the actions of malicious groups or persons.
   - Compliance with the work hour requirement would force undue risk to on-site or off-site station personnel as a consequence of an external event (e.g., security, fire, severe weather).

3. Alertness: The ability to remain awake and sustain attention.

4. Break: An interval of time that falls between successive work periods, during which no duties are performed for NextEra other than one period of shift turnover at either the beginning or end of a shift but not both.

2.0 TERMS AND DEFINITIONS (continued)

5. Business Travel: Travel required by the company to a work location other than the worker's normal work location.

6. Call-in: Returning to the nuclear plant site when not normally scheduled for work.

7. Circadian variation in alertness and performance: The increases and decreases in alertness and cognitive / motor functioning caused by human physiological processes (e.g., body temperature, release of hormones) that vary on an approximately 24-hour cycle.

8. Contractor / vendor (C/V): Any company, or any individual not an employee of NextEra, who is providing work or services to NextEra, either by contract, purchase order, oral agreement, or other arrangement.

9. Covered Work:

   - Operating or on-site directing of the operation of structures, systems or components (SSC) determined to be of high safety significance. The determination of the safety significance of an SSC shall be determined using the Maintenance Rule risk assessment process.

   - Radiation Protection or Chemistry duties required as a member of the on-site emergency response organization minimum shift complement.

   - Maintenance or on-site directing of maintenance of structures, systems or components (SSC) determined to be of high safety significance. The determination of the safety significance of an SSC shall be determined using the Maintenance Rule risk assessment process described in each site's procedures. The personnel who perform these duties may include contractor with unescorted access, Radiation Protection, and Chemistry personnel.

   - Fire Brigade member responsible for understanding the effects of fire and fire suppressants on safe shutdown capability (Fire Brigade Leader).

   - Armed security force officer, alarm station operator, response team leader or watchperson (i.e. Security Personnel).

10. Covered Worker: Any worker granted unescorted access to a nuclear power plant protected areas performing Covered Work.

11. Cumulative Fatigue: The increase in fatigue over consecutive sleep-wake periods resulting from inadequate rest.

2.0 TERMS AND DEFINITIONS (continued)

12. Day-off: A calendar day in which an individual does not start a work shift.

13. Deviation: A departure from the requirements specified in 10CFR26 Subpart I.

14. Directing: The exercise of control over an operations or maintenance work activity by an individual who is directly involved in the execution of the work activity, and either makes technical decisions for that activity without subsequent technical review, or is ultimately responsible for the correct performance of that work activity. Directing only applies when the work being performed is covered work, this then makes the directing covered work as well.

15. Eight (8) -hour shift schedule: A schedule that averages not more than 9 hours per workday over the entire shift cycle.

16. Fatigue Management software: Software used as a tool for scheduling and tracking time worked for covered workers.

17. Fatigue: The degradation in an individual's cognitive and motor functioning resulting from reasons such as bodily or mental exertion or inadequate rest.

18. Incidental duties: Unscheduled work activities required by NextEra performed off-site. Activities include phone calls and teleconferences supporting outages, emergent issues, and performance of emergent analysis performed while off-site. After hours study time is not included as an incidental duty.

19. Increased threat condition: An increase in protective measure level, relative to the lowest protective measure level applicable to the site during the previous 60 days, as promulgated by an NRC advisory.

20. Intervening Hours: Time between the end of a scheduled work shift and beginning of a call-in period or the hours between the end of a call-in period and beginning of a scheduled work shift.

21. Maintenance: On-site maintenance activities including modification, surveillance, post-maintenance testing, corrective and preventive maintenance.

22. Maintenance Rule: The maintenance rule process represents the integration and coordination of a broad range of equipment reliability activities into one process for plant personnel to : evaluate important station equipment, monitor equipment performance and condition; provide direct input for the implementation of long-term equipment health plans, and make continuing adjustments to preventive maintenance tasks and frequencies based on trend data and equipment operating experience.

2.0 TERMS AND DEFINITIONS (continued)

23. Nominal: The limited flexibility that is permitted in meeting a scheduled due date for completing a recurrent activity that is required under 10 CFR 26, such as the nominal 12-month frequency required for FFD refresher training. Completing a recurrent activity at a nominal frequency means that the activity may be completed within a period that is 25 percent longer or shorter than the period required in 10 CFR 26. The next scheduled due date would be no later than the current scheduled due date plus the required frequency for completing the activity.

24. Online: Status of the plant when connected to the electrical grid.

25. Outage: Status of the plant when disconnected from the electrical grid.

26. On-site: Within the owner controlled area of the nuclear power plant.

27. Off-site: Any area not considered on-site.

28. Protected area: The area inside the security fence line. Access to this area requires a badge allowing access that is issued by security.

29. Security personnel: Armed security force officer, alarm station operator, response team leader, or watchperson.

30. Security System Outage: The loss of sufficient components and operational capabilities of the security system that adversely affects security's ability to provide resources required for compensatory measures to comply with physical security and safeguards contingency plans. These planned or unplanned outages could be the result of equipment degradation / failure, adverse weather conditions, loss of power, or structural damage to the security system.

31. Shift cycle: A series of consecutive work shifts and days off that is planned to repeat regularly, thereby constituting a continuous shift schedule. A shift cycle cannot exceed 6 weeks for the purposes of calculating days off.

32. Shift turnover: Only those activities that are necessary to safely transfer information and responsibilities between two or more individuals between shifts. Shift turnover activities may include, but are not limited to, discussions of the status of plant equipment, the status of ongoing activities, such as extended tests of safety systems and components and arming / disarming for security officers. A shift turnover shall not exceed 1 hour.

33. Tactical exercise: A force-on-force simulation used to evaluate and demonstrate the capability to defend target sets against selected attributes and characteristics of an adversary.

2.0 TERMS AND DEFINITIONS (continued)

34. Ten (10)-hour shift schedule: A schedule that averages more than 9 hours, but not more than 11 hours, per workday over the entire shift cycle.

35. Twelve (12)-hour shift schedule: A schedule that averages more than 11 hours per workday over the entire shift cycle.

36. Unplanned Outage: Shutdown that is initiated less than 72 hours following the discovery of an off-normal condition. Unplanned shutdowns include those conducted in response to equipment failures or personnel errors and those conducted to perform maintenance.

37. Waiver: An approved request to deviate from work hour limits of Section 4.3.

38. Work Hours: The amount of time a worker performs duties for NextEra. Activities included and excluded from this time are outlined in Section 4.1.

39. Work Hour Controls: The regulatory requirements specified in 10 CFR 26.205.

40. Work Period: The scheduled or unscheduled amount of continuous work hours from when an individual starts to perform duties for NextEra until when they stop. A work period can also be referred to as a shift period or work shift. (e.g. A scheduled work time from 06:00 to 18:00 including turnovers, breaks, and lunches is a work period.)

3.0 RESPONSIBILITIES

1. The Plant General Manager or a site senior level manager with requisite signature authority is responsible for:

   A. Determining that a waiver is necessary to mitigate or prevent a condition adverse to safety.

   B. Evaluating staffing levels to ensure individual work hours can be managed with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.

   C. Communicating the requirements of this procedure to appropriate personnel.

   D. Ensuring a review is performed at least once per year, in accordance with Section 4.5.

2. The Security Manager or a site senior level manager with requisite signature authority is responsible for:

   A. Determining that a waiver is necessary to maintain site security.

   B. Evaluating staffing levels to ensure individual work hours can be managed with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.

3. All Managers and Supervisors are responsible for:

   A. Designating covered or non-covered status for new employees, transferred employees, or shared resources. For those to be designated as a covered worker, the designation must be made prior the worker performing any covered work.

   B. Ensuring workers' covered status, plant site, department, and supervisor is accurately documented in the Fatigue Management software, as applicable, prior to the worker performing any covered work.

4. Licensing Managers are responsible for:

   A. Providing oversight for rule implementation and procedure interpretation and determination of adequacy of associated software, including future changes.

3.0 RESPONSIBILITIES (continued)

5. Information Management is responsible for:

A. Implementing and maintaining the configured software to meet the business requirements including coordinating the testing of the software with the business and the vendor.

6. Manager or Supervisor of Covered Workers is responsible for:

A. Ensuring workers' status (i.e. covered status, plant site, department, and supervisor) and schedules are accurately updated in Fatigue Management software prior to beginning any covered work.

B. Ensuring Fatigue Management software is updated for schedule changes such as personnel sickness, call-ins, vacation, or overtime prior to the hours being taken off or worked.

C. Initiating a waiver as necessary for workers deviating from work hour limits and ensuring the waiver is completed and approved before the individual performs work.

D. Evaluating a person's fitness to deviate from work hour limits by performing a face-to-face assessment per Attachment 1.

E. Evaluating the employee's performance and continued fitness-for-duty while working under a waiver.

F. Attaching approved waivers in Fatigue Management software when software is utilized for tracking time.

G. Ensuring approved waivers are captured in the applicable condition reporting system.

H. Communicating the requirements of this procedure to appropriate personnel within his/her department.

I. Scheduling the work hours of covered workers consistent with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.

3.0 RESPONSIBILITIES (continued)

6. **(continued)**

   J. Documenting covered worker shift schedules and actual work hours, that are not being tracked and stored in the site's Fatigue Management software, in a Routine Work Tracking item in the applicable corrective action program or submitting the required records to Records Management in accordance with site requirements on an annual basis. For covered workers where the site's Fatigue Management software is utilized to track and store the schedules and work hours, a Routine Work Tracking item is not required.

   K. Evaluating staffing levels to determine if they are adequate to ensure work hours can be managed with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.

   L. Documenting any evaluation of projects or tasks for the purpose of determining if the work is considered covered or not in a condition report (CR) or other retrievable format.

   M. Tracking work related telephone calls in accordance with Attachment 2 and incorporating data in Fatigue Management software when software is utilized for tracking time.

   N. Generating a Condition Report to document each deviation. (Section 7.2 Commitment 1 and 2)

7. Site Technical Representatives (or associated Contract Coordinator) are responsible for:

   A. Designating covered or non-covered status of contract workers.

   B. Informing contractors of Fatigue Management and work hour control requirements.

   C. Ensuring work hour limits are followed and initiating a waiver if required. Also ensuring that waiver is approved prior to individual performing work.

   D. Ensuring proper documentation of contractor work hours including, at a minimum, all information listed on Attachment 4. Attachment 5 may be used, as applicable.

   E. Documenting any evaluation of projects or tasks for the purpose of determining if the work is considered covered or not in a condition report (CR) or other retrievable format.

3.0 RESPONSIBILITIES (continued)

7. **(continued)**

   F. Documenting contractor covered worker schedules and actual work hours, that are not being tracked and stored in the site's Fatigue Management software, in a Routine Work Tracking item in the applicable corrective action program or submitting the required records to Records Management in accordance with site requirements within 60 days of the contractor's termination of unescorted access or annually, which ever comes first. For covered contractor workers where the site's Fatigue Management software is utilized to track and store the schedules and work hours, a Routine Work Tracking item is not required.

8. Each employee (NextEra or contractor) is responsible for :

   A. Understanding fatigue rule status (i.e. covered worker) and responsibilities associated with this categorization

   B. Evaluating his/her personal fitness to work based on impairment from fatigue and managing his/her work hours consistent with the objective of preventing impairment from fatigue.

   C. Making a self-declaration of fatigue in accordance with SY-AA-100-1011, Fatigue Management, and discussing his/her concerns with supervision or management in cases when he/she feels his/her performance may be impaired.

   D. Monitoring and reporting concerns related to other individuals' fitness to work based on impairment from fatigue (i.e. behavioral observation program).

9. Covered workers (NextEra or contractor) are responsible for:

   A. Being aware of his/her total hours worked in the previous 14 days and notifying management if work hour limits will be exceeded if asked to work additional hours.

   B. Ensuring Fatigue Management software is updated, as applicable, for schedule changes such as personal sick leave, call-ins, vacation, or scheduled overtime prior to the hours being taken off or worked.

10. Each site's access authorization supervisor is responsible for

   A. Including the Section 5 reporting requirements in the annual FFD report and for periodically transmitting required records to records management department

4.0 INSTRUCTIONS

4.1 Calculating Work Hours

4.1.1 Time to be Included in Work Hour Calculation

1. Any break time during the work period including lunch time.

2. Business Travel time. The cumulative travel time for the most direct route shall be utilized and can be estimated by flight times, Google maps, Mapquest, etc. Personal travel breaks for sight seeing, visits, etc. are not to be included in the cumulative travel time.

   A. Overnight stays - travel time from the worker's home to the hotel and travel time from the hotel back to the worker's home.

   B. Single day - travel time to and from the temporary work location from the worker's starting location (home, usual work location, other temporary work location, etc.).

3. Shift holdovers to cover for late arrivals of incoming shift members; early arrivals of individuals for meetings, training, or pre-shift briefings for special evolutions; and holdovers for interviews needed for event investigations.

NOTE

- A 10 hour break between the end of the previous work period and the start of the incidental duty period is not required.
- A 10 hour break between the end of the incidental duty period and the start of the next work period where covered work will be performed is required.

4. Incidental duties totaling greater than 30 minutes between each work period (e.g. 3-20 minute phone calls) count toward work time and work periods. The cognizant supervisor shall complete Attachment 2.

   Example 1:

   An individual performs covered work for 10 hours (0700 - 1700) and goes home. At 2200 he/she receives a call from work and talks for 1 hour until 2300 pm.

   - A 10 hour break prior to receiving the phone call is not required.
   - Intervening hours are not applicable with incidental duty time. The hours from 1700 through 2200 do not count with respect to calculating hours worked.

4.1.1 Time to be Included in Work Hour Calculation (continued)

4. (continued)

- The individual worked a total of 11 hours with the work period ending at 2300.
- The individual cannot return to work at 0700 the next day; he/she would not meet the 10-hour break requirement. The individual could begin work at 0900 the next day.

Example 2:

An individual is on a day off and is required to talk with licensee personnel at the plant on 3 occasions, with each call lasting 20 minutes, totaling 1 hour.

- The total time spent on the phone (1 hour) shall be counted since it exceeds a nominal 30 minutes during a single break period.
- The day is considered a work day.
- The individual can return to work following a 10 hour break after the end of the last phone call.

5. Intervening hours between end of shift and start of call in work or between call-in work and beginning of next shift if no Waiver is processed for insufficient break. See Section 4.1.1 Step 6.

6. Call-ins

A. All call-ins will be performed in accordance with SY-AA-100-1013, Call-in Testing.

B. A call-in is considered an addition to the normal work schedule. The work hours can be accounted for using three different methods depending on timing and circumstances of the call-in work period.

(1) The call-in hours can be considered a separate work period. Using this method, only the hours worked for NextEra will be counted. The method requires a 10 hour break before the call-in period and after the call-in period.

(2) The call-in hours can be considered an extension to the preceding or succeeding work period. Using this method, the intervening hours between the regular work period and the extended work period must be counted.

4.1.1 Time to be Included in Work Hour Calculation (continued)

6. B. (continued)

(3) A Waiver can be processed for the required 10 hour break between successive work periods. If a Waiver is approved for the 10 hour break, the intervening hours need not be counted.

Example 1:

An individual's normal schedule is from 0700 to 1530 (8 hour day) and the individual is called back to work at 1900 and he/she works until 2100.

- The separate work period method cannot be used as a 10 hour break is not available prior to the call-in period.
- The call-in is considered an extension of the previous work period, 0700 to 1530. The hours counted for this work period would be 14. A ten hour break is required prior to the individual starting an additional work period; therefore, the individual could return at the normal start of their work period at 0700 the next day.

or

- A waiver to the 10 hour break between successive work periods could be requested. The hours counted for the work day would be 10.5. The individual could return at the normal start of their work period at 0700 the next day.

Example 2:

An individual's normal schedule is from 0700 to 1530 (8 hour day), and the individual is called back to work from 0200 to 0400 the next day.

- The call-in period is considered a separate work period. The 2 hours worked for the licensee is counted. The individual had a 10 hour break prior to the start of the work period and must be given a 10 hour break following the end of the work period.

or

- The call-in is considered an extension of the succeeding work period, 0700 to 1530. The hours counted for this work period would be 13.5.

4.1.2 Time to be Excluded in Work Hour Calculation

1. All shift turnover time, not to exceed one hour for any particular turnover, may be excluded from the total hours worked.

2. Normal commute to and from a work location. This includes commutes from hotels and other temporary living quarters to an alternate work location during a Business Travel period.

3. Personal time before and after work when not performing duties for NextEra.

4. Off-site incidental duties performed less than a cumulative 30 minutes.

5. Hours worked above the normal scheduled work hours for the purpose of participating in the conduct of an unannounced emergency preparedness exercise or drill. If an individual is on a day off, it is still considered a day off.

6. Paid hours during which the individual is not expected to perform work (e.g., vacation time, sick days, personal leave)

7. The one additional hour time shift from daylight savings time to standard time.

8. For security personnel, during the conduct of a Force on Force tactical exercise evaluated by the NRC if they are required to work on a scheduled day off, this may be counted as a day off.

4.2 Transitioning to Covered Work OR between Covered Groups

> **NOTE**
>
> The following transition rules from Non-Covered to Covered status apply at all times; even during transitioning from outage to online unit status. (i.e. If a unit transition from outage to online status has just occurred and it is desired to transition a worker from Non-Covered to Covered status, a look back into the outage hours worked must be performed to satisfy the transition from Non-Covered to Covered status.)

If a worker begins or resumes performing covered work, consider all hours worked for NextEra, including hours worked performing duties that are not considered covered work. Before beginning or resuming covered work, the following requirements shall be met:

1. Except as permitted by waivers, ensure the individual's work hours have not exceeded the following limits:
   - 16 hours in previous 24 hour period
   - 26 hours in previous 48 hour period
   - 72 hours in previous 7 day (168 hour) period
2. Except as permitted by waivers, ensure the individual has had the following breaks and Minimum Days Off
   - A 10 hour break before beginning covered work period
   - A 34 hour break in the previous 216 hour period
   - A minimum of 1 day off in the preceding 7-day period is acceptable for individuals who have been working an 8-hour shift schedule, as either day or shift workers, to begin covered work.
     - Ensure the work hours and days off of the 7-day period are documented in Fatigue Management software, as applicable.

4.2 Transitioning to Covered Work OR between Covered Groups (continued)

2. (continued)

- A minimum of 1 day off in the preceding 7-day period is acceptable for individuals who have been working an 8-hour shift schedule, as either day or shift workers, to transition from a covered group to another covered group with more stringent Minimum Days Off requirements.
    - Ensure the work hours and days off of the 7-day period are documented in Fatigue Management software, as applicable.
- A minimum of 2 days off in the preceding 7-day period is acceptable for individuals who have been working a 10- or 12-hour shift schedule, as either day or shift workers, to begin covered work.
    - Ensure the work hours and days off of the 7-day period are documented in Fatigue Management software, as applicable.
- A minimum of 2 days off in the preceding 7-day period is acceptable for individuals who have been working a 10- or 12-hour shift schedule, as either day or shift workers, to transition from a covered group to another covered group with more stringent Minimum Days Off requirements.
    - Ensure the work hours and days off of the 7-day period are documented in Fatigue Management software, as applicable.
- A minimum of 2 days off in the preceding 7-day period is acceptable for operators who have been working outage hours on 10- or 12-hour shifts before they transition to the non-outage unit as one of the two required operators working non-outage Minimum Days Off.
    - Ensure the work hours and days off of the 7 day period are documented in Fatigue Management software, as applicable.

4.3 Work Hour Limits

4.3.1 Work Hour Limits Regardless of Unit Status

NOTE

The periods of 24 hours, 48 hours and 72 hours are considered rolling time periods. Rolling means the period is not re-zeroed or reset following a day off or after obtaining authorization to exceed 10 CFR 26 overtime limits. The 24 hours, 48 hours, 7 days (168 hours), and 216 hours do not restart after a day off; the period continues to roll.

- No more than 16 work hours in any 24 hour period.
- No more than 26 work hours in any 48 hour period.
- No more than 72 work hours in any 7 day (168 hour) period.
- At least a 10 hour break between successive work periods, or an 8 hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34 hour break in any 216 hour period.

4.3.2 Online Minimum Days Off

When the plant status is on line, workers shall average the Minimum Days Off listed in Table 1. Each worker is subject to the Minimum Days Off that correlate with the plant status at the beginning of their shift.

- These Minimum Days Off may be averaged over the shift cycle.
- For the purposes of calculating an average number of days off, the duration of the shift cycle shall not exceed six weeks.
- In the event of an unplanned outage, the work hours for covered workers shall be considered to be in compliance with the requirements of this section if the schedule for the shift cycle would have provided for the required Minimum Days Off required during on line periods.

4.3.2 Online Minimum Days Off (continued)

Table 1 - Online Minimum Days Off

Group	8 hour shift	10 hour shift	12 hour shift
Maintenance	1 day off/week	2 days off/week	2 days off/week
Operations, Radiation Protection, Chemistry, Fire Brigade Leader / Advisor	1 day off/week	2 days off/week	2.5 days off/week
Security	1 day off/week	2 days off/week	3 days off/week

4.3.3 Outage Minimum Days Off

When the plant status is in an outage, workers shall have the Minimum Days Off listed in Table 2. Workers are subject to the Minimum Days Off that correlate with the plant status at the beginning of their shift.

- These Minimum Days Off are required over successive days as listed in Table 2.
- At a multi unit site, Table 2 may apply to all covered workers performing outage activities except for 2 Reactor Operators (ROs) and 2 Senior Reactor Operators (SROs) per shift who shall adhere to Section 4.3.2, Online Minimum Days Off required online. The reactor operator at the reactor controls and his supervisor for the online unit must work within the limits of the online hours requirements. Two additional operators, one RO and one SRO (per shift), must also work online hours. This is so that they are available to relieve the operator at the controls or his supervisor, if needed. For a dual unit site with 12 hour shift coverage, this could take as many as 12 operators adhering to the Online Minimum Days Off requirement. These additional operators may work on the outage unit.
- The required Minimum Days Off for covered workers subject to outage hours are only applicable to the first 60 days of an outage. After the first 60 days, average Minimum Days Off for on line operations are required.
- The 60 day outage period may be extended in 7-day increments for each non-overlapping 7 day (168 hours) period in which the person has not worked more than 48 hours during the unit or security system outage or increased threat condition.

4.3.3 Outage Minimum Days Off (continued)

- Eligibility for Outage Minimum Days Off (MDOs), should be established on an individual or group basis. Eligibility should be evaluated every 15 days during the outage period, beginning at day 0. Covered workers that perform any outage related activity during the outage period are eligible for outage MDOs. Covered Workers not performing outage related activities during the outage period shall adhere to Section 4.3.2, Online Minimum Days Off.

- Days off may be scheduled throughout the week or 15 day period without restraint during periods of Outage (i.e. not required to be one day off every 5 days).

Table 2 - Outage Minimum Days Off

Group	8 hour shift	10 hour shift	12 hour shift
Maintenance	1 day off/week	1 day off/week	1 day off/week
Operations, Radiation Protection, Chemistry, Fire Brigade Leader / Advisor	3 days off/ successive (i.e. non-rolling) 15 day period	3 days off/ successive (i.e. non-rolling) 15 day period	3 days off/ successive (i.e. non-rolling) 15 day period
Security (Not applicable for unplanned Security System Outages)	4 days off/ successive (i.e. non-rolling) 15 day period	4 days off/ successive (i.e. non-rolling) 15 day period	4 days off/ successive (i.e. non-rolling) 15 day period

4.4 Request to Deviate from Work Hour Limits

Recognizing that very unusual and non preventable circumstances may arise requiring deviation from the Work Hour Limits in Section 4.3, such deviation shall be considered on **an individual basis**. Authorized deviations to the work hour limits shall be documented using Attachment 3. Deviations from work hour limits must meet the following requirements:

1. The plant general manager, operations manager, security manager, or their respective designees, determines the deviation is necessary to mitigate or prevent a condition adverse to safety or security.

4.4 Request to Deviate from Work Hour Limits (continued)

2. The cognizant supervisor(s) performs and documents a face-to-face assessment in Q4 of Attachment 3 and determines there is reasonable assurance that the individual will be able to safely and competently perform assigned duties during the additional work period for which the deviation will be granted.

   A. Face to face assessments shall be performed no more than four hours before the start of the work period documented in Attachment 3.

   B. Face-to-face assessment shall be performed by person qualified to perform or oversee the work requiring the Waiver. The Operations Shift Manager is considered qualified to perform assessments on personnel from any department.

3. The completed Attachment 3 is approved by the Plant General Manager or designee.

4. Ensure the period of work approved on the waiver is entered into Fatigue Management software, as applicable.

5. In an emergent situation, in which the Plant General Manager or designee is unable to sign the waiver request, it is acceptable to obtain a verbal authorization from the Plant General Manager or designee prior to an individual exceeding the work hour limits and subsequently complete Attachment 3 when time allows, but no later than 24 hours after the event. The cognizant supervisor shall have completed Q4 of Attachment 3, prior to requesting the Waiver approval.

6. Generate a Condition Report to document the work hour deviation and capture the approved waiver.
   (Section 7.2 Commitments and/or CAPR 1 and Section 7.2 Commitments and/or CAPR 2)

7. To the extent practical, granting of Waivers shall only address circumstances that could not have been reasonably controlled. Hours worked for activities such as vacation coverage, normal shift coverage or pre-planned projects during on line or outage periods, do not constitute unusual circumstances. Hours worked for these types of activities should not exceed the work hour limits of Section 4.3.

4.4 Request to Deviate from Work Hour Limits (continued)

8. If an individual is observed to be fatigued or exhibits unsatisfactory mental alertness at any time, then:

A. The individual will be removed from performing work as soon as possible,

B. A Fatigue Assessment per SY-AA-100-1011, Fatigue Management, shall be performed on the individual.

9. If an individual is performing, or being assessed for, work under a Waiver of the requirements and declares in accordance with SY-AA-100-1011, Fatigue Management, that due to fatigue, he or she is unable to safely and competently perform his or her duties, a supervisor or manager shall immediately stop the individual from performing any work. If the individual is required to continue performing those duties under other requirements of the regulations, e.g., to meet minimum licensed operator staffing, then immediate action to relieve the individual as soon as possible shall be taken. Conditions and controls per SY-AA-100-1011 will be established to ensure the worker can continue to work safely. Following the self-declaration or relief from performing covered work, as applicable, the individual may be:

A. Reassigned to duties other than covered work, but only if the results of an extensive fatigue assessment per SY-AA-100-1011, Fatigue Management indicate that the individual is fit to safely and competently perform those other duties;

Or

B. Permitted to take a break of at least 10 hours before returning to perform any covered work.

(1) If an individuals is sent home as a result of a self declaration fatigue assessment, the cognizant supervisor shall consider if alternate transportation is appropriate. Personnel safety should be considered in any decision to send someone home due to fatigue.

10. At the conclusion of the work performed under the waiver, the cognizant supervisor shall:

A. Complete Q6 of Attachment 3,

B. Ensure Attachment 3 is attached in Fatigue Management software, as applicable.

4.4 Request to Deviate from Work Hour Limits (continued)

11. Deviations from the requirements of the rule may occur as the result of administrative errors or unforeseen circumstances and may constitute violations of rule requirements. A person is considered "reset" from a deviation, whether under a Waiver or otherwise, when they have met all of the work hour limits of Section 4.3.1 and are scheduled to meet the Minimum Days Off requirement for their current shift cycle or outage window (7 days or 15 days). The corrective action program shall be utilized to document deviations from the rule requirements.

4.5 <u>Annual Review</u>

1. An annual program review is required to meet the requirements of 10CFR26 Subpart I. This review should be performed in concurrence with data gathering for the annual Fitness for Duty Report which is due before March 1 of each year.

2. The plant manager shall complete this review within 30 days of the end of the review period. Responsible department managers will perform the review for their respective departments.

3. The annual review shall be completed using the quick hit self assessment process in PI-AA-101-1001, Quick Hit Assessments and shall contain at least the following activities:

   A. Review the actual work hours and worker performance of the below individuals for consistency with the work hours scheduling requirement objective of preventing impairment from fatigue due to the duration, frequency and sequencing of hour worked.

   - Workers whose actual hours worked during the review period exceeded an average of 54 hours per week in any shift cycle while the work hours were subject to Online Minimum Day Off requirements.
   - Workers who were granted more than one Waiver during the review period.
   - Workers who were assessed for fatigue during the review period.

   B. Review hours worked and the Waivers under which work was performed to evaluate staffing adequacy for all positions subject to Work Hour Controls.

4.5 Annual Review (continued)

3. (continued)

C. Review performance of the station in adhering to work schedules for Covered Work groups; evaluate whether or not the schedule is effectively being implemented.

- Is the schedule being adhered to?
- Are the changes understood and reasonably consistent with a properly managed schedule?
- Does the overtime utilized support efficient utilization of resources?
- Are the available resources properly aligned with the scheduled work load?
- Is unplanned work or Outages indicative that other corrective actions are necessary?
- Does the level and pattern of overtime support a determination that staff size is appropriate for the schedule and work?

D. Summarize fatigue assessments performed in accordance with SY-AA-100-1011.

- Condition under which the fatigue assessment was conducted (for-cause, self declaration, post event and follow-up)
- Statement of whether or not the worker was working on outage activities at the time of the self-declaration or condition resulting in the fatigue assessment.
- The category of duties the individual was performing at the time of the self declaration
- Management actions if any resulting from the fatigue assessment.

E. Record, trend and correct any problems identified in maintaining control of work hours consistent with the specific requirements and performance objectives of the rule in the corrective action program.

5.0 REPORTING

NOTE

Information on waivers may be obtained by utilizing the reporting capabilities of the Fatigue Management software, EmpCenter, as applicable.

The following information shall be included in the annual FFD program performance report required under 10 CFR 26.717:

1. A summary of all instances during the previous calendar year in which a waiver was granted. The summary shall include only those waivers under which work was performed. If it was necessary to deviate from more than one work hour limit during any single extended work period, the summary of instances shall include each of the work hour limits that were waived during the period for each category of covered worker.
2. The number of approved waivers for on line work hour limits.
3. The number of approved waivers for outage work hour limits.
4. A summary that shows the distribution of waiver use among the covered workers within each category.
5. A summary of corrective actions, if any, resulting from the analyses of these data.
6. Reports related to fatigue management may be integrated into the overall FFD report.

6.0 RECORDS REQUIRED

In keeping with 10 CFR 26.417, Record Keeping and Reporting, the following business records may be stored and archived electronically so that they are available for NRC inspection purposes and for any legal proceedings resulting from the administration of Fatigue Management. These business records shall be retained for three years or until the completion of all legal proceedings, whichever is later.

NOTE

- If the electronic storage system being used for fatigue management is retired or converted to a newer system, ensure the old system is maintained to meet the storage time requirements or print hard copy documents and contact site Records Management for storage options.
- The Fatigue Management software is an approved storage medium for shift schedules and work hours. The reporting capabilities of the software can be utilized to generate data when requested.

1. Records of work hours including start and stop times for all covered workers including contract personnel. This report may be produced by Fatigue Management software reporting or documented using Attachment 4.

2. Records of shift schedules and shift cycles for covered workers. This report may be produced by Fatigue Management software reporting.

3. The documentation of approved waivers for covered workers (Attachment 3) including the bases for granting the deviations.

4. The documentation of yearly reviews as required in Section 4.5. Yearly reviews are performed in accordance with PI-AA-101-1001, Quick Hit Assessments. In keeping with PI-AA-101-1001, Step 5.0, quick hit assessment reports performed in accordance with subject procedure AD-AA-101-1004, Section 4.5, Annual Reviews, shall be retained as a business record for three years or until the completion of all legal proceedings, whichever is later in the electronic action request system.

7.0 REFERENCES AND COMMITMENTS

7.1 References

7.1.1 Common

1. 10 CFR 26 Subpart I Managing Fatigue
2. NEI 06 11, Managing Personnel Fatigue at Nuclear Power Reactor Sites
3. Regulatory Guide 5.73, Fatigue Management for Nuclear Power Plant Personnel
4. SY-AA-100-1011, Fatigue Management
5. PI-AA-100, Condition Assessment and Response
6. PI-AA-101-1000, Focused Self-Assessment Planning, Conduct and Reporting
7. SY-AA-100-1013, Call in Testing
8. SY-AA-100-1000, Determination of Fitness
9. NRC Frequently Asked Questions http://www.nrc.gov/reactors/operating/ops-experience/fitness-for-duty-programs/faqs/manage-fatigue.html
10. NEI Frequently Asked Questions http://atom.nei.org/Default.aspx?alias=atom.nei.org/workhourstf

7.1.2 Duane Arnold Energy Center

None

7.1.3 Point Beach Nuclear Plant

1. FP-PA-ARP-01, CAP Action Request Process
2. NP-1.3.1, Records Management Program

7.1.4 Plant St. Lucie

1. L-96-217, 10CFR2.201, Reply to Notice of Violation, NRC Inspection Report 96-09 (EA 96-263).
2. CR 96-2417, QA Audit QSL-PM-96-18
3. CR 03-1063, QA Review of ANO Violation

7.1.4 Plant St. Lucie (continued)

4. CR 2006-3915 Electronically Scan and Attach Approved Appendix A to Applicable CR

7.1.5 Seabrook Station

1. ACR 97-2791
2. NRC Inspection Report No. 50-443/92-0

7.1.6 Plant Turkey Point

1. Technical Specifications Section 6.1, Responsibility
2. Technical Specifications Section 6.2, Organization
3. Technical Specifications Section 6.8, Procedures and Programs
4. FSAR Section 12.0
5. QI 1-PTN-2, Operations Organization
6. QI 1-PTN-3, Maintenance Organization
7. QI 1-PTN-5, Engineering Technical Support Organization
8. QI 1-PTN-6, Training Organization
9. NAP-406, On-Site Review Group
10. Miscellaneous Documents (i.e. e., PC/M, Correspondence)
11. QATR, A.2, Organization
12. Appendix E, Organization Charts, Quality Assurance Topical Report
13. Condition Report, CR 96-1047
14. Condition Report, CR 03-0647
15. Condition Report, CR 03-0989
16. Condition Report, CR 04-1155
17. Condition Report, CR 2007-37413
18. Condition Report, CR 07-40653 CA# 1

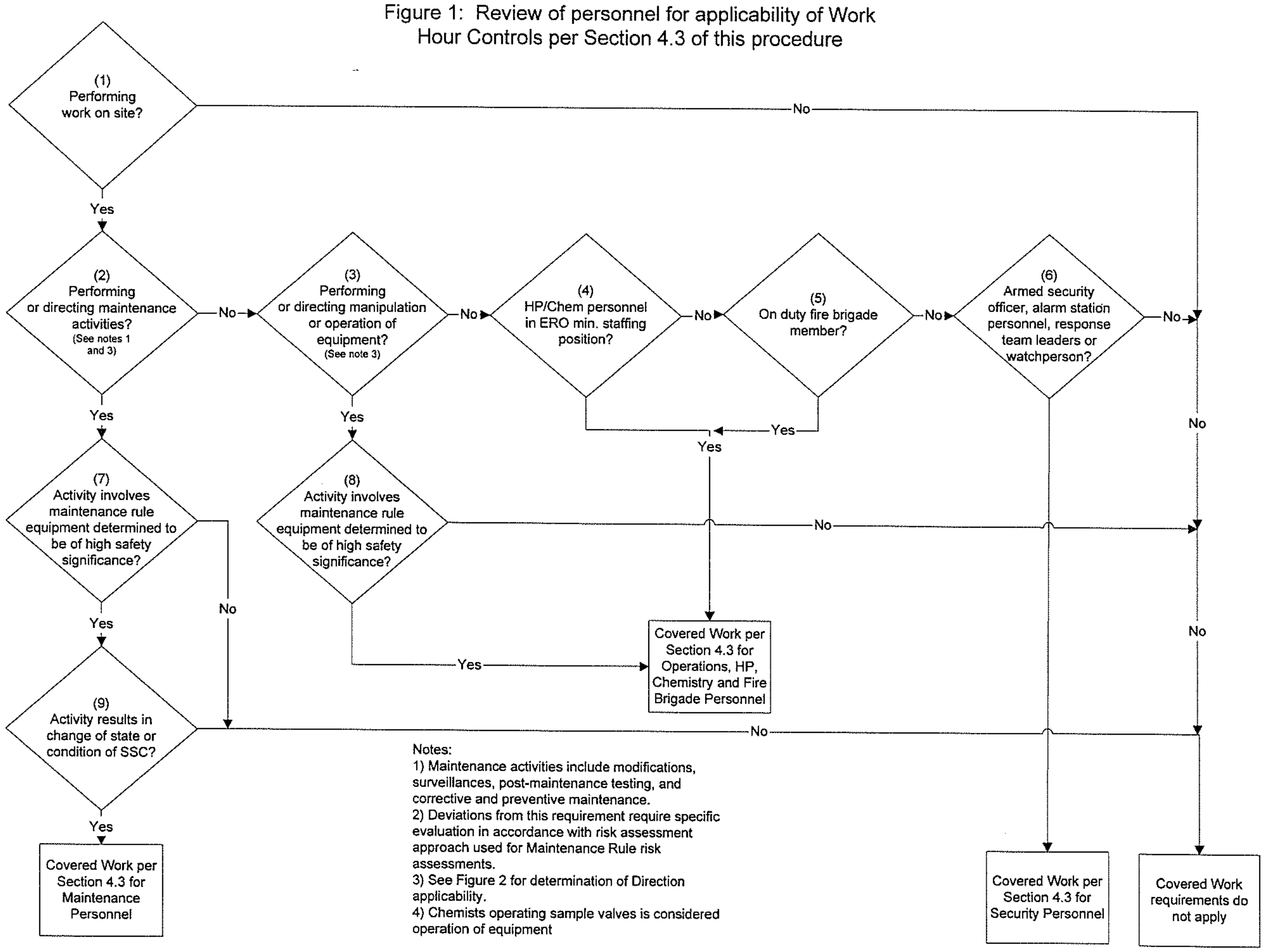
7.2 Commitments and/or CAPRs

1. L-97-291, Reply to Notice of Violation, NRC Inspection Report 97-11 (Section 4.4 Step 6)

2. PM-99-03-322, Overtime Tracking (Section 4.4 Step 6)

ATTACHMENT 1
GUIDELINES FOR COVERED WORK
(Page 1 of 3)

Figure 1: Review of personnel for applicability of Work Hour Controls per Section 4.3 of this procedure

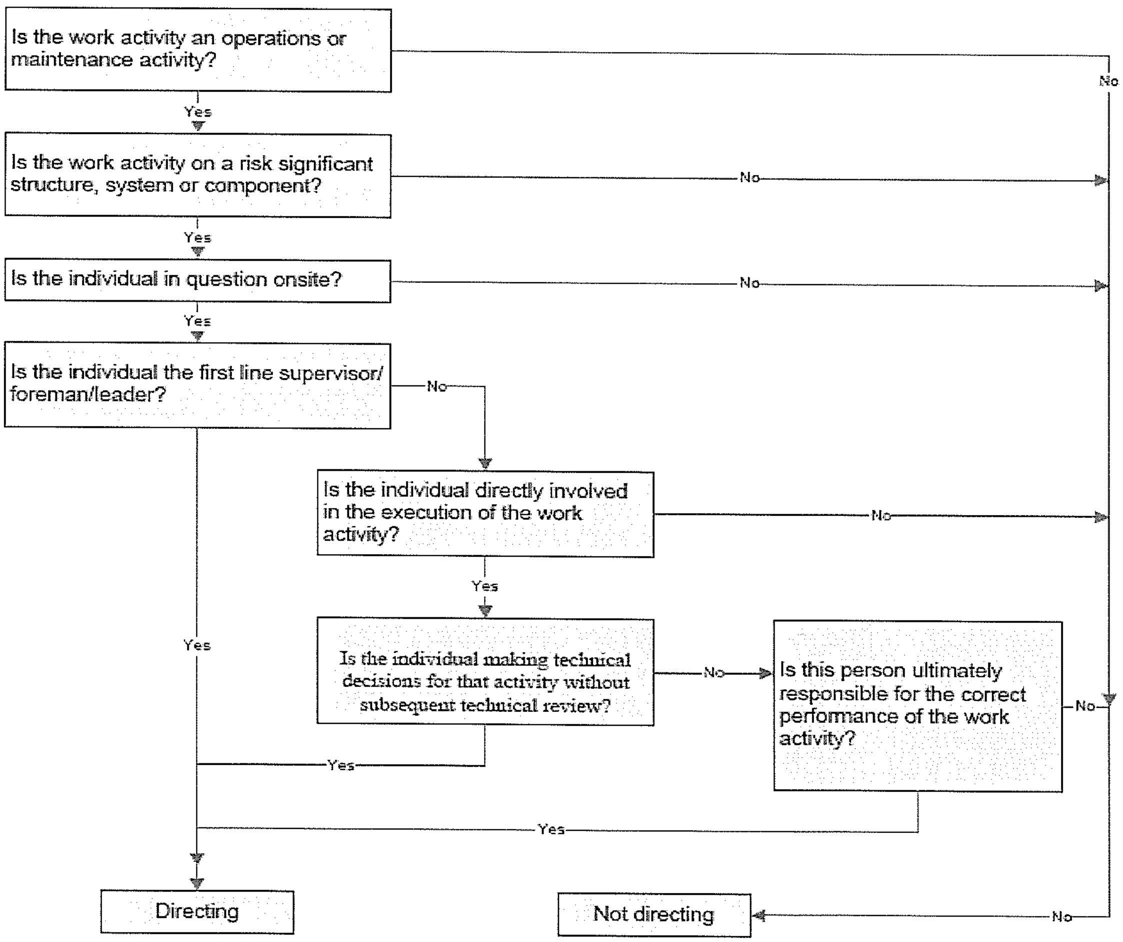


Notes:
1) Maintenance activities include modifications, surveillances, post-maintenance testing, and corrective and preventive maintenance.
2) Deviations from this requirement require specific evaluation in accordance with risk assessment approach used for Maintenance Rule risk assessments.
3) See Figure 2 for determination of Direction applicability.
4) Chemists operating sample valves is considered operation of equipment

ATTACHMENT 1
GUIDELINES FOR COVERED WORK
(Page 2 of 3)

Directing

The following guidance should be used when determining if an individual is directing an operations or maintenance activity. An affirmative answer suggests the activity may be considered directing:



ATTACHMENT 1
GUIDELINES FOR COVERED WORK
(Page 3 of 3)

The following tasks are examples generally considered NOT directing:

- Engineering tasks (e.g., check valve visual inspections, snubber bench testing, Motor-Operated Valve (MOV) Valve Operator Test Evaluation System (VOTES) trace evaluations, Air-Operated Valve (AOV) flow scan evaluations, NDE, ASME repair / replacement acceptance reviews, flow accelerated corrosion evaluations, In-Vessel Visual Inspection (IVVI) review and approval, Generic Letter 89-13 visual and work review)
- Supervision in the plant of the maintenance on a non-covered SSC
- Supervision at the second level of supervision Note: Position alone should not be a deciding factor and all criteria must be evaluated e.g. a Shift Manager is a second level supervisor but has the authority to direct Covered Work.
- Conducting Work Execution Center (WEC) documentation activities
- Writing a work procedure
- Preparing a work or modification package
- Review by senior management of work plans
- Training of personnel during which time the trainee is not operating or performing
- Providing recommendations from vendors and engineers on test performance, components and system operation, or other similar technical inputs
- Review and approval of documents
- Any work that is not operations or maintenance on high safety significant System, Subsystem or Component (SSC).
- Technical Staff providing only advice to control room staff, including non -licensed Shift Technical Advisors (STAs).

ATTACHMENT 2
INCIDENTAL DUTIES RECORD
(Page 1 of 1)

INCIDENTAL DUTIES RECORD
(Page 1 of 1)

Record all incidental duty time between the specified work periods below. Cumulative incidental duty time between each work period that does not total greater than 30 minutes may be discarded. For the purpose of calculating and accounting for work hours totaling greater than 30 minutes, reference section 4.1.1.5.

Record of duties performed by : ______________________________

End of previous work period: ____________ / ____________
Date Time

Start of next scheduled work period: ____________/ ____________
Date Time

Incidental Duty Performed	Start Date / Time	Completion Date / Time	Duration in Minutes
Total Duration			

The individual subject to this record shall contact the cognizant supervisor or designee to determine the time at which a return to work is permitted.

Incidental duties Start and Completion times entered into Fatigue Management software when software is utilized for tracking time.

By:______________________________ ____________________

Cognizant Supervisor Date / Time

ATTACHMENT 3
WAIVER REQUEST
(Page 1 of 2)

WAIVER REQUEST
(Page 1 of 2)

WAIVER FORM

Cognizant Supervisor

Name of Individual requiring Waiver

Q1
This deviation is required for work beginning________/______ and scheduled to complete _______/______ .
Date Time Date Time

Q2
This work period will deviate from the Work Hour Controls as follows:
Check all that apply (Upon approval, ensure schedule is updated):

	Greater than 16 hours in any 24 hour period
	Greater than 26 hours in any 48 hour period
	Greater than 72 hours in any 7 day (168 hours) period
	A break of less than 10 hours (excluding travel time)
	Less than a 34 hour break in any 216 hour period
	Minimum required days off - Outage REQUIRED DAYS OFF _____ days per_____________
	Minimum required days off - Online REQUIRED DAYS OFF _____ days per_____________

Q3 SCOPE OF WORK / BASIS FOR WAIVER

Enter the required position this work hour deviation is necessary to fill and describe the unusual circumstances that justify the extraordinary action to deviate from the Work Hour Limits.

___

___

___

Q4 FITNESS TO DEVIATE FROM WORK HOUR LIMITS

Person performing the face to face assessment is qualified to perform or oversee the work for which this Waiver is required? YES ☐ NO ☐ Comment ___________________________________

DAY		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Shift Schedule	Record D-Days, N-nights (12 or 10 hour shifts); D-Days, S-Swing or M - midnights (8 hour shift)														
Number of Hours Worked	Do not include shift turnover														
34 Hour Break	Check the boxes for the days containing the 34 hour break.														

ATTACHMENT 3
WAIVER REQUEST
(Page 2 of 2)

WAIVER REQUEST
(Page 2 of 2)

Based on the above hours worked is there potential for an increase in fatigue over consecutive sleep-wake periods? (has there been adequate opportunity for rest, was sleep restricted because of shift changes, have issues outside work restricted sleep opportunities) YES ☐ NO ☐ Comment ____________________

Based on face to face observation does this person appear to be fatigued? (appear intoxicated, yawning, tired legs, rubs face with hands often, poor communication, apathetic)

YES ☐ NO ☐ Comment ____________________

Based on responses to the above and the time of day for which this Waiver is being requested, is there reasonable assurance that the individual will be able to safely and competently perform duties during the additional work period for which the Waiver is to be granted? (Section 4.4.2)

YES ☐ NO ☐ Reason: ____________________

Are any controls and/or conditions required to be established in order for this person to perform work under this Waiver? Controls and conditions will include, but will not be limited to, (1) controls on the type of work to be performed (e.g. physical or mental, tedious or stimulating, individual or group, risk-significant or not), (2) the required level of supervision (continuous or intermittent) and other oversight (e.g. peer checks, independent verifications, quality assurance reviews, and operability checks), and (3) the need to implement fatigue countermeasures (e.g. rest breaks)

YES ☐ NO ☐ Controls: ____________________

______ / ______ ______ / ______
Supervisor or designee Sign / Print Date Time

______ / ______ ______ / ______
Individual requiring Waiver Sign / Print Date Time

Q5 APPROVAL

This Waiver is required to address conditions adverse to safety or security. Based on results of the face to face assessment this deviation from Work Hour Limits is approved.

______ / ______ ______ / ______
Plant General Manager or designee Sign / Print Date Time

Q6 SUPERVISOR CLOSEOUT

Time actually worked on this Waiver beginning ______ / ______ and completed ______ / ______
Date Time Date Time

☐ Waiver not needed?

☐ Fatigue Management software updated with time worked WHEN software is utilized for tracking time?

Individual performed satisfactorily? YES ☐ NO ☐ If NO, initiate a separate Condition Report.

Comments ____________________

______ / ______ ______ / ______
Supervisor or designee Sign / Print Date Time

ATTACHMENT 4
EXAMPLE WORK HOUR RECORD
(Page 1 of 1)

FPL / NextEra Energy Resources Contractors and Vendors 10 CFR 26.205 Work Hour Report

Work Hours shall be applied as required in NextEra Procedure AD-AA-101-1004, Work Hour Controls

Name	10 CFR 26 Subpart I Work Category (Ops, Mntc, RP, Chem, Sec)	Covered Work Y / N	Outage / Online	Date	Time In	Date	Time Out	Total Fatigue Rule hours for work period in accordance with AD-AA-101-1004
Doe, John (example)	RP	Y	Outage	3/12/09	0600	3/12/09	1930	13.5
Doe, John (example)	RP	N	Outage	3/13/09	0400	3/13/09	1800	14 - No deviation required, work performed not Covered Work
Doe, John (example)	RP	N	Outage	3/14/09	0600	3/14/09	1600	10
Doe, John (example)	RP	N	Outage	3/15/09	off	3/15/09	off	0
Doe, John (example)	RP	Y	Outage	3/16/09	1800	3/17/09	0530	11.5
Doe, John (example)	RP	N	Outage	3/17/09	1800	3/18/09	0530	11.5
Doe, John (example)	RP	Y	Outage	3/18/09	1800	3/19/09	1030	16.5 - FPL / NextEra Energy approved deviation on file

non - covered hours required to be tracked for 7 day period prior to Covered Work

ATTACHMENT 5

<u>WORK HOUR RECORD</u>

(Page 1 of 1)

FPL / NextEra Energy Resources Contractors and Vendors 10 CFR 26.205 Work Hour Report

Work Hours shall be applied as required in NextEra Procedure AD-AA-101-1004, Work Hour Controls

Name	10 CFR 26 Subpart I Work Category (Ops, Mntc, RP, Chem, Sec)	Covered Work Y / N	Outage / Online	Date	Time In	Date	Time Out	Total Fatigue Rule hours for work period in accordance with AD-AA-101-1004

non - covered hours required to be tracked for 7 day period prior to Covered Work

Facility:	Turkey Point	Task No:	01201013100
Task Title:	Prepare an ECO for 3A Component Cooling Water Pump	JPM No:	01201013103
K/A Reference:	G2.2.13 RO 4.1 SRO 4.3		
Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
Method of Testing:	Classroom		
Simulated Performance		Actual Performance	X

Classroom	X	Simulator		Plant	

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- The plant is in Mode 1.
- The 3D 4KV Bus is aligned to the 3A 4KV Bus.
- 3A Component Cooling Water Pump has developed a bearing vibration problem.
- The computer is unavailable for generating ECOs.
- Operations/Maintenance has requested an "ECO" tagout be prepared to facilitate motor and bearing replacement of the 3A Component Water Pump.

Initiating Cue:

- The Shift Manager has directed you to generate a clearance (ECO) for the 3A CCW Pump to facilitate motor and bearing replacement.
- Complete only the Tag Hang List for ECO.
- For Tag Serial Numbers, use sequential numbers, starting with Tag No. 1.

Task Standard:

The Tag Hang List for ECO is completed to the following criteria:

- All steps marked as critical on the answer key are included on the applicant's form.
- The step for rackout of breaker 3AA12 precedes all other steps requiring manipulation of valves.
- The correct positions of all components on critical steps are included on the Applicant's form.
- At least one vent path and one drain path are properly identified and tagged.

The following listed items are not critical to completion of this ECO:

- The order of steps following the rack out step of 3AA12.
- Equipment Description and Equipment Location wording do not have to exactly match the answer key.

Note that valves with "Danger" tags that are not marked critical on the answer key may be included by the Applicant to provide vent and drain paths in preparation for maintenance.

Required Materials:

- Plant Drawings 5613-M-3030 - Sheets 1 through 5, *Component Cooling Water System*
- Plant Drawing 5610-T-E-1591, Sheet 1, *Operating Diagram Electric Distribution*
- 0-ADM-212.1, *Operations In-Plant Equipment Clearance Orders*
- OP-AA-101-1000,Clearance and Tagging
- 3-NOP-030, *Component Cooling Water System*
- ODI-CO-004, *Shift Operations Management System (eSOMS)*
- PTN Breaker List for Lighting Panel 34A (5610-E-855, Sheet 44, Pages 1-6)
- Blank Tag Hang List for ECO
- Pencil

General References:

- PTN Breaker Book
- ECO 3-10-06-006

Time Critical Task: No

Validation Time: 1 hour

SIMULATOR SETUP

NOT Applicable.

Denote critical steps with a check mark (√)

Start Time ______

STEP 1	Obtain required materials.	SAT UNSAT
STANDARD	Applicant may request a copy of the following: • Plant Drawings 5613-M-3030 - Sheets 1 through 5, Component Cooling Water System • Plant Drawing 5610-T-E-1591, Sheet 1, *Operating Diagram Electric Distribution* • 0-ADM-212.1, Operations In-Plant Equipment Clearance Orders • OP-AA-101-1000, Clearance and tagging • 3-NOP-030, Component Cooling Water System • ODI-CO-004, *Shift Operations Management System (eSOMS)* • PTN Breaker List • Blank Tag Hang List For ECO	
CUE	Provide the Applicant with a copy of information when requested: • Plant Drawings 5613-M-3030 - Sheets 1 through 5, *Component Cooling Water System* • Plant Drawing 5610-T-E-1591, Sheet 1, *Operating Diagram Electric Distribution* • 0-ADM-212.1, *Operations In-Plant Equipment Clearance Orders* • *OP-AA-101-1000, Clearances and tagging* • 3-NOP-030, *Component Cooling Water System* • ODI-CO-004, *Shift Operations Management System (eSOMS)* • PTN Breaker List for Lighting Panel 34A (5610-E-855, Sheet 44, Pages 1-6) • Blank Tag Hang List For ECO	

STEP 2 √	Enter **"3P211A-CONTROL SWITCH"** on Tag Hang List for ECO.	SAT / UNSAT
STANDARD	1. **Enters "3P211A-CONTROL SWITCH**" in *Equipment ID* Column. 2. Enters "**3A CCW PP CONTROL SWITCH VPB 3C05**" in *Equipment Description* column. 3. Enters "**CONTROL ROOM VERTICAL PANEL**" in *Equipment Location* column. 4. Enters " - " in *Tag Serial Number* column. 5. **Enters "INFO TAG" in *Tag Type* column.** 6. Enters a value in *Place Seq*. column. 7. **Enters "HANG INFO TAG" in *Place Config*. Column.**	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** Standards 2, 3, 4 and 6 are not critical to this Step. **Bolded steps are critical steps.** Entries on this line may be done in any order. The exact wording shown is not important.	

STEP 3 √	Enter breaker "**3AA12**" on Tag Hang List for ECO.	SAT UNSAT
STANDARD	**1. Enters "3AA12" in *Equipment ID* Column.** 2. Enters "4.16KV BKR TO CCW PUMP A (P211A)" in *Equipment Description* column. 3. Enters "368 _4160 V SWITCHGEAR ROOM" in *Equipment Location* column. 4. Enters "1" in *Tag Serial Number* column. 5. **Enters "DANGER" in *Tag Type* column**. **6. Enters a value in *Place Seq.* column.** **7.** Enters "RACKED OUT PLUS" in *Place Config.* Column.	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** Standards 2, 3 and 4 ,and 7 are not critical to this Step. **Standard 6 is only critical in that sequence should show breaker 3AA12 racked out before any ECO boundary valves are closed.** For Standard 7, the "plus" is not critical to this step, as it is not required for safety. Entries on this line may be done in any order. The exact wording shown is not important.	

STEP 4 √	Enter breaker **"LP34A-47"** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	**1. Enters "LP34A-47" in *Equipment ID* Column.** **2. Enters "MTR HTR- OMPONENT COOLING WATER PUMP 3A (3P211A)" in *Equipment Description* column.** **3. Enters "368 _4160 V SWITCHGEAR ROOM" in *Equipment Location* column.** **4. Enters "2" in *Tag Serial Number* column.** **5. Enters "DANGER" in *Tag Type* column.** 6. Enters a value in *Place Seq*. column. **7.** Enters **"OFF PLUS"** in *Place Config*. Column.	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** **Standards 1, 2, 3, 4, 5 are critical.** Entries on this line may be done in any order. The exact wording shown is not important.	

STEP 5 √	Enter valve **"3-703A"** on Tag Hang List for ECO	SAT UNSAT
STANDARD	**1. Enters "3-703A" in *Equipment ID* Column.** 2. Enters **"STOP VLV FOR CCW PUMP A DISCH"** in *Equipment Description* column. 3. Enters **"202 _COMPONENT COOLING PUMP ROOM"** in *Equipment Location* column. 4. Enters **"3"** in *Tag Serial Number* column. **5. Enters "DANGER" in *Tag Type* column.** **6. Enters value in *Place Seq.* column.** 7. Enters **"CLOSE PLUS"** in *Place Config*. Column.	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** Standards 2, 3 and 4 are not critical to this Step. For Standard 7, the "plus" is not critical to this step, as it is not required for safety. Entries on this line may be done in any order. The exact wording shown is not important. **Standard 6 is only critical in that sequence must be after step 3 (rack out breaker) and before step 6 (open vent valve).**	

STEP 6 √	Enter valve **"3-701A"** on Tag Hang List for ECO	SAT UNSAT
STANDARD	**1. Enters "3-701A" in *Equipment ID* Column.** 2. Enters **"ISO VLV TO CCW PUMP A INLET"** in *Equipment Description* column. 3. Enters **"202 _COMPONENT COOLING PUMP ROOM"** in *Equipment Location* column. 4. Enters **"4"** in *Tag Serial Number* column. **5. Enters "DANGER" in *Tag Type* column.** **6. Enters value in *Place Seq.* column.** 7. Enters **"CLOSE PLUS"** in *Place Config*. Column.	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** Standards 2, 3 and 4 are not critical to this Step. For Standard 7, the "plus" is not critical to this step, as it is not required for safety. Entries on this line may be done in any order. The exact wording shown is not important. **Standard 6 is only critical in that sequence must be after step 3 (rack out breaker) and before step 9 (open vent valve).**	

STEP 7	Enter **"3-703F-HOSE"** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	1. Enters **"3-703F-HOSE"** in *Equipment ID* Column. 2. Enters **"VENT VLV ON CCW PUMP A CASING HOSE"** in *Equipment Description* column. 3. Enters **"202 _COMPONENT COOLING PUMP ROOM"** in *Equipment Location* column. 4. Enters **"-"** in *Tag Serial Number* column. 5. Enters **"No Tag"** in *Tag Type* column. 6. Enters value in *Place Seq.* column. 7. Enters **"REMOVE CAP AND INSTALL HOSE"** in *Place Config.* Column. (Note: Initially route hose for collection of contaminated molybated water until vented.)	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES**: This step is not critical, as it may be included on Restoration Steps, which are not required for this JPM. For Standard 5, also accept "Danger Tag." Entries on this line may be done in any order. The exact wording shown is not important. Standard 6 is only critical in that sequence must be after step 3 (rack out breaker) and before step 8 (open vent valve). Additional guidance for removing and installing hose is not critical to performance of the JPM.	

STEP 8	Enter valve **"3-703F" Throttle** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	1. Enters "3-703F" in *Equipment ID* Column. 2. Enters "VENT VLV ON CCW PUMP A CASING HOSE" in *Equipment Description* column. 3. Enters "202 _COMPONENT COOLING PUMP ROOM" in *Equipment Location* column. 4. Enters **"-"** in *Tag Serial Number* column. 5. Enters "DANGER" in *Tag Type* column. **6.** Enters value in *Place Seq*. column. 7. Enters **"**Throttle" in *Place Config*. Column. (Note: Do not exceed drain system capacity. Use barrels for draining.)	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** Standards are not critical except noted below. **For Standard 5, also accept "No Tag." If "No Tag" is entered, this will change subsequent Tag Serial Numbers.** Applicants may add a line entry for "throttling" this valve (to control venting process) prior to opening the valve fully. Entries on this line may be done in any order. The exact wording shown is not important. **Standard 6 is only critical in that sequence must be after step 5 (discharge valve) and step 6 (inlet valve).** Additional guidance in item 7 is not critical to this JPM.	

STEP 9	Enter valve **"3-703F" OPEN** on Tag Hang List for ECO.
STANDARD	1. Enters "3-703F" in *Equipment ID* Column. 2. Enters "VENT VLV ON CCW PUMP A CASING HOSE" in *Equipment Description* column. 3. Enters "202 _COMPONENT COOLING PUMP ROOM" in *Equipment Location* column. 4. Enters "-" in *Tag Serial Number* column. **5. Enters "DANGER" or No Tag in *Tag Type* column.** 6. Enters value in *Place Seq*. column. 7. Enters "OPEN" in *Place Config*. Column.
CUE	
COMMENT	
NOTE	**EVALUATOR NOTES:** Only critical steps relates to sequencing of steps noted below. **For Standard 5, also accept "No Tag." If "No Tag" is entered, this will change subsequent Tag Serial Numbers.** Applicants may add a line entry for "throttling" this valve (to control venting process) prior to opening the valve fully. Entries on this line may be done in any order. The exact wording shown is not important. **Standard 6 is only critical in that sequence must be after step 5 (discharge valve) and step 6 (inlet valve).**

STEP 10	Enter **"3-702D-HOSE"** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	1. Enters "3-702D-HOSE" in *Equipment ID* Column. 2. Enters "DRAIN VLV FOR CCW PUMP A DISCH" in *Equipment Description* column. 3. Enters "202 _COMPONENT COOLING PUMP ROOM" in *Equipment Location* column. 4. Enters "-" in *Tag Serial Number* column. 5. Enters "No Tag" in *Tag Type* column. 6. Enters value in *Place Seq.* column. 7. Enters "REMOVE CAP AND INSTALL HOSE" in *Place Config.* Column. (Note: route hose to barrel for collection of contaminated, molybated water.)	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** This step is not critical, as it may be included on Restorations Steps, which are not required for this JPM. **For Standard 5, also accept "Danger Tag. Or No Tag" If "Danger Tag" is entered, this will change subsequent Tag Serial Numbers.** Entries on this line may be done in any order. The exact wording shown is not important.	

STEP 11	Enter valve **"3-702D"-Throttle** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	1. Enters "3-702D" in *Equipment ID* Column. 2. Enters "DRAIN VLV FOR CCW PUMP A DISCH" in *Equipment Description* column. 3. Enters "202 _COMPONENT COOLING PUMP ROOM" in *Equipment Location* column. 4. Enters "-" in *Tag Serial Number* column. 5. Enters "No Tag in *Tag Type* column. 6. Enters value in *Place Seq*. column. 7. Enters "THROTTLE" in *Place Config*. Column. (Note: Do not exceed system capacity. Use barrels for draining.)	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** No critical steps are associated for this step except the sequencing noted below. For Standard 5, also accept "No Tag." If "No Tag" is entered, this will change Tag Serial Numbers. Applicants may add a line entry for "throttling" this valve (to control venting process) prior to opening the valve fully. Entries on this line may be done in any order. The exact wording shown is not important. It is critical that one vent path be danger tagged open. Either steps 9 & 10 <u>OR</u> 11 & 12 must be performed to establish a vent path. Standard 6 is only critical in that sequence must reflect that this step must occur after steps 2 through 8 have been completed.	

STEP 12	Enter valve **"3-702D"-OPEN** on Tag Hang List for ECO.	SAT UNSAT
STANDARD	1. Enters "3-702D" in *Equipment ID* Column. 2. Enters "DRAIN VLV FOR CCW PUMP A DISCH" in *Equipment Description* column. 3. Enters "202 _COMPONENT COOLING PUMP ROOM" in *Equipment Location* column. 4. Enters "-" in *Tag Serial Number* column. 5. Enters "No Tag in *Tag Type* column. 6. Enters value in *Place Seq.* column. 7. Enters "THROTTLE" in *Place Config.* Column.	
CUE		
COMMENT		
NOTE	**EVALUATOR NOTES:** No critical steps are associated for this step except the sequencing noted below. For Standard 5, also accept "No Tag." If "No Tag" is entered, this will change Tag Serial Numbers. Entries on this line may be done in any order... The exact wording shown is not important. **It is critical that one vent path or one drain path be tagged open.** **See key Attached.**	

Stop Time ________

Verification of Completion:

Job Performance Measure No.	01201013103
Examinee's Name:	
Examiner's Name:	
Date Performed:	
Facility Evaluator:	
Number of Attempts:	
Time to Complete:	

Question Documentation:

Question:

____

____

____

____

____

Response:

____

____

____

____

____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: ______________________ __________

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- The plant is in Mode 1.
- The 3D 4KV Bus is aligned to the 3A 4KV Bus.
- 3A Component Cooling Water Pump has developed a bearing vibration problem.
- The computer is unavailable for generating ECOs.
- Operations/Maintenance has requested an "ECO" tagout be prepared to facilitate motor and bearing replacement of the 3A Component Water Pump.

Initiating Cue:

- The Shift Manager has directed you to generate a clearance (ECO) for the 3A CCW Pump to facilitate motor and bearing replacement.
- Complete only the Tag Hang List for ECO.
- For Tag Serial Numbers, use sequential numbers, starting with Tag No. 1.

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- The plant is in Mode 1.
- The 3D 4KV Bus is aligned to the 3A 4KV Bus.
- 3A Component Cooling Water Pump has developed a bearing vibration problem.
- The computer is unavailable for generating ECOs.
- Operations/Maintenance has requested an "ECO" tagout be prepared to facilitate motor and bearing replacement of the 3A Component Water Pump.

Initiating Cue:

- The Shift Manager has directed you to generate a clearance (ECO) for the 3A CCW Pump to facilitate motor and bearing replacement.
- Complete only the Tag Hang List for ECO.
- For Tag Serial Numbers, use sequential numbers, starting with Tag No. 1.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

ECO FORM - ANSWER KEY - 2011 PTN NRC Exam (RO) A.2

TAG HANG LIST FOR ECO

Equipment ID	Equipment Description	Equipment Location	Tag Serial Number	Tag Type	Place Seq	Place Config	1st	2nd	Notes
3P211A-CONTROL SWITCH	**3A CCW PP CONTROL SWITCH VPB 3C05**	CONTROL ROOM VERTICAL PANEL		**INFO TAG**	1	HANG INFO TAG			Critical step and sequence
3AA12	**4.16KV BKR TO CCW PUMP A (P211A)**	368 _4160 V SWITCHGEAR ROOM	**1**	**DANGER**	**2**	RACKED OUT PLUS			Critical Step and sequence
LP34A-47	**MTR HTR-COMPONENT COOLING WATER PUMP 3A (3P211A)**	368 _4160 V SWITCHGEAR ROOM	**2**	**DANGER**	**3**	OFF PLUS			Critical Step and sequence
3-703A	**STOP VLV FOR CCW PUMP A DISCH**	202 _COMPONENT COOLING PUMP ROOM	**3**	**DANGER**	**4**	CLOSE PLUS			Critical step and sequence
3-701A	**ISO VLV TO CCW PUMP A INLET**	202 _COMPONENT COOLING PUMP ROOM	**4**	**DANGER**	**5**	CLOSE PLUS			Critical step and sequence
3-703F-HOSE	VENT VLV ON CCW PUMP A CASING HOSE	202 _COMPONENT COOLING PUMP ROOM		No Tag	6	REMOVE CAP AND INSTALL HOSE Initially route hose for collection of contaminated molybated water until vented.			ONLY CRITICAL That one drain or vent path is installed. Sequence is not critical
3-703F-THROTTLE	VENT VLV ON CCW PUMP A CASING HOSE	202 _COMPONENT COOLING PUMP ROOM		No Tag	7	Throttle Do Not Exceed drain system capacity, Use Barrels for draining.			
3-703F	VENT VLV ON CCW PUMP A CASING	202 _COMPONENT COOLING PUMP ROOM		DANGER Or No Tag	8	OPEN			

Equipment ID	Equipment Description	Equipment Location	Tag Serial Number	Tag Type	Place Seq	Place Config	1st	2nd	Notes
3-702D-HOSE	DRAIN VLV FOR CCW PUMP A DISCH	202 _COMPONENT COOLING PUMP ROOM		No Tag	9	REMOVE CAP AND INSTALL HOSE Route hose to barrel for collection of contaminated,, molybated water			
3-702D-THROTTLE	DRAIN VLV FOR CCW PUMP A DISCH	202 _COMPONENT COOLING PUMP ROOM		No Tag	10	THROTTLE Do not exceed system capacity. Use barrels for draining.			
3-702D	DRAIN VLV FOR CCW PUMP A DISCH	202 _COMPONENT COOLING PUMP ROOM		DANGER Or No Tag	11	OPEN			

*** At least one vent path (***) or one drain path (***) must be properly identified. Any vent or drain path is allowable and is critical.**

Florida Power & Light Company

Turkey Point Nuclear Plant

This procedure may be affected by a T.C. (Temporary Change) Verify information prior to use.
Date verified________ Initials________

0-ADM-212.1

Title:

Operations In-Plant Equipment Clearance Orders

(Information Use)

Responsible Department:	Operations/Safety
Revision Number:	2A
Issue Date:	4/25/11
Revision Approval Date:	2/25/11

***ARs** 1613425, 1618785, 1611997*
***PCRs** 08-4655, 09-1340, 09-1604, 09-0202, 09-3933, 10-0865, 10-1331, 10-1418, 10-1003*

W97:JE/nw/nw/cls

LIST OF EFFECTIVE PAGES
(Rev. 2A)

Page	Revision Date	Page	Revision Date	Page	Revision Date
1	02/25/11	25	05/05/09	49	02/05/11
2	02/25/11	26	11/24/08	50	02/05/11
3	02/05/11	27	02/05/11	51	02/05/11
4	02/05/11	28	11/24/08	52	02/05/11
5	05/29/09	29	04/09/10	53	02/05/11
6	11/24/08	30	02/05/11	54	02/05/11
7	11/24/08	31	02/05/11	55	02/05/11
8	02/25/11	32	02/05/11	56	02/05/11
9	11/24/08	33	02/05/11	57	02/05/11
10	04/28/10	34	02/17/11	58	02/05/11
11	02/25/11	35	02/05/11	59	02/05/11
12	02/05/11	36	02/05/11	60	02/05/11
13	02/05/11	37	02/05/11	61	02/05/11
14	02/05/11	38	02/05/11	62	02/05/11
15	02/05/11	39	02/05/11	63	02/05/11
16	02/05/11	40	02/05/11	64	02/05/11
17	11/24/08	41	02/05/11	65	02/05/11
18	04/09/10	42	02/05/11	66	02/05/11
19	04/09/10	43	02/05/11	67	02/05/11
20	02/05/11	44	02/05/11	68	02/05/11
21	11/24/08	45	02/05/11	69	02/05/11
22	11/24/08	46	02/05/11	70	02/05/11
23	02/05/11	47	02/05/11	71	02/05/11
24	11/24/08	48	02/05/11	72	02/05/11

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

1.0 PURPOSE

1.1 This procedure provides guidance in the use of Equipment Clearance Orders (ECO) for the isolation of equipment to protect personnel from energy sources, for the use of other controls when isolation is NOT possible and for administrative control of equipment.

NOTE

Compliance with this procedure provides a safe working environment for personnel and equipment. Changes to this procedure shall be reviewed by the Nuclear Division Joint Safety Committee (NJSC).

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Quality Instructions/Plant Procedures

1. QI 3-PTN-1, Design Control
2. QI 14-PTN-1, Inspection, Test and Operating Status
3. 0-ADM-016.3, Fire Protection Impairments
4. 0-ADM-031, Independent Verification
5. 0-ADM-033, PTN Industrial Safety Program
6. 0-ADM-200, Conduct of Operations
7. 0-ADM-205, Administrative Control of Valves, Locks and Switches
8. 0-ADM-212, In-Plant Equipment Clearance Orders
9. 0-ADM-213, Tech Spec Related Equipment Out-of-Service Logbook
10. 0-ADM-217, Conduct of Infrequently Performed Tests and Evolutions
11. 0-ADM-701, Control of Plant Work Activities
12. 0-GME-005.1, 4.16KV Equipment Grounding and Testing
13. 0-PME-005.6, 4160V A and B Bus Inspection and Cleaning
14. 0-PME-090.1, Power Generator Grounding
15. 0-OSP-200.1, Schedule of Plant Checks and Surveillances
16. ADM-09.08, ST. Lucie Plant Operations In Plant Clearance Orders

2.1.2 Regulatory Guidelines

1. INPO Good Practice 87-002, Tagging Procedures for the Protection of Personnel, Components, and Systems
2. NUREG 0737
3. 10 CFR 50 Appendix B, Criterion XIV, Inspection, Test, and Operating Status
4. OSHA Standard 29 CFR 1910.269, Electrical Power Generation

2.1.3 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. FPL Safe Work Practices Book
2. CR-96-1106, Control of Excess Material Inside Containment (PTN-ENG-SENS-96-077)
3. PNSC 96-217, 10 CFR 50.59, Safety Screening Format
4. CR-00-0910, Human Error Related Events

2.2 Records Required

2.2.1 Completed copies of the below listed items constitute Quality Assurance records and shall be transmitted to QA Records for retention in accordance with Quality Assurance Record Program requirements:

1. None

2.2.2 Completed copies of the Nuclear Joint Safety Committee (NJSC) Review Form should be routed to Safety Department for record keeping.

2.3 Commitment Documents

2.3.1 NIR 88-07, Failure to Maintain Clearance on Non- Seismic Gauges

2.3.2 PTN-PMN-88-313, CAR 88-016 Dated June 21, 1988, Temporary Lifts Being Abused

2.3.3 PTN-PMN-88-361, CAR 88-025 Dated July 21, 1988

2.3.4 FOP 92-039, Both Shutdown Cooling Relief Valves Found Disabled, PSL Problem Report (PR/IHE-92-010)

2.3.5 NIR 89-45 C/A 4, C: Administrative Controls for Hose Connections Upon Closure of Associated Clearance, CTRAC 89-1552-34

2.3.6 NIR 94-01, USNRC Resident Inspector's Monthly Report

2.3.7 QAO-PTN-94-008, Inadequate Equipment Administrative Control for Work on Flux Mapper Guide Tube - RCS Non-Isolable Integrity Breach

2.3.8 OSHA STANDARD 29 CFR 1910.269, Electric Power Generation, Transmission and Distribution; Electrical Protective Equipment; Final Rule

2.3.9 PTN-ENG-SEMS-96-070, Biocide Treatment of Closed Cooling Water Systems

2.3.10 LER 2003-005-00, Disabling Both Auxiliary Feedwater Trains Inadvertently During Mode 3

3.0 RESPONSIBILITIES

3.1 Operations Manager

3.1.1 Approves the hanging of ECO tags in the containment during Modes 1 and 2. [Commitment - Step 2.3.3]

3.2 Assistant Operations Manager

3.2.1 Acts on the results of the periodic ECO review.

3.3 Senior Reactor Operator (SRO)

3.3.1 Verifies the adequacy of ECO boundaries.

3.3.2 Approves review of all ECOs.

3.3.3 Authorizes all ECOs.

3.3.4 Approves ECO boundary modifications.

3.3.5 Ensures adherence to Technical Specification requirements for equipment operability, limiting conditions for operation, equipment redundancy, surveillance testing, and containment integrity.

3.3.6 Approves ECO revisions and verifies boundary modification is not required.

NOTE

The System Engineer may be consulted to determine if execution of an ECO will result in the plant being operated in a condition other than described in the UFSAR.

3.3.7 Determines if a 10 CFR 50.59 evaluation is needed in accordance with ECO in Effect Longer Than 60 Days (similar to Attachment 3).

3.3.8 When issuing or releasing an ECO, ensures applicable valves, locks, and switches under administrative control are properly denoted on the order (i.e., designated LOCKED OPEN or LOCKED CLOSED) in accordance with 0-ADM-205, Administrative Control of Valves, Locks and Switches.

3.3.9 Directs Reactor operator or qualified operator to prepare and execute ECOs.

3.3.10 Resolves ECO discrepancies in the field.

3.3.11 Ensures the person issued an ECO is on the authorized list.

3.3.12 Directs operators to execute ECOs.

3.3.13 Verifies ECO boundary is adequate for attached work orders and prior to attaching new work orders or executing boundary mods / revisions.

3.3.14 Directs the writing of ECOs.

3.3.15 Supports the Plan of the Day (POD) ECO List.

3.3.16 Authorizes and reviews the realignment of ECOs that have been released.

3.3.17 Ensures that operators are briefed on the purpose of the ECO and conditions that should be established inside the boundary for safe performance of work.

3.4 Shift Manager (SM)

3.4.1 Performs all duties under Senior Reactor Operators (SRO).

3.4.2 Notifies the Unit Supervisor and Reactor Operator of ECOs affecting Technical Specification, safety related, risk significant or in-service systems during an outage.

3.4.3 Reviews all ECOs active for greater than 30 days.

3.5 Unit Supervisor (US)

3.5.1 Performs all duties under Senior Reactor Operator (SRO).

3.5.2 Reviews Temporary System Alterations (TSA) for affect on ECO boundaries.

3.5.3 When an ECO is executed or released, updates the Equipment Out-of-Service Log (EOOS).

3.5.4 If a conflict is identified between computerized clearance system and the hard copy of the ECO, directs an investigation.

CAUTION

The TPCW System, CCW System, EDG Cooling Water Systems, and the Chilled Water Systems for the 4160/480 Switchgear Rooms, Vital Electrical Equipment Room, Computer Room, and Cable Spreading Room may contain biocides that present a personnel safety or chemical release hazard.
[Commitment - Step 2.3.9]

3.5.5 Obtains verification from Chemistry that NO biocide hazard exists prior to issuing an ECO on the TPCW System, CCW System, EDG Cooling Water Systems, or one of the Chilled Water Systems for the 4160/480 Switchgear Rooms, Vital Electrical Equipment Room, Computer Room, or Cable Spreading Room that require the draining of liquid from the system.
[Commitment – Step 2.3.9]

3.6 Work Control Center Supervisor (WCCS)

3.6.1 Performs all duties under Senior Reactor Operators (SRO).

3.6.2 Performs all duties under Unit Supervisor.

3.6.3 Reviews ECOs.

3.7 Nuclear Watch Engineer/Field Supervisor

3.7.1 Coordinates ECO activities outside the Control Room.

3.7.2 Performs ECO activities delegated by the SM/US.

3.8 Reactor Operator (RO) or Authorized Operator

3.8.1 Ensures the person issued an ECO is on the authorized list.

3.8.2 Researches ECO boundaries.

3.8.3 Writes Master ECOs.

3.8.4 Writes ECOs, also includes the restoration position of the components using documents such as prints, procedures, and attachments.

3.8.5 Directs operators to execute ECOs.

3.8.6 Executes ECOs for equipment they are qualified to operate.

3.8.7 Briefs operators on the following:

1. The purpose of an ECO to be executed.
2. The conditions that should be established within the ECO boundary for safe performance of work (non-outage).

3.8.8 Reviews the ECO to verify proper alignment of all components within the ECO boundary upon release.

3.8.9 Ensures computerized database is updated for all ECO status changes and step manipulations via boundary modifications.

3.8.10 When issuing or releasing an ECO, ensures applicable valves, locks, and switches under administrative control are properly denoted on the order (i.e., designated LOCKED OPEN or LOCKED CLOSED) in accordance with 0-ADM-205, Administrative Control of Valves, Locks, and Switches.

3.9 Qualified Operator

3.9.1 Executes ECOs as written and in the sequence detailed.

3.9.2 Performs ECO activities delegated by the SM/US/WCCS/NWE/FS/SRO.

3.10 Shift Technical Advisor

3.10.1 Assists SM/US/WCCS in determining if a 10 CFR 50.59 Applicability Determination/Screening/Evaluation is needed prior to authorizing an ECO.

3.10.2 If an ECO has been in effect for more than 60 days AND a 10 CFR 50.59 Applicability Determination / Screening has NOT been previously performed, ensures a 10 CFR 50.59, Applicability Determination / Screening review of the ECOs is performed in accordance with 0-ADM-104, 10 CFR 50.59 Applicability / Screening Reviews.

3.10.3 If the Applicability Determination / Screening review identifies a 10 CFR 50.59 evaluation is required, a Condition Report should be generated to address the condition.

3.11 Safety Supervisor

3.11.1 Ensure that an annual evaluation is conducted and documented to verify plant personnel that use this procedure are trained in the purpose and use of this procedure.

3.11.2 Results of the annual evaluations shall be provided to the Training Manager for incorporation into the annual training of the ECO process.

3.12 Training Manager

3.12.1 Provides initial training on this procedure for all employees who write, execute, or release ECOs.

3.12.2 Provides pre-implementation training on this procedure whenever there is a change in the procedure which affects safety.

3.12.3 Provides annual training on this procedure.

3.13 Chemistry Department Supervisor

NOTE

The determination that biocides are NOT present in the system may be determined by the system history (no biocides have been added), previously obtained acceptable sample results (no biocides have been added since last acceptable sample), or by determining current samples do NOT contain biocides above acceptable levels (biocides have been added to the system and a previous sample has shown acceptable concentrations of biocides needed for personnel safety or liquid releases). [Commitment - Step 2.3.9]

3.13.1 Upon request from the US or WCCS, determines if a biocide personnel safety or release hazard exists prior to the authorization of an ECO.

3.13.2 Notifies the US or WCCS of the results of the biocide determination and whether or not the system is safe for draining.
[Commitment - Step 2.3.9]

3.14 Operations Outage Shift Director

3.14.1 Approves the attachment of Outage work to existing ECOs and the hanging of outage ECOs after the start of the outage. The Owner of the Work Order shall be notified of the addition.

3.14.2 Directs outage ECOs under the direction of the SM.

3.14.3 Notifies the SM of all ECOs affecting Tech Spec, Safety Related, Risk Significant, or in-service system.
[Commitment - Step 2.3.9]

3.15 Nuclear Joint Safety Committee (NJSC0

3.15.1 The Nuclear Joint Safety Committee is responsible for reviewing and approving exceptions to the guidance of this procedure on a case-by-case basis, prior to implementation.

3.16 Lead Maintenance Discipline (LMD) Reviewer

3.16.1 Responsible for reviewing the ECO for a work order assigned to their group. If possible the LMD reviewer should be the individual who will be the ECO Owner.

3.16.2 The LMD reviewer shall:

1. Provide an independent review of the Clearance.
2. Verify that a safe work boundary has been prepared, using available references and/or walkdowns.
3. Specifying any unique requirements (i.e., Component prepositioning, etc.) needed in the ECO to place the work in a safe condition.
4. Verify the Work Order Task(s) is assigned to the Clearance.
5. Review the information provided in the Clearance Detail tab for descriptions, purpose, hazards, and sequencing instructions.
6. Document approval for their assigned Work Orders / Tasks by signing as 2nd verifier under the Work Order Task tab.

4.0 DEFINITIONS

4.1 Authorized Operator - An operator authorized to perform tasks associated with ECOs. This person shall be authorized by the Assistant Operations Manager or designee and shall have completed required ECO training.

4.2 Bus Outage Tag – A device or method that allows the Bus Outage Clearance ECO jurisdiction over the individual ECO isolation tags at breakers. Information is provided at the individual breakers to inform holders that the electrical isolation for individual clearances is provided by the Bus Clearance.

4.3 Concurrent Verification (CV) – Concurrent Verification is the verification of operations, testing, and maintenance activities that is performed concurrent with the activity by a second individual. CV is a preferred alternative to an Independent Verification where an IV is impractical or where immediate potential adverse affects to the plant would occur if the component were incorrectly positioned. CV incorporates and depends upon good three-way communication and peer checking. Instances where CV would be preferred to an IV include but are not limited to, throttling a valve and testing, calibrations, or lineups that are done utilizing the procedure in the **reader/doer** mode.

4.4 ECO Boundary Modification - A change that expands or reduces an existing clearance boundary to facilitate maintenance or testing.

4.5 ECO Boundary Modification Form - A form used to list the proposed boundary changes and to document the approval to perform these changes.

4.6 ECO Control Form - A form signed (electronically) by the ECO Owner and holders to document verification of the adequacy of the ECO boundary.

4.7 ECO Information Tag - A tag hung on or near component switches or display gauges to indicate its associated equipment is located within or affected by an ECO boundary.

4.8 ECO Preparer - The Reactor Operator or authorized operator who writes an ECO or ECO Boundary modification.

4.9 ECO Release - Occurs when all ECO holders/owner release their right to work and their right to protection within the ECO boundary by signing in the ECO Release section of all applicable ECO Owner/holder Forms.

4.10 ECO Revision – A modification to an existing ECO that does not alter the existing ECO ISOLATION boundary but could enhance the ECO boundary in the conservative direction to increase worker safety.

4.11 ECO Holder - An individual who is authorized and qualified to work or support work within an ECO boundary. In order for an individual to be considered qualified, they shall have attended and successfully completed an approved training course on the ECO process.

4.12 ECO Tag - A tag hung on all boundary points that isolate equipment from sources of energy to permit work to be performed safely. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking and non-releasable, with a minimum unlocking strength of no less than 50 pounds and shall have the general design and basic characteristics of being equivalent to a 1 piece, all environment tolerant nylon cable tie.

4.13 Equipment Clearance Order (ECO) - A formal order for administrative control on plant components and/or systems, delineating the method for configuring plant equipment where isolation is possible, or for control of system parameters (i.e., level, pressure) where isolation is not possible, which permits safe entry for construction, testing, maintenance, or inspection.

Each ECO must be comprehensive in nature to establish an adequate boundary. The ECO cannot rely on plant conditions that are not identified and controlled on the equipment clearance order, boundaries established by other ECOs, or system configurations outside an ECO boundary to provide personnel and equipment protection.

4.14 Lead Maintenance Discipline (LMD) Reviewer - A supervisor / GML or responsible individual in the department assigned to perform work for a particular Work Order and who is assigned to review the ECO for that work order.

4.15 Letter Designation - In some instances there will be a letter designation at the end of an ECO number. This designation is optional and will indicate the general type or purpose of the ECO. The letter options used will be as follows:

4.15.1 A - Administrative

4.15.2 C - Caution Tag

4.15.3 H - Hydro

4.15.4 I - Integrity

4.15.5 L - LLRT

4.15.6 R - Outage Related

4.15 (Cont'd)

4.15.7 T - Test

4.15.8 M - Management

4.15.9 S - Short Notice Outage (SNO)

4.16 Master ECO - A previously researched ECO boundary stored in computer database.

4.17 Operating Permit Tag – A tag that gives the personnel holding the clearance authority to manipulate tagged components in order to facilitate Maintenance Department testing or minor repairs. This tag requires permission to operate from an SRO. Operating Permit tags are under the direct control of a single owner and provide a visual warning marking the isolation boundary for equipment or systems in order to prevent personnel injury or equipment damage.

4.18 Outage Owner/ECO Coordinator – An individual may be appointed when the number of personnel and/or clearances are above normal. This Coordinator shall be qualified in In-Plant Clearances Requirements. The Coordinator will assume the responsibilities of an Owner for all work assigned to an outage zone clearance and act as a liaison between Operations and the individual department Owners and Holders. Licensed operators meet this qualification criteria.

4.19 Qualified 10 CFR 50.59 Reviewer – Any person that meets the 10 CFR 50.59 Screening training requirements, possesses the requisite experience to competently analyze the proposed change/activity and is on the qualified reviewers list.

4.20 Qualified Operator - Operators who have successfully completed all requirements necessary to operate the equipment on which the ECO is to be executed.

4.21 10 CFR 50.59 Applicability Determination/Screening Review - Performed to determine if an ECO requires an evaluation under 10 CFR 50.59(c)(2) criteria.

4.22 Safety Related – Any system, subsystem, display, or instrumentation that is required for the safe shutdown of the plant or is used to minimize the release of radiation to the public.

4.23 Tags Plus – Physical actions or measures, such as two tagged valves in series, one tagged with a device that prevents operation, or other physical barriers that are needed to protect workers performing work on a tagged circuit or system from the re-energizing of that circuit or refill/repressurization of the system resulting from a single human error or mistake.

4.24 Tag Sharing - The process in which the computerized database assigns a specific tag number to an ECO section to create a clearance boundary that may be common to other sections.

4.25 Tag Type Hierarchy – Tags associated with equipment clearance orders have a specific hierarchy that must be adhered to. It is possible that more than one tag type may be assigned to a plant component at the same time. The position of the component is controlled by the tag type in the following order:

4.25.1 Danger Tag - This tag controls the position of any component. The position of the component may not be altered in any way with the exception of those danger tags properly controlled under a bus outage tag.

4.25.2 Bus Outage Tag - This tag, when properly authorized, may transfer jurisdiction of a component under a danger tag to the established boundaries of a bus outage clearance.

4.25.3 Operating Permit Tag - This tag gives the personnel holding the clearance authority to manipulate the tagged component, provided permission has been obtained by an SRO prior to manipulation.

4.25.4 Caution Tag - This tag is used to identify conditions that are unusual, potentially hazardous, or to provide cautionary information for operating equipment. Equipment governed by a caution tag can be manipulated with SRO approval. Because caution tags can be manipulated, required positions should not be used for personnel protection. If a required position is needed, then a danger tag should be used. (Caution tag clearances for maintaining configuration control are excluded from this requirement.)

4.25.5 Information Tag- This tag provides information only and does not control the position of the component.

4.26 Tech Spec Related – Components, equipment, or systems whose operability is addressed by Technical Specifications.

5.0 PROCEDURE

NOTES

- *ECO tags are warning devices affixed to energy isolating equipment and do NOT, in themselves, provide a physical restraint.*
- *Personnel NOT trained on this procedure, shall NOT perform ECOs.*
- *When tagged components are shared with multiple ECOs, caution should be used when restoring systems to ensure configuration control. Tag sharing warnings should be addressed, and the proper releasing order of sections that shared tags should be verified by the SRO.*
- *A Caution tag is used to identify conditions that are unusual, potentially hazardous, or to provide cautionary information for operating equipment. Equipment governed by a caution tag can be manipulated with SRO approval. Because caution tags can be manipulated, required positions should not be used for personnel protection. If a required position is needed, then a danger tag should be used. (Caution tag clearances for maintaining configuration control are excluded from this requirement.)*

5.1 Standard ECO Practices

5.1.1 Equipment, on which an ECO has been granted, shall NOT be considered safe until tests have been made using approved methods to verify that the equipment is de-energized, grounded, drained and/or depressurized as required.

5.1.2 ECO tags shall be conspicuously posted so that the component can NOT be operated without the tag being seen.

5.1.3 An ECO shall NOT be utilized as a means of bypassing procedural requirements.

5.1.4 When any special instruction can be verified with an action, it should be written as a step in the ECO; otherwise, it should be included as a note in the Instruction block.

5.1.5 When hanging ECO tags, electrical switching should be performed first.

5.1.6 When removing ECO tags, electrical switching should be performed last.

5.1.7 ECO tags hung on control panels shall be secured in a manner that allows accessibility to controls without obscuring plant status indicators, controls, switches, and labels.

5.1.8 Controlled documents, such as prints, procedures, and attachments, shall be consulted to determine ECO boundaries.

1. When controlled documents are NOT available, additional measures shall be taken to ensure an adequate boundary is established, and the ECO holders shall be advised.

5.1.9 Prior to approving an ECO, it shall be DETERMINED the impact on equipment availability as required to meet Technical Specification.

5.1.10 The ECO Tag Hang List shall be IN HAND <u>and</u> USED as a guide during execution.

5.1.11 When ECOs are executed in contaminated areas, outdoors during inclement weather, or for large ECOs:

1. An exact copy of the ECO may be used.
2. Information recorded on the exact copy shall be transferred to the original as soon as possible upon completion.

5.1.12 An ECO information tag should be placed on or near component switches or display gauges to indicate the associated equipment is within or affected by an ECO boundary.

1. Independent verification of ECO information tags is not required.
2. ECO information tags shall not be used on ECO boundary components in lieu of an ECO tag.
3. An ECO Order step shall be written to control each ECO information tag.
4. Manipulation of a component or switch with an Information Only Tag is permitted.

5.1.13 If an ECO tag is removed from a component for any reason, the tag will be ACCOUNTED for <u>and</u> DOCUMENTED on the ECO.

1. At NO time shall an ECO tag be REMOVED and subsequently RE-HUNG, bypassed or ignored.
2. The Bus Outage Tag (which are placed over Danger Tags) may transfer jurisdiction of a danger tag to the isolation boundaries associated with a bus clearance in accordance with provisions of this procedure.
3. <u>**IF**</u> the original ECO tag is removed, lost or destroyed, <u>and</u> the ECO boundary must be re-established, <u>**THEN**</u> a new ECO tag shall be issued.

5.1.14 During the Independent Verification/Concurrent Verification of the ECO, the ECO Form shall be initialed after the IV/CV for that step has been completed.

5.1.15 Tag placement shall only be DONE after the component is manipulated to its required position per the ECO.

5.1.16 In cases where isolation boundaries can NOT be established for work affecting the pressure boundary (e.g., work on the Reactor Vessel head, pressurizer or steam generator primary or secondary sides), an ECO which is controlled by Operations, as well as other departments performing said work, shall be generated.

1. This ECO shall list all such work.
2. This ECO shall place ECO Tags, with the ECO number, on in-service level, temperature or pressure instruments which would be used to control fill and vent operations.

5.1.16 (Cont'd)

3. A vent path shall be established as determined by Operations.

4. Caution tags should be placed on Control Room valve/component switches that if manipulated could affect the clearance boundary and/or plant parameters that are being controlled during an un-isolable configuration. These Caution tags shall warn that manipulation of these components could jeopardize the safety of personnel working under this ECO.

5 This ECO shall also include the following statement in the Instruction section of the ECO Form:

This is an ECO for an un-isolable system. Parameters are being maintained by the Operations shift for control of protective conditions.

5.1.17 Tags shall be legible, understandable, and capable of withstanding environmental conditions.

5.1.18 Tags should be securely attached to energy isolating devices so that they can not be inadvertently or accidentally detached during use.

5.1.19 Where a tag can NOT be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

5.1.20 For configuration control, the Operations Department may use the Breaker/Valve Alignment Sheet, a form similar to Attachment 4 of this procedure. This sheet **SHALL NOT** be used in place of an ECO or in place of a Caution Tag ECO.

1. The SM or SRO designee shall approve the Breaker/Valve Alignment Sheet after performing the following:

   a. Verify that the specified steps satisfy the requirements of the activity being performed.

   b. Verify that plant conditions (TSAs, current alignment, active ECOs, testing, etc.) will support the manipulation of the component(s) listed.

   c. Verify that Containment Integrity is maintained, as required.

   d. Verify compliance with Technical Specifications.

   e. Determine which steps require use of CV, and annotate those steps on the Sheet.

   f. Verify that the sequence of steps is correct.

2. If doubt exists as to whether the execution of the Breaker/Valve Alignment Sheet will result in the plant being operated in a condition that adversely affects an UFSAR described design function, the SM/SRO shall refer to the questions listed on the 10 CFR 50.59 Applicability Determination/Screening to determine if a 10 CFR 50.59 Evaluation is needed.

5.1.21 If an ECO will require a 120V Vital AC or 125V Vital DC Breaker to be opened that has not been authorized in accordance with an approved plant procedure, the Engineering department SHALL sign the Engineering Review block to indicate that an independent review has been completed. (Reference CR 03-0406)

5.1.22 For clearance tags issued on a bistable located in the Control Room, the tags should be secured to the rack door in clear view of anyone entering the protection or control rack.

5.1.23 Operating Permit tags must be hung in a manner that allows Maintenance personnel to manipulate a component without removing the tag.

5.1.24 Site and Division clearance boundaries should not overlap. Prior to issuing a Site clearance to be hung, ensure Site Area Operations (SAO) has shifted their clearance boundaries to not conflict with the Site clearance. Example: Transfer of jurisdiction for the main generator to the Site from Division.

5.2 Tags Plus

Tags Plus is intended to keep a worker safe in case a person makes a single or inadvertent error or mistake, involving one or more tagged devices, that could adversely affect the control of energy within a tagging clearance. Tags Plus applies only to DANGER and OPERATING PERMIT tagged components.

NOTE

Tags Plus is indicated by "Plus" in the ECO component position field on the ECO and on the Danger Tag component position.

5.2.1 **Tags Plus** is a physical action or measure, **NOT** a behavior, culture, or administrative procedure.

5.2.2 "Operation" means manual and remote manipulation of an isolating device to the extent that it affects a change in the state of the energy it controls, or activation of a device or system by a human-error induced contact, whether by a person or by material or equipment operated, set in motion, carried, or handled by a person.

5.2.3 **Tags Plus,** like lockout / tagout in general, is intended to guard against human error, **NOT** equipment malfunction.

5.2.4 **Tags Plus** is **NOT** intended to prevent an action or event that is consciously intended to overcome or defeat the tagged isolation.

5.2.5 Examples of **Tags Plus:**

- Two tagged valves in series, such that operation of only one would **NOT** reenergize the system.
- One tagged valve with a device preventing the valve from being operated.
- On a device capable of being locked out, the tag's attachment means (tie wrap) being placed through the fittings intended for a lock such that the attachment means would prevent the device from being operated.
- Grounding of an electrical circuit, if the grounding practices would protect the worker if a tagged isolating device were operated.
- Isolation by *inaccessible* location - if the device can be accessed only by the use of extraordinary means (e.g., 15' portable ladder or scissors lift that is **NOT** already in position).
- Removal of a valve handle on a tagged valve.
- Secure placement of a barrier or blocking device adequate to physically prevent a tagged control switch from being operated.
- Removal of a fuse and tagging the fuse box, or racking out, and tagging a breaker, in the circuit of a tagged component.

5.2.6 Examples of actions that are **NOT Tags Plus**

- Testing for potential, because this merely verifies that the tagged electrical isolating device is in the proper position and the circuit is **NOT** energized. The inadvertent operation of that device would still energize the circuit.
- Placing two tags on the same device, because this would **NOT** prevent the inadvertent operation of that device.
- Verbal warnings, instructions, or training **NOT** to touch a tagged device because these would **NOT** prevent inadvertent operation of the device.
- Isolation by *accessible* location - including but **NOT** limited to restricted areas and rooms, infrequently-visited sites, devices accessible by the use of ordinary means (e.g., step ladder or shotgun stick), and areas with installed means of access (e.g., fixed ladders). If the device is or should be tagged, the presumption is made that a *Tags Plus* measure can be applied to it.
- Dual, peer, or independent verification of tagging because such verification is **NOT** a physical measure.

5.2.7 Devices NOT Capable of Being Locked Out

In the rare circumstance in which it is physically impossible to apply a *Tags Plus* measure to a circuit or system that can be energized only by the operation of a single isolating device, and is **NOT** capable of being locked out, additional actions are still necessary to minimize opportunities for inadvertent operation of the device or re-energizing the system.

Examples of these actions include:

- Erecting barricades or installing barrier tape with signs to restrict access to the workspace around the device
- Installing shields, placing warning signs to supplement the tags (which are warning labels themselves)
- Posting a guard, or
- Taking other engineering or administrative actions appropriate to the situation.

5.2.8 Examples of Components Locked out under Tags Plus

1. Valves:
   - Two valves tagged closed in series.
   - One valve locked and tagged in required position.
   - One valve with the operator removed.
   - Valve blocked and tagged in required position.
2. Breakers:
   - Power panel breakers locked open and tagged.
   - MCCs, Unit Substations breakers locked open or racked out with locking device and tagged.
   - 4.16 KV and 6.9 KV breakers locked off bus (NOT in connected position) or removed with blocking device installed and tagged.
   - Local disconnects locked open and tagged.
3. Fuses:
   - Fuse removed and blocking device installed when possible.
4. Lifting Leads:
   - Lifting leads and taping the end of the leads.

NOTES

- *Other components used for isolation will be evaluated by an SRO for the method of isolation to comply with Tags Plus.*
- *Vent and drain valves are NOT required to be locked.*

5.3 Valve Practices

5.3.1 Establishing an ECO Boundary around a Motor Operated Valve (MOV)

1. To perform maintenance on the valve portion of the MOV, the breaker shall be Danger tagged open and the isolation valves shall be Danger tagged closed, including inner disc relief isolation valves if the MOV is a double disc valve.

2. To perform maintenance on the motor actuator or gear box portion of the MOV, the breaker shall be tagged with an Operating Permit Tag attached to the breaker in the OFF position, and NO tag on handwheel.

3. If the stem nut locknut or the upper bearing housing is to be removed:

   a. The isolation valve(s) shall be tagged closed, and a means to vent and drain the piping is provided,

   OR

   b. A stem locking device shall be provided and tagged **DO NOT REMOVE.**

   OR

   c. Static conditions limited to a maximum of 50 psig will be provided by the ECO boundary. Components or valves will be tagged to ensure the static conditions are maintained for the duration of the MOVATs testing or actuator overhaul. Pressure at the valve will be verifiable by observation of system pressure or system vented to atmospheric pressure (ie., Vent valve tagged open, head removed, or safety removed and tagged). The MOV under MOVATs will be initially in the open position on the hang of the ECO.

4. When MOVATS is to be performed:

   a. Ensure the system/component is isolated prior to stroking the valve

   OR

   b. Ensure that any stroke will NOT affect/cause system flow.

CAUTION

MOV declutching may result in the shearing of the torque switch roll pin, and further torquing of the valve after it is declutched could result in serious valve damage.

5.3.2 MOVs may be used as isolation points of an ECO boundary provided the breaker is tagged open and the handwheel is tagged **DO NOT OPERATE**, or the MOV is blocked with a mechanical blocking device which is tagged **DO NOT REMOVE**.

5.3.3 A pneumatically operated valve may be used as an isolation point of an ECO boundary provided:

1. A fail closed valve shall:

   a. Be visually verified to be closed locally or by the use of light indications remotely, and

   b. Have its gas supply isolated and tagged, or

   c. Have its control power fuses removed and tagged, and

   d. For valves which have handwheels, the handwheel is tagged appropriately, (i.e., locked in up position, neutral, etc.), depending on the type of valve.

   e. Valves without handwheels shall be tagged on the valve body **Valve Must Remain Closed.**

2. A fail open valve shall be closed with jacking, or gagging device installed which is tagged **DO NOT REMOVE** or **ON HANDJACK**.

5.3.4 The following applies to installed system pressure operated valves or relief valves:

1. Installation of any physical restraint, jacking device, or gagging device shall be CONTROLLED by an In-Plant Equipment Clearance Order and tagged appropriately.

2. System pressure operated valves or relief valves shall NOT be USED as an isolation point of an ECO boundary unless:

   a. Downstream pressure is at atmospheric pressure and not capable of being pressurized (i.e., manway removed and tagged, tank by designed is maintained at atmospheric pressure etc. . .)

   OR

   b. The valve is physically restrained in the required position through the use of an installed jacking or gagging device which is tagged **DO NOT REMOVE**. If the valves can NOT be gagged or jacked, the Safety Department shall be NOTIFIED to approve actions to safely work on the system.

5.3.4 (Cont'd)

3. Physical restraints, jacking devices, or gagging devices shall NOT be APPLIED to a valve in an operable system without a 10 CFR 50.59 evaluation which is reviewed by the PNSC and approved by the Plant General Manager, Vice President – Turkey Point Nuclear Plant and Chief Nuclear Officer.

5.3.5 Valves required to be operated or repaired during the performance of the work order shall NOT be tagged except for:

1. When re-packing a valve on the backseat, the valve shall be tagged in the BACKSEATED position and additional ECO boundaries shall be established (as necessary) to ensure the valve is subject only to pressure from a static elevation head of water or a system pressure less than 50 psig.

5.3.6 Vents and drains that are being repaired shall have a step in the ECO for positioning the valve when the ECO is released.

5.3.7 MSIVs shall be controlled as follows: (not applicable in Mode 5, Mode 6, or Defueled)

1. Tag MSIV control switches in CLOSE for administrative control of switches.

2. Pull and tag fuses for 1 train of solenoids for each MSIV.

3. If loss of instrument air or power to the remaining train of MSIV solenoids occurs, refer to check valve requirements.

CAUTION

Draining systems, which contain environmentally hazardous chemicals such as oil or hydrazine, shall be conducted in accordance with 0-ADM-015.1, Chemical Control Program.

5.3.8 Drain valves used for draining a fluid within the ECO boundaries shall be throttled and the Drain System into which it is draining shall be monitored to ensure that this Drain System can accept the flow rate from the drain without over flowing.

1. This shall be designated as a step in the ECO prior to the step to tag the drain valve. This step should state throttle the drain valve, (Valve Number), to the flow rate of Drain System.

2. When opening a drain or vent valve on a filled or pressurized system, and fluid or gas does NOT flow from the valve, notify the SRO to request that Mechanical Maintenance try and unplug the drain. If the drain can NOT be cleared, add a caution statement to the ECO delineating the clogged valve and the potential for the system to still be pressurized.

5.3.9 If the need arises to add vents or drains to an existing ECO, the US shall grant permission to modify the ECO as required. A boundary modification is NOT required solely to add vents or drains.

5.3.10 When a blocking device is installed on a valve, that valve/component shall be declared out of service, unless a 10 CFR 50.59 evaluation is written to address the stem block.

1. When determining which component will be out of service, assume the stem block fails, and the valve travels to the worst case position.

5.3.11 The valve operator used to manipulate floor valves shall be locked in its storage location when NOT in use.

5.3.12 A solenoid valve should NOT be used as a pressure boundary isolation if a manual isolation valve is readily available.

1. When a solenoid operated valve is used for an ECO boundary and the failure mode is NOT clear, request assistance from Engineering or Instrument and Control Departments to determine the correct failure mode.
2. When a solenoid operated valve is used and it does NOT fail in the required position, it shall be blocked or gagged in the required position, and an ECO tag shall be attached to the blocking device.

5.3.13 If NO other means of isolation exists, check valves may be used as an isolation point of an ECO boundary, provided prior PNSC review, Nuclear Joint Safety Committee (NJSC), and Plant General Manager approval is obtained. The following additional measures shall be taken:

1. The check valve shall be verified to be holding pressure prior to commencement of work.
2. A drain, open flanges, or other means of draining shall be continuously monitored for the duration of the work to ensure the check valve is NOT back leaking.
3. If the job is not being actively worked, constant MONITORING may be relaxed to a periodicity designated by Operations.
4. Place a note in the Instructions block of the ECO Form explaining that a check valve is part of the ECO boundary.
5. ECO holders shall be notified that a check valve is part of the boundary.
6. Nuclear Joint Safety Committee (NJSC) Review Form shall be used.
7. During outages, Risk Assessment Team review is required for issues that involve RCS inventory.

5.3.14 Operation of Components Within an ECO Boundary

1. With the permission of the SM/US/WCCS/NWE/FS/SRO, Maintenance personnel may MANIPULATE the component that is under repair or test only to the extent necessary to facilitate repairs or job completion.

2. All other component manipulations during the course of the repair shall be PERFORMED by qualified operators.

3. Instrument and Control personnel are ALLOWED to manipulate valves downstream of the main instrument root valves (five-valve manifold, internal isolations, etc.) for the performance of maintenance and calibrations. Instruments with single root isolations may be MANIPULATED by I&C personnel provided IV provisions of the NPWO are followed.

4. Components within an ECO boundary may be manipulated by maintenance with approval from the SRO provided a restoration step is included on the ECO.

5.4 Electrical Practices

5.4.1 A component hand switch should NOT be used as an isolation point for establishing an ECO boundary for maintenance activities.

1. Hand switches/control switches may be used for isolation only for purpose of administrative control.

NOTES

- *Only a manually operated switch, visible air break, or a switch that can be locked or blocked in the open position will be regarded as clearing a circuit.*
- *In 4.16kv switchgear and 480 volt load centers, breakers shall be racked-out.*
- *4.16kv DC control power fuses are not tagged unless specifically required when maintenance is performed on control circuit.*
- *In 480 volt Motor Control Centers, molded case breakers shall be opened.*
- *Following notification to all applicable owners, a racked out and tagged 4.16kv switchgear, 480 volt load center breaker, or a reactor trip circuit breaker may be placed in the test position if required.*

5.4.2 To de-energize components from 4160 volt power, the appropriate 4160 volt switchgear breakers shall be racked out and the breaker cubicle door tagged.

5.4.3 To de-energize a component powered from a 480 volt load center, its breaker shall be opened and racked out and tagged on the breaker cubicle door.

5.4.4 To de-energize a component powered from a 480 volt Motor Control Center (MCC).

1. Normal method:

   a. The appropriate molded case breaker shall be placed in OFF and tagged on the attached lug.

   b. A Ty-wrap shall be placed on the locking device.

2. Alternate Method – used when the breaker needs to be cycled for testing without the equipment operating (i.e., Safeguards, CCW System Flow Balance).

   a. The appropriate molded case breaker shall be placed in OFF.

   b. The line starter contacts for all three phases shall be removed and tagged.

   c. Control power fuses for any related fan dampers shall be removed and tagged.

   d. The line starter contacts (and fuses, if applicable) shall be placed in a transparent bag and affixed with the related ECO tag(s) to the attached lug.

   e. The molded case breaker should be placed in ON.

   f. Completed form similar to Attachment 6 shall be affixed to breaker.

5.4.5 A local knife switch will be verified as open and be tagged OPEN.

5.4.6 To remove component DC control power, the appropriate fuses shall be removed, and the fuse holder shall be tagged or the DC control power breaker shall be tagged OFF.

5.4.7 <u>Motor Heater Breakers</u>

1. Motor space heaters shall NOT be included in an ECO order if the motor is being used for an ECO boundary only.

2. Motor space heaters shall only be included in an ECO if the motor is being removed or if requested.

5.4.8 Electrical grounds shall not be installed unless they are delineated as a restoration step with no tag on the equipment clearance order.

5.4.9 Fuses

1. ECO tags shall NOT be placed on fuses.

2. ECO tags associated with fuses shall be posted on or as close to the fuse holder as practical and in a location where they would be obvious to anyone intending to replace the fuses.

3. Usage of the fuse holder tagging devices is recommended to prevent electrical shock.

NOTES

- *Leads may only be lifted on a component which was previously declared Out of Service.*
- *Lifted leads should NOT normally be used as an ECO boundary. There are times when this is the most appropriate method for assuring personnel safety. Maintaining related equipment in a particular configuration may also be a consideration (e.g., multiple annunciator inputs or same power supply to different components).*
- *Maintenance personnel will be granted access as necessary to sign for verification as required by the SRO.*

5.4.10 Lifted Leads

1. If lifted leads are determined to be an ECO boundary, appropriate discipline (I&C or EM) shall provide input as to lead designations, location, and potential related consequences.

2. If the qualified operator is NOT clear as to the exact lead on which to hang the ECO tag, the appropriate discipline (I&C or EM) Journeyman shall identify the lead for the operator to hang and perform concurrent verification.

5.5 Tank and Piping System Practices

5.5.1 If necessary for the performance of work; systems, portions of systems, and components that normally operate at temperatures or pressures above ambient shall be vented and drained before work is authorized.

5.5.2 An atmospheric drain or vent between the equipment to be worked and sources of pressure to the equipment should be verified in the open position to depressurize the equipment and to accommodate thermal expansion or contraction.

5.5.3 If a normal depressurization path can NOT be provided within the ECO boundary, other definitive measures shall be taken to verify the system or component is adequately depressurized and drained.

1. These measures may include:

   a. Breaking of flanged connections

   b. Loosening of valve bonnets

   c. Removal of instrument tubing

5.5.4 When placing an ECO on equipment, the high-pressure side (pump discharge) should be ISOLATED prior to low-pressure side (pump suction) to prevent over pressurizing the low-pressure piping. For the same reason, un-isolate the suction (low-pressure) side of the pump first when releasing a clearance.

5.5.5 Hoses placed on vent/drain valves shall be listed/designated on the ECO as a step with NO tag. [Commitment - Step 2.3.5]

5.6 ECO Log

5.6.1 Three ECO files shall be maintained:

1. Unit 3
2. Unit 4
3. Common

5.6.2 Each ECO file should contain executed ECOs filed by system or zone number.

5.7 Operating Permit Tags

NOTES

- *Only Operations personnel will issue Operating Permit Tags*
- *Holders SHALL have the final decision if an Operating Permit tag will be used as part of the ECO*

5.7.1 Operating Permit Tags are used to isolate energy to a component during performance of minor maintenance, minor repairs, and/or testing when periodic re-energization/manipulation is required.

5.7.2 If conditions change or additional scope is identified, then the use of the Operating Permit Tag shall be re-evaluated by the Holder, Owner and SRO.

5.7.3 Maintenance on components with Operating Permit Tags may be performed under the following conditions:

- SRO approval to do the work
- During periods when personnel or equipment protection is required and Operating Permit Tags are used, then the ECO Owner shall apply a lock(s) on the component to prohibit operation
- When Holder(s) require the protection of an isolation device, the Owner shall place a lock on the device and place the key for this lock in a Group Lock Box
- The Holder(s) shall place their individual locks on this Group Lock Box / Locking Hasp while protection is required
- When any of the following conditions are met, then Holder(s) individual lock(s) can be removed from the Group Lock Box / Locking Hasp:
    1. Protection from isolation device is no longer required.
    2. Work is completed.
    3. Shift is complete or turnover to another holder.
- The lock(s) shall remain in place until a safe condition is established for its removal
- If lock(s) are required, then lock(s) shall remain in place during turn over

NOTE

Operating Permit Tags are under the direct control of a single Owner.

- During turnover the on-coming ECO Owner shall sign on the ECO, and the current ECO Owner shall sign off. The lock remain in place during turnover, if required.

5.7.4 Operating Permit Tags have the following restrictions:

1. Only one Operating Permit Tag may be on a single component at any time.
2. Operating Permit ECO's may have Danger Tags that make up the total ECO boundary combined with Operating Permit Tags for components allowed to be manipulated, (Example: MCC breaker for an MOV tagged with an Operating Permit Tag and the downstream isolation on the fluid system tagged with a Danger Tag to prevent movement of water).

5.7.5 All work assigned to Operating Permit Tagged components shall be owned by a single ECO Owner. The ECO Holder(s) is responsible for control and the proper use of locks.

5.7.6 Each Operating Permit Tag shall be designated with the respective work group owning the clearance during the preparation of the ECO. This work group designation will be placed in the "Tag Note" field by stating which LMD owns the Operating Permit Tags.

5.7.7 The ECO Owner and Holder(s) shall verify their Operating Permit tagged components are in the expected or desired position by performing a physical walkdown prior to starting work.

5.7.8 Designated ECO Owner shall get concurrence from all ECO Holder(s) prior to operation of or energizing Operating Permit tagged equipment to assure personnel and equipment safety. The method of concurrence and Owner designated to manipulate the Operating Permit Tag shall be determined during the tailboard briefing.

5.7.9 The ECO Owner designated shall contact a SRO for authorization prior to manipulating any Operating Permit Tag component. The ECO Owner designated may position or direct the positioning of the components (Unit Supervisor / SRO will determine the frequency of the notification).

5.7.10 Operating Permit Tags can be hung on components in the energized position (e.g. breaker closed, valve open).

5.7.11 Once a component is placed to the energy isolation position for personnel safety, the ECO Owner shall attach or direct the attachment of a lock prior to starting work.

5.7.12 Prior to manipulating an Operating Permit tagged component. The ECO Owner as a minimum shall review the following:

1. Status of the work (to include lifted leads, temporary configurations, etc.).
2. List of components to be manipulated.
3. The hazards / dangers to be aware of prior to adding energy to the ECO boundary.

5.7.13 Operating Permit tagged control switches are used to identify equipment under Operating Permit Tag control and are **NOT** required to have Tags Plus Protection.

5.7.14 Where a tag can **NOT** be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

NOTES

- *The Nuclear Joint Safety Committee SHALL be contacted for activities NOT on the list*
- *Installation / removal of 480 VAC leads and installation / removal of stem nuts SHALL have a Danger Tag ECO*

5.7.15 Operating Permit Tags could be used for the following activities:

1. MOV Maintenance (VOTES / VIPER)
   a. Limit switch and torque switch adjustments
   b. Installation and removal of test equipment
   c. Stem greasing and linkage adjustments
   d. Installation / removal or lifting leads of 120 VAC or 125 VDC Leads
   e. Installation / removal of kill switches
   f. Installation / removal of limit or torque switches
   g. Installation / removal of spring packs
2. Installation / removal of test equipment
3. Valve linkage and stem lubrication
4. Installation / removal of kill switches
5. Installation / removal of leads or jumpers 120 VAC or 125 VDC
6. Consolidation of valve packing (Manual / MOV / AOV)
7. Traveling screen work (PM's)
8. Breaker PM's
9. Battery Charger and Inverter PM's tests and troubleshooting (must be used with an ECO Danger Tag to disconnect equipment from the Bus)
10. Cranes (Polar, Gantry, Intake, etc.) Local Disconnects
11. Fan or A/C PM's (480 VAC or less)
12. Air Conditioning repair work
13. Remove / Install Pressure Indicators, D/P Gauges, Flow Transmitters and Indicators

5.7.15 (Cont'd)

14. Power Panels and Lighting Panels for repair of lighting and minor equipment repairs (NOT to be used for replacing motors)

15. Valve repack on the back seat per valve practices section of this procedure.

16. Transformer deluge testing.

17. Install and remove Stop Logs

18. Turbine Turning Gear (generator balancing, Exciter swing checks, Thrust bearing adjustments, Main Oil Pump extension shaft torquing, rolling rotor for coupling work).

5.8 ECO Research and Preparation

5.8.1 The US/WCCS/SRO designee should direct the Reactor Operator or Authorized Operator:

1. To research and write the ECO,

   OR

2. Associate the new Work Order with an existing ECO that has an adequate boundary.

   a. **IF** the ECO is already reviewed or Authorized / Hung (green or red flagged), **THEN** the addition of the Work Order shall be performed as follows:

      (1) The SM / US / WCCS / SRO shall:

         (a) With a peer check from another Authorized Operator, verify the isolation is adequate and add the Work Order Task to the Clearance Work Orders.

         (b) Sign-on as 1st verifier for the Work Order task and contact the appropriate LMD Reviewer/Clearance Owner to perform the LMD review.

      (2) The LMD Reviewer / Clearance Owner shall:

         (a) Verify the isolation is adequate and sign as 2nd verifier for the Work Order task.

         (b) If the ECO is **NOT** reviewed, then the addition of the Work Order can proceed using the standard process for developing an ECO (preparer, reviewer, LMD review, and authorizer).

5.8.1 (Cont'd)

3. If a new Work Order is generated during an outage, the ECO Coordinator responsible for the work order must obtain approval from the Operations Outage Shift Director PRIOR to issuing the new ECO or attaching the new Work Order to an existing ECO.

4. During outages, only the responsible ECO Coordinator can add work orders to a new or existing ECO after obtaining the Operations Outage Shift Directors approval.

5.8.2 The RO or Authorized Operator should: (refer to Attachment 7, ECO Checklist for additional guidance)

1. Review approved Master ECOs for possible use.

2. Evaluate the impact to the plant by considering Tech Specs and Risk Significance:

   a. Consider the effects of turning off power.

      (1) When a vital 125 Volt DC or 120 Volt AC breaker will be used as part of a boundary, verify Engineering reviews the impact.

   b. Consider the affects of alignment changes.

   c. Consider mode applicability.

   d. Add appropriate limitations **AND** conditions as required for ECO. [Commitment – PTN Step 2.3.10]

3. Verify ECO boundaries are adequate for work to be performed using controlled documents (i.e., prints, procedures, and attachments) and, as necessary, the assistance of the requesting discipline.

4. Prepare the new ECO in the computer database as follows:

   a. Placement steps shall be sequentially executed, unless approved by the US/WCCS/SRO designee and denoted on the ECO Form.

   b. Include steps with no tag for procedure performance, Caution, or Information tag placement, and steps for information only.

5.8.2.4 (Cont'd)

NOTE

In some situations, checking all components within the ECO boundary may be redundant (i.e., during outages when a system alignment will be performed prior to system startup, etc.). In these cases, checking components within the ECO boundary may be waived by the Shift Manager.

c. Include restoration steps to verify proper alignment of all components within the ECO boundary. This includes the removal of drain hoses, unless the hose is controlled by a TSA or Temporary Procedure. [Commitment – PTN - Step 2.3.5]

d. When electrical grounds are to be installed, include steps with no tag to verify removal of those grounds prior to energizing the equipment.

e. Include restoration steps to verify the position of handwheels on control valves within the ECO boundary, when applicable.

5. Attach appropriate work orders to the new or existing ECO.

6. **IF** Clearance associated holds do not Auto-Release, **THEN** release Clearance associated holds in NAMS Asset Suite as follows:

a. Asset Suite applies TWO holds when a Clearance Request is generated. Holds are "released" by the owner, in this case Operations, when the condition is satisfied.

b. The CLR is to be released by the preparer when the ECO is prepared for the work order task.

c. The CCL is to be released when the ECO reviewer verifies the clearance order applicability to the WO task

d. To release a HOLD on the respective task status on the M100 Panel:

(1) Right Click on STATUS, and Select <MORE DETAIL>. This takes you to the Status Tracking Panel M130

(2) Select the "HOLD TRACKING" family tab (M131 Task Status Hold Tracking Panel)

(3) Select the desired HOLD ("CLR", and "CCL") to release associated with the Clearance Request.

(4) Enter the Release Date, and Time in the blanks and the hold is released putting your SLID in the blank.

5.8.2.6.d Cont'd)

(5) When the "CLR" HOLD is released, go to the M105 Requirements Panel, and perform the following in Section 2 to enter the Clearance information:

(a) Enter facility "PTN".

(b) Enter Permit Type "CO"

(c) Select <APPLY>. This opens the Permit Number Grid

(d) Enter the ESOMS clearance number into this Grid

7. Notify the US/WCCS/SRO designee that the new ECO or attached work order is ready for review.

a. Submit copies of controlled documents used (to be retained in the ECO package).

b. A hard copy of the unapproved ECO may be printed to aid in the review process.

5.9 ECO Review and Approval (refer to Attachment 7, ECO Checklist for additional guidance)

5.9.1 The US/WCCS/SRO designee shall independently review the ECO or attached work order to:

1. Verify that the specified ECO boundary satisfies the requirements of the activity to be performed.

2. Verify that no active Temporary System Alterations (TSAs) will affect the ECO boundary.

3. Verify that the necessary Fire Protection Impairments (FPIs) have been requested, as required.

4. Verify that Containment Integrity is maintained, as required.

5. Verify that plant conditions (current alignment, other active ECOs, surveillance testing, etc.) will support removal of equipment from service.

6. Verify compliance with Technical Specifications.

7. Determine which steps require use of CV, and annotate those steps on the ECO.

8. Verify that the sequence of steps is correct.

9. Verify that all appropriate equipment, in addition to the tagged equipment, has been specified to be checked.

10. Verify that Engineering Review has been completed, when applicable.

11. Verify that ECO lists appropriate limitations and conditions required for ECO execution. [Commitment – PTN-Step 2.3.10]

5.9.2 The US/WCCS/SRO designee shall determine and indicate the following on the ECO Form:

1. Tech Spec related
2. Safety related
3. Risk Significant
4. Load limiting
5. Load threatening

5.9.3 All ECO's shall be reviewed by each responsible Maintenance Discipline prior to the ECO being authorized for implementation.

1. In case of emergent **OR** outage work, the maintenance review may occur in parallel with **OR** following ECO implementation in the field

5.9.4 The US/WCCS/SRO designee shall authorize all ECOs by signing the ECO Form.

5.9.5 A second, independent review by the SM/SRO shall be performed for ECOs affecting Tech Spec or Safety Related to ensure the following:

1. Adherence to Tech Spec Limiting Condition for Operations (LCOs).
2. Containment Integrity is maintained, as required.
3. No adverse impact on redundant equipment or opposite train/unit.
4. Appropriate log entries (EOOS, Outage Risk Assessment, etc.) have been made.

5.9.6 If doubt exists as to whether execution of the ECO will result in the plant being operated in a condition that adversely affects an USFSAR described design function, the SM/SRO shall refer to the questions listed on the 10 CFR 50.59 Applicability Determination/Screening to help determine if a 10 CFR 50.59 Evaluation is needed.

5.9.7 The SM/SRO shall approve all ECOs affecting Tech Spec or Safety Related equipment by signing the ECO Form.

1. The SM shall be notified when a Tech Spec or Safety Related, Risk Significant, or in-service system ECO is being sent out for execution. The notification should include scope of the ECO and equipment affected.
2. The US and RO shall be informed of the ECO execution.

5.9.8 The Operations Manager shall approve the hanging of ECO tags in the Containment during Modes 1 and 2. [Commitment - PTN – Step 2.3.3]

1. ECO tags in the Containment during Modes 1 and 2 shall be made of phenolic material.
2. Phenolic tags shall be attached using the same cable and cable crimps provided for permanent valve tags, OR stainless steel tie-wraps.
3. Phenolic tags must be filled out manually.

5.9.9 When final approval has been obtained, the ECO may be issued to the RO or Qualified Operator to be executed.

NOTE

*The ESOMS Clearance Module component **PLACEMENT** and **RESTORATION** electronic signatures are to be used as the official verifications. Signing the computer for another operator is not allowed except for LLRT or Integrity ECOs. The use of the hard copy (paper) as component position verification and IV should **only** be used when the ESOMS Computer System is not available or not functioning correctly.*

5.10 ECO Execution (refer to Attachment 7, ECO Checklist for additional guidance)

5.10.1 ECO alignment and tag placement shall be performed by a qualified operator who is knowledgeable of the type and magnitude of the energy, the hazards of the energy, and methods to control it.

5.10.2 The operator shall be briefed on the purpose of the ECO and the conditions that should be established within the ECO boundary for the safe performance of work.

5.10.3 The operator shall be given a copy of the ECO tag hang list form, tags, and any other materials used in the development of the ECO pertinent to the implementation of the ECO (prints, EWDs, ETC.)

5.10.4 The ECO alignment and tag placement shall be performed in a step by step manner as specified on the ECO.

1. At the discretion of the SM/SRO, large ECOs may be performed out of order (i.e., Containment Integrity, ILRT, etc.)
2. CV shall be performed for steps designated by the US/WCCS/SRO designee.

5.10.5 ECO tags shall be legible and understandable.

5.10.6 ECO tags shall be securely attached to energy isolating devices so that they can not be inadvertently or accidentally detached during use.

1. ECO tagout device attachment shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of 50 pounds, AND shall have the general design and basic characteristics of being at least equivalent to a one-piece, all environment nylon cable tie.

5.10.7 The ECO execution shall be stopped and the Control Room/Work Control Center shall be notified immediately for any of the following circumstances:

1. Any step that can NOT be executed as specified.
2. The execution must be suspended.
3. A component is locked, and NO lock is referenced on the ECO.
4. A component is unlocked, and a lock is referenced on the ECO.

5.10.7 (Cont'd)

5. A component cannot be positively identified using standard plant labeling

   a. If the component is not tagged with a unique plant component tag, the following should be considered for identification:

      (1) Verification of the component designations using plant drawings

      (2) Engineering walkdown and identification of the component

      (3) Independent Operations personnel agreement on the component designation

   b. When these situations are identified, steps shall be taken to obtain the correct identification tags for the component.

5.10.8 The US/WCCS/SRO designee shall resolve any discrepancy and indicate by initialing on the ECO Form.

5.10.9 The first Placement block of the ECO shall be initialed on the hard copy as each step is performed and the computer records updated as soon as practical.

5.10.10 The physical result of each alignment action should be observed during the tagging operation to ensure the desired conditions are being met for safe work.

1. If undesired conditions are encountered, the tagging operation shall be stopped and the US/WCCS/NWE consulted for resolution prior to continuing.

5.10.11 Independent Verification of ECO steps shall be performed by a second qualified operator and shall be performed in accordance with 0-ADM-031, Independent Verification. Independent verification is required for systems listed in 0-ADM-031, Independent Verification, Enclosure 1, or as deemed necessary by the SM/US/WCCS/SRO.

1. The second Placement block of the ECO shall be initialed on the hard copy as each IV is performed and the computer records updated as soon as practical.

2. IV steps may be performed in any order.

3. Information tags and procedure or information steps do NOT require IV.

4. CV of THROTTLED or BACKSEATED valves replaces IV. Operators performing CV of these valves shall place their initials/date/time in the 2nd Placement block of the appropriate step.

5.10.11 (Cont'd)

5. Verify ECO completion and sign for tags verified executed on the ECO Form as soon as practical.

6. Independent Verification (IV) shall be implemented for all Caution, Danger and Operating permit tags unless conditions otherwise warrant IV being waived by Shift Supervision.

   Examples include:

   a. ALARA

   b. Task performance may have immediate consequences for safe reliable pant operation, etc.

   c. Personnel safety

5.10.12 The completed ECO shall be returned to the Control Room or Work Control Center for review.

5.10.13 The US/WCCS shall:

1. Ensure that the Tech Spec related or Risk Significant equipment is placed in the EOOS Log and/or Outage Risk Assessment Notebook, as required.

2. Notify the ECO Owner that the ECO has been executed and that the Control Form may be picked up in the Work Control Center or Control Room.

3. Ensure that the ECO is filed under the appropriate system/zone number in the ECO File.

5.11 <u>ECO Release</u>

<u>NOTE</u>

*Only original ECO Control Forms shall be used to release an ECO. These can be recognized by the colored border and unit designator, OR, if colored paper was not available, the form was stamped **Original** with Red ink.*

5.11.1 The US/WCCS/SRO designee shall perform the following:

1. Review the ECO package AND the computer to ensure that all Holders and Owners have released the ECO.

2. Verify (if paper forms are used) that all original Control Forms are present and signed off.

   a. If any Control Forms were NOT accepted or signed on, the responsible department shall sign on and then release, noting that no work was performed.

   b. If an original Control Form was lost, a duplicate may be made. The new form shall be labeled **DUPLICATE – ORIGINAL LOST**, and the responsible Owner shall sign on and then off after verifying all work for that discipline is complete and all holders have released the ECO.

3. When all Control Forms have been signed off and returned to Operations, the ECO may be released.

5.11.2 The RO or authorized operator shall prepare the ECO Release as follows:

1. Verify all Control Forms are accounted for.

NOTES

- *In some situations, checking all components within the ECO boundary may be redundant (i.e., during outages when a system alignment will be performed prior to system startup, etc.). In these cases, checking components within the ECO boundary may be waived by the SM.*
- *For any component that will not be restored to its "normal position" upon release of the ECO (except components tag shared with another ECO), identify what action, method or procedure will restore the component to its normal position in the Tag Removal Note for that component to ensure configuration control is maintained*

2. Verify that the ECO includes restoration steps to verify the following:

   a. Proper alignment of all components within the ECO boundary, using documents such as system prints, the body of the procedure, and attachments to develop the alignment. This includes the removal of drain hoses, unless the hose is controlled by a TSA or Temporary Procedure. [Commitment – PTN – Step 2.3.5]

   b. Components worked on within an ECO boundary SHALL have positions verified through a specific restoration step during the ECO release. This verification cannot be waived by a Shift Manager.

   c. Removal of any electrical grounds prior to energizing the equipment.

      (1) Electrical Maintenance Supervisor or GML shall attach a completed log sheet from the Electrical Maintenance Grounds Tracking Log for the affected equipment to the ECO when releasing.

3. Using controlled documents, such as system prints, the body of the procedure and attachments, specify the component positions and releasing sequence for all ECO steps. Releasing steps shall be sequentially executed, unless approved by the US/WCCS/SRO designee and denoted on the ECO Form.

4. Sign the Release Review block on the ECO Form.

5.11.3 The US/WCCS/SRO designee shall independently verify:

1. The specified restoration positions and sequence of steps for the Release are correct.

2. In addition to the tagged components, verify that the necessary steps have been added to check all components within the ECO boundary to be properly aligned.

3. If a procedure is to be used to place the equipment in service, verify that there is a step on the Release to perform the procedure.

4. The US/WCCS/SRO designee shall determine which steps require the use of CV and annotate those steps on the ECO Form.

5.11.3 (Cont'd)

5. Ensure any component that will not be restored to its "normal position" upon release of the ECO (except components tag shared with another ECO), has a Tag Removal Note to identify what action, method, or procedure will restore the component to its normal position to maintain configuration control.

5.11.4 The US/WCCS/SRO shall determine if any tag sharing warnings were received upon release of the ECO, and verify that multiple sections that are approved for release and awaiting execution are performed in the correct order to ensure configuration control is maintained.

5.11.5 The US/WCCS/SRO designee shall authorize the removal of each tag and the re–positioning of each component by signing the Release Authorized block on the ECO Form.

1. This signature denotes that all Control Forms for that ECO have been released and are accounted for.

5.12 ECO Tag Removal and Equipment Restoration

NOTE

*The ESOMS Clearance Module component **PLACEMENT** and **RESTORATION** electronic signatures are to be used as the official verifications. Signing the computer for another operator is not allowed except for LLRT or Integrity ECOs. The use of the hard copy (paper) as component position verification and IV should **only** be used when the ESOMS Computer System is not available or not functioning correctly.*

5.12.1 If electrical grounds were installed, the US/WCCS/SRO designee shall contact the Electrical Department to sign for electrical ground removal verification.

1. The Electrical Department General Maintenance Leader/Supervisor shall authorize removal of the electrical grounds.
2. Electrical Department personnel shall sign the applicable step on the ECO form indicating grounds have been removed.
3. Electrical Department Supervision or GML shall independently verify that grounds have been removed and sign the applicable steps on the ECO.

5.12.2 The operator releasing the ECO shall be briefed to ensure the intent of the ECO is understood for the safe release of the ECO.

5.12.3 ECO tags shall be removed and components realigned in the sequence specified on the ECO Form.

1. If a tag from a different ECO is found on a component that conflicts with the realignment, an ECO tag is found to be missing, or an ECO tag is found on the wrong component, the operator shall immediately stop and notify the US/WCCS/SRO designee of the discrepancy.
2. The US/WCCS/SRO designee shall resolve any problems and note resolutions on the ECO Form, initialing any notes or changes.
3. The first Restoration block of the ECO shall be initialed on the hard copy as each step is performed and the computer records updated as soon as practical.

5.12.3 (Cont'd)

4. CV shall be performed for steps designated by the US/WCCS/SRO designee.

5. After the system piping is filled and pressurized, visually check all vent and drain valves to verify that they are fully seated and NO visible leakage is observed. If leakage is noted, attempt to seat the valve. If the valve can NOT be seated, immediately notify the US/WCCS/SRO designee, and submit a PWO to repair the valve.

5.12.4 Independent Verification of releasing steps shall be performed by a second Qualified Operator in accordance with 0-ADM-031, Independent Verification for systems listed in 0-ADM-031, Independent Verification, Enclosure 1.

1. The IV shall include verification that the proper tag was removed by the first operator.

2. The second Restoration block on the ECO shall be initialed on the hard copy as each IV is performed and the computer records updated as soon as practical.

3. IV steps may be performed in any order.

4. CV of THROTTLED or BACKSEATED valves replace IV. Personnel performing CV of these valves shall place their initials in the second Restoration block of the appropriate step.

5.12.5 The completed ECO Release shall be returned to the Control Room or Work Control Center for review.

5.12.6 The US/WCCS/SRO designee shall:

1. Verify completion of the ECO Form.

2. Verify that FPIs issued for this ECO have been removed.

3. Update the EOOS Log and Outage Risk Assessment Notebook, as required.

4. Review IST and ITOP requirements prior to declaring a component Operable.

5. Ensure that the ECO is closed out.

5.13 ECO Boundary Modification

5.13.1 When notified that an ECO requires a Boundary Modification, the SM/SRO designee shall determine if the Boundary Modification can be performed based upon a review of the following:

1. Current plant conditions
2. Tech Specs/EOOS entries
3. TSA log
4. Temporary procedures in effect
5. Questions listed on Attachment 3, ECO in Effect Longer Than 60 Days. [Commitment - Step 2.3.6]
6. Work in progress on current ECO section and review of additional work orders to be added after the boundary mod is completed.

5.13.2 If the Boundary Modification can be performed, the SM/SRO designee shall perform the following:

1. For Work Stoppage Boundary Modification, verify that all original ECO Control Forms have been returned to Operations or all Holders have signed off the electronic form.
2. **Lock the ECO section** to prevent other Owners or Holders from signing on the existing ECO while the boundary mod is being executed.
3. Direct the RO or authorized operator to modify the ECO as required in accordance with the type of ECO Boundary Modification to be performed.
   a. When reducing an ECO, verify by adding additional steps, that all components now outside the new boundary are in their correct position by use of prints, procedures, and attachments.
   b. Add any special instructions for the Boundary Modification as informational steps on the ECO. For Boundary Modifications for Test, this should include a step on the ECO to perform the test.
   c. Add steps to verify that electrical grounds have been removed, as required.
   d. Verify that no other Boundary Modification is in effect on the ECO.
4. Review the Boundary Modification for accuracy and completeness.
   a. The review and approval cycle shall be performed in the same manner as a new ECO; however, the second SM/SRO Designee independent review is not required.
   b. Sign the ECO Boundary Modification Form, authorizing performance.

NOTE

If the work stoppage boundary modification only applies to a specific discipline or activity, it should be specified by the owners on the boundary modification form, and work may continue on other work orders not affected by the boundary modification.

5.13.3 For a Work Stoppage Boundary Modification, perform the following:

1. Direct a qualified operator to perform the Boundary Modification.
   a. After the system is filled or pressurized, verify no leakage.
2. When the Boundary Modification is complete, notify the ECO Owners to pick up their ECO Control Form(s) and a copy of the modified ECO. Owners and Holders must sign on to the Control Form for the new ECO section.
3. Verify that the computer is updated for the changes made.

5.13.4 For a Non-Work Stoppage Boundary Modification, perform the following:

1. Direct a qualified operator to perform the Boundary Modification.
   a. After the system is filled or pressurized, verify NO leakage.
2. When the Boundary Modification is complete, notify the ECO Owners to pick up a copy of the modified ECO.
3. Verify that the computer is updated for the changes made.

NOTE

Within 5 days of execution of an ECO Boundary Modification for the purpose of testing, the boundaries should be restored or the ECO should be released.

5.13.5 For a Boundary Modification for the purpose of testing, perform the following:

1. Direct a Qualified Operator to perform the Boundary Modification.
   a. After the system is filled or pressurized, verify NO leakage.
2. Notify the test owner that the test may be performed.
3. Restore the ECO Boundary as necessary when requested by the test owner.
4. When the boundary has been restored, notify the ECO Owners to pick up their ECO Control Form(s) and a copy of the modified ECO. Owners and Holders must sign on to the new ECO section.
5. Verify that the computer is updated for the changes made.

5.14 ECO Revision

5.14.1 ECO Revision - is a modification to an existing ECO that does not alter the ECO ISOLATION boundary. US/SRO approval is required although it is not necessary to route boundary modification forms. Revisions may be used:

1. For the addition of restoration steps after execution of the ECO section.
2. For the addition or removal of tags that do not require work stoppage, affect the boundary or conflict with work orders assigned to the original ECO section.
3. To remove tags that were incorrectly issued or issued on the wrong equipment during the ECO execution and before acceptance of the ECO.
4. To add steps to include information tags or update annunciator panels.
5. To correct errors of a clerical nature, such as typographical errors in valve nomenclature or component location.

5.14.2 When performing a revision, the following method shall be used:

1. SRO approval prior to implementation of the revision.
2. The preparer shall verify the Original ECO section is locked to prevent owners and holders from signing on during the revision process.
3. The preparer of the ECO revision shall notify all Owners and get their concurrence prior to implementation.
4. The Owners shall notify all Holders of the Revision.
5. The ECO Owner/Coordinator for each discipline shall obtain a copy of the revised ECO. If The ECO Holder form is used, it shall be updated by the Owner of that discipline.

5.15 Bus Outages (Bus Clearances)

NOTE

This procedure section refers ONLY to Electrical Isolation Controls for 4KV Switchgear components.

5.15.1 All 4KV sources of power to affected 4KV bus shall be isolated by the following methods or combination of methods:

1. 4KV breaker racked out on Bus Clearance (Breaker may or may not be on affected bus)

2. EDG disabled on Bus Clearance

3. Switching order to OPS personnel and referenced by a step in the Bus Clearance

4. 480V LC bkrs racked out on Bus Clearance

5. Some other acceptable means (i.e., power leads determined and tagged on Bus Clearance)

CAUTION

In the event As Found meggering of the 4KV bus is necessary, the department performing the meggering is required to verify a visible air gap on all breakers on that bus, and to station a person whose sole responsibility will be to maintain that air gap.

5.15.2 If Bus Outage Tags are to be used, a Bus Outage Caution clearance shall be generated to hang the Bus Outage Tags on the individual Danger tags. The Bus Outage Tags shall be removed prior to the release of the Bus Clearance tags.

5.15.3 For ECOs which require the 4KV breaker as isolation which are approved after the bus outage commences and had not been previously tagged, a step shall be added to the Bus Outage Caution Clearance so that the Danger Tag can be hung with a Bus Outage Tag (Sleeve)

1. The Owner for the new ECO shall become an active holder of the Bus Clearance on his department's control form.

OR

2. For ECOs which are releasing the danger tag from the breaker currently on a Bus clearance, the Bus Outage Caution Clearance shall be revised to remove the Bus Outage Tag (sleeve) prior to removing the danger tag.

5.15.4 The Bus Outage Caution Clearance will be a separate section that is approved and executed after the Bus Clearance has been executed. This clearance will issue Bus Outage Tags (sleeves) for all 4160V breakers in the Bus Clearance that are not providing Bus isolation and currently are danger tagged. These sleeves will be hung over the danger tags and do not require independent verification.

1. If a Danger tag is not removed, a Bus Outage Tag shall be used to alert maintenance personnel that electrical isolation for that breaker is provided by the Bus Clearance.

2. Upon restoration of the Bus Clearance, the individual breakers will be verified in its original position (normally Racked Out) and the Bus Outage Tags shall be removed.

    a. Any Caution Tags or Bus Outage Tags hung in reference to the Bus Clearance shall be removed prior to releasing the Bus Clearance.

5.15.5 The Owner of the Bus Clearance shall be the SM and one individual from each department affected by that ECO.

1. Each department head shall designate the Owner for that department.

2. That individual must have supervisory jurisdiction over all of the affected holders.

3. All Owners of the Bus Clearance shall accept the Bus Clearance as the electrical isolation for their individual ECOs before Bus Outage Tags are hung superseding the individual ECO Tags.

4. The Owners signature on his Bus Clearance Control Form signifies his permission to hang Bus Outage Tags.

5.15.6 Each craft performing work on the 4KV bus shall have a Supervisor become a Owner on the Bus Clearance prior to commencing any work related to the bus outage.

1. This shall be done by attaching the new WO to the Bus Clearance.

5.15.7 No Boundary Modification for the purpose of testing shall be performed on the Bus Clearance unless all other affected ECOs have had their original boundaries restored.

1. The one exception is a Boundary Modification for testing of the affected sequencer under the condition that all 4KV breakers on the affected 4KV bus are racked out with test umbilicals disconnected prior to sequencer testing.

2. During the sequencer Boundary Modification for the purpose of testing, all individual Bus Clearance Control Forms are accounted for and no work is authorized on the affected 4KV bus.

5.16 Review of ECOs

5.16.1 The Shift Manager or designee shall perform a monthly review of all ECOs active for greater than 30 days.

NOTE

ECOs written for the long-term administrative control of equipment, which is to be abandoned or will require more than 30 days to repair, are not subject to the 30-day duration limit, and do not need an evaluation every 30 days per the ECO in Effect Longer than 30 Days Sheet, provided there has been a condition report generated with an action item to release the administrative ECO once the condition has been corrected. They are still subject to the audit and to the 10 CFR 50.59 Applicability Determination/Screening Review per the ECO Evaluation Sheet after 60 days in accordance with ECO in Effect Longer Than 60 Days (similar to Attachment 3).

1. An inspection of the ECO tags shall be performed. If a unit is in Mode 4, 5, or 6, the inspection should be a spot check only.

2. Damaged or missing tags shall be replaced.

3. Copies of each outstanding ECO shall be routed by transmittal to the respective Owners for their review and feedback on the clearance status.

4. Copies of all ECOs active for greater than 60 days at the time of the review shall have an Attachment 3 completed by the Operations Support Supervisor/Designee (not applicable if a 10 CFR 50.59 evaluation is attached to the clearance).

5. ECOs greater than 60 days at the time of the review shall be checked to ensure previous required reviews have been completed and are attached to the ECO. If the reviews are not attached to the ECO, the responsible department manager shall be notified to resolve the discrepancy.

6. ECOs active for greater than 90 days at the time of the review shall be routed for review by appropriate plant management with the purpose of expediting their release.

7. The SM shall document this review by initialing 0-OSP-200.1, Schedule of Plant Checks and Surveillances, when the review has been completed.

5.16.2 The ECO Owners shall review each ECO provided by the Shift Manager and:

1. Request release, or
2. Document the reason the ECO can NOT be released within 30 days, and provide the estimated release date the ECO in Effect Longer than 30 Days Form.
3. Return the completed forms to the Shift Manager.

5.16.3 The ECO Owner review shall be documented by attaching the ECO in Effect Longer than 30 Days Form to the ECO.

5.16.4 ECOs requiring release or corrective action shall be reported to the Assistant Operations Manager.

5.16.5 The Operations Support Supervisor/designee shall perform a review of 10 CFR 50.59 Applicability Determination/Screening of all ECOs not released within 60 days when requested by the SM, or scheduled by 0-OSP-200.1, Schedule of Plant Checks and Surveillances.

1. The Shift Manager shall provide the Operations Support Supervisor/designee with copies of ECOs requiring review.
2. The review (if not previously performed and attached to the ECO) shall be documented on a form similar to Attachment 3, ECO in Effect Longer Than 60 Days.
3. ECOs requiring release or corrective action shall be reported to the Assistant Operations Manager.
4. Return the completed safety review to the Shift Manager.

5.16.6 The safety review shall be documented by attaching the ECO in Effect Longer Than 60 Days Form to the ECO.

5.16.7 The Operations Support Supervisor/designee shall document this review (per Attachment 3, ECO in Effect Longer Than 60 Days) by initialing 0-OSP-200.1, Schedule of Plant Checks and Surveillances, when the review has been completed.

5.17 ECO Computer Failure

5.17.1 When the ESOMS ECO Computer System is not available immediately, call the help desk to get NIS assistance or the ESOMS Operations Administrator. If NIS cannot restore the ESOMS ECO System in a timely manner, continue with this procedure section.

5.17.2 If an ECO is required to be issued during this failure, fill out forms similar to Attachment 1 of this procedure and Attachments 2 and 3 of 0-ADM-212, In-Plant Equipment Clearance Orders. Use the same guidance as Subsections 5.7 through 5.9 without the computer verification requirements.

5.17.3 If an active ECO is required to be released during this failure, fill out forms similar to Attachment 1 of this procedure and Attachments 2 and 3 of 0-ADM-212, In-Plant Equipment Clearance Orders. Use the same guidance as Subsections 5.10 and 5.11 without the computer verification requirements.

CAUTION

The Shift Manager shall ensure all Owners and Holders have signed the hard copies (paper) of the ECO Owner and Holder Forms similar to Attachments 2 and 3 of 0-ADM-212, In-Plant Equipment Clearance Orders, when preparing boundary modifications and/or revisions with the ESOMS System out of service.

5.17.4 If a boundary modification or revision is required during this failure, fill out forms similar to Attachment 4 of 0-ADM-212, In-Plant Equipment Clearance Orders, and follow the guidance of Subsections 5.12 and 5.13 of this procedure without the computer verification requirements.

END OF TEXT

ATTACHMENT 1
(Page 1 of 4)

ECO FORM

ECO FORM

ECO COVER SHEET

SAMPLE

1	Unit Number:		2	Equipment Clearance Order Number:
4	Equipment/System to be Tagged:			
5	Reason for Equipment Clearance:			
6	Opened By:		3	System Number:
10	Closed By:			

DATE ______
DOCT ______
SYS ______
ITM ______

12	Equipment Clearance Order Verified Correctly Hung							
	Conducted By	Date	Conducted By	Date	Conducted By	Date	Conducted By	Date

EOOS Log Update (Upon Releasing) ☐ YES ☐ NO ☐ N/A (Circle One)

Release Review: ______________________ Date: __________ Time: __________

ATTACHMENT 1
(Page 2 of 4)

ECO FORM

ECO FORM

ECO SECTION COVER SHEET

1	Unit Number:	2	Equipment Clearance Order Number:
3	System Number:		Equipment Clearance Order Section:
4	Equipment/System to be Tagged:		
5	Reason for Equipment Clearance:		

DATE ____
DOCT ____
SYS ____
ITM ____

6 and 8

Prepared By:		
US Reviewed By		
SM Reviewed By		
Verified Executed		
Work Complete		
Equip I/S Boundary Ck'd		
Grounds Removed Verif		
Release Review By		
Release Authorized By		
Tags Verif Removed By		

7

Dept	Owner Accepted	Date/Time	Owner Release	Date/Time
OPS				
MECH				
ELECT				
PROJ				
ENG				
RELAY				
I/C				
HP				
OTHER				
OTHER				
OTHER				

9 Safety Review:

Prepared By:	N – None
US Reviewed By	No
SM Reviewed By	No
Verified Executed	No
Work Complete	No
Equip I/S Boundary Ck'd	No

10 Hazards:
11 Special Instructions:

ATTACHMENT 1
(Page 3 of 4)

ECO FORM

ECO FORM

TAG HANG LIST FOR ECO

Page ______ of ____

Equipment ID	Equipment Description	Equipment Location	Tag Serial Number	Tag Type	Place Seq	Place Config	1st	2nd	Notes

ATTACHMENT 1
(Page 4 of 4)

ECO FORM

ECO FORM

TAG REMOVAL LIST FOR ECO

Page ______ of ____

Equipment ID	Equipment Description	Equipment Location	Tag Type	Rest. Seq	Rest. Config	1st	2nd	Notes	Tag Serial

ATTACHMENT 2
(Page 1 of 1)

ECO IN EFFECT LONGER THAN 30 DAYS

1. **TO:** Shift Manager

2. **FROM:** ______ Operations ______ Engineering ______ QC

   ______ Electrical ______ Mechanical ______ I&C

   ______ Other ______________
   Specify

3. Date: ______________ CL. No.: ______________

   Equip: ______________ Sys No.: ______________

   Unit: ______________ Released: ______________

4. Estimated Date of Release: ______________

5. Reason for Extension:

   ______ Need Parts ______ Shutdown Item

   ______ Equipment Removed ______ Administrative Control

   ______ Other ______________
   Specify

6. Remarks: ______________

   ____

   ____

   ____

7. Supervisor/Leader: ______________
   Signature

   Date: ______________

ATTACHMENT 3
(Page 1 of 1)

ECO IN EFFECT LONGER THAN 60 DAYS

1. Requested By Shift Manager or Designee:
   a. ECO No.: __________________
   b Date Approved: __________________
   c. System: __________________
   d. Affected Equip: ____
   (Description and No.)

2. Reviewed By Operations Support Supervisor or Designee:
   a. How does this ECO affect the running units?

   b. How does this ECO affect the Technical Specification?

   c. Reasons for being out of service:

3. 10 CFR 50.59 Applicability Determination/Screening Review:

   A. Perform and attach a 10 CFR 50.59 Applicability Determination/Screening review per 0-ADM-104.

   B. Is a 10 CFR 50.59 evaluation required? YES ☐ NO ☐

4. If Item 3B above is a Yes, route this form to the Engineering Department for a 10 CFR 50.59 evaluation prior to return to the Shift Manager.

REMARKS:

5. If the answer to item 3B is No, sign form and return to Shift Manager.

   Operations Support Supervisor/Designee __________________ Date: ____________

6. Update 0-OSP-200.1, Schedule of Plant Checks and Surveillances, when this review has been completed.

ATTACHMENT 4
(Page 1 of 1)

BREAKER/VALVE ALIGNMENT SHEET

1. If this form is being used to correct a mispositioned breaker/valve, a 50.59 screening is NOT required.
2. If this form is being used as the work control document to track component manipulations, a 50.59 screening SHALL be performed.

10 CFR 50.59 Screen Questions (See Subsection 5.3 of 0-ADM-104)		
1. Does the proposed activity require a change to the Technical Specifications? **Technical Specifications Reviewed** ____________	☐ NO	☐ YES
If YES, request and receive a License Amendment prior to implementation of the activity.		
2. Does the proposed activity involve a change to an SSC that adversely affects an UFSAR described design function?	☐ NO	☐ YES
3. Does the proposed activity involve a change to a procedure that adversely affects how UFSAR described SSC design functions are performed or controlled?	☐ NO	☐ YES
4. Does the proposed activity involve revising or replacing an UFSAR described evaluation methodology that is used in establishing the design bases or used in the safety analysis?	☐ NO	☐ YES
5. Does the proposed activity involve a test or experiment not described in the UFSAR, where an SSC is utilized or controlled in a manner that is outside the reference bounds of that design for the SSC or is inconsistent with analyses or descriptions in the UFSAR?	☐ NO	☐ YES
UFSAR Chapters Reviewed ____________		
If questions 2, 3, 4, or 5 are answered YES, a 10CFR50.59 Evaluation shall be performed.		
Prepared by ____________ Date ____________		

START TASK:
SRO review ____________
Date ____________

SM Approval ____________
Date ____________

RESTORATION COMPLETE:
SRO review ____________
Date ____________

STEP	**FS/US/SM Permission** (Initial/Date)	**BKR/ VALVE ID**	**DESCRIPTION** (Location, System, Train, etc.)	**Normal Position** (Open/Closed)	**Positioned To** (Open/Closed)	**Positioned To** (Initial/Date)	**Restored To Normal** (Initial/Date)	**Verified By** (Initial/Date)

ATTACHMENT 5
(Page 1 of 1)

LOCAL JOINT ADVISORY SAFETY COMMITTEE (LJASC) & NUCLEAR JOINT SAFETY COMMITTEE (NJSC) REVIEW FORM

Subject: ______________________________ Date: ____________

Description of condition, including proposed resolution*

____
____
____
____
____
____

* Provide drawing details and other supporting documents.

LOCAL JOINT ADVISORY SAFETY COMMITTEE (LJASC)

RECOMMENDED ☐ REJECTED ☐ COMMENTS ATTACHED ☐

______________ / ______________ / ______________
Signature Union Committeeman *Print* *Date*

______________ / ______________ / ______________
Signature Company Committeeman *Print* *Date*

LJASC may require approval of the NJSC Members

NUCLEAR JOINT SAFETY COMMITTEE (NJSC)

RECOMMENDED ☐ REJECTED ☐ COMMENTS ATTACHED ☐

______________ / ______________ / ______________
System Council Safety Chairman *Print* *Date*

______________ / ______________ / ______________
Chief Nuclear Officer *Print* *Date*

______________ / ______________ / ______________
Signature Union Committeeman PTN *Print* *Date*

______________ / ______________ / ______________
Signature Company Committeeman PTN *Print* *Date*

______________ / ______________ / ______________
Signature Union Committeeman PSL *Print* *Date*

______________ / ______________ / ______________
Signature Company Committeeman PSL *Print* *Date*

NJSC Action Item #: ______________

W97:JE/nw/nw/cls

ATTACHMENT 6
(Page 1 of 1)

STARTER MAIN CONTACTS AND FUSE REMOVAL FORM

ECO #:__________________ BREAKER #_____________

STARTER MAIN CONTACTS ON ALL 3 PHASES HAVE BEEN REMOVED

FUSES HAVE BEEN REMOVED: ____YES ____N/A

OPERATIONS:____________________________ ________________________ _________________
Signature *Print* *Date*

EM JOURNEYMAN:________________________ ________________________ _________________
Signature *Print* *Date*

EM GML:________________________________ ________________________ _________________
Signature *Print* *Date*

AFFIX THIS SHEET TO BREAKER PANEL

REMOVE AFTER RESTORATION

ATTACHMENT 7
(Page 1 of 9)

ECO CHECKLIST

This ECO Checklist is a tool to aid in the preparation and approval of ECOs. It provides guidance for materials that should be included in an ECO package and is for informational purposes.

ECO Preparer – Checklist #1

ECO# ____________

(✓ as appropriate)

ECO Package Contents

	Y	N	N/A	
1.	☐	☐	☐	Copy of the ECO (cover sheet, tag list).
2.	☐	☐	☐	Drawings (P& IDs, EWDs, breaker list, etc) marked up to show boundary.
3.	☐	☐	☐	Any other materials needed or used in the preparation of ECO.

The individual preparing the ECO will review the PWO(s) to identify:

1.	☐	☐	☐	Principle Equipment.
2.	☐	☐	☐	Scope of Work.
3.	☐	☐	☐	Recommended isolation points (For ECO purpose, the PWO is not a controlled document).
4.	☐	☐	☐	Notes, emails, etc. to identify communications or corrective actions taken against discrepancies found during the preparation of the ECO.

ECO Reviewer

1.	☐	☐	☐	ECO boundary provides proper isolation for described work (verify all components of ECO package checklist).

ATTACHMENT 7
(Page 2 of 9)

ECO CHECKLIST

The individual preparing the ECO package will consider the following:

	Y	N	N/A	Reviewer	
1.	☐	☐	☐	☐	Principle Equipment identified in "Reason for ECO".
2.	☐	☐	☐	☐	Work assigned to the ECO, when PWO is at Status of 31 or greater & scheduled.
3.	☐	☐	☐	☐	Procedures (OP Attachment 1, Startup & Shutdown sections, BKR racking)
4.	☐	☐	☐	☐	Tech Spec, ODCM, or ADM-016 if applicable & note in special instructions
5.	☐	☐	☐	☐	Isolation Boundaries (Use two controlled documents. If two are not available, must have two SROs review ECO for proper isolation).
6.	☐	☐	☐	☐	Proposed vent & drain paths, if applicable.
7.	☐	☐	☐	☐	Proper grounding step and a Restoration step (EM procedurally required). Instructions to leave cubicle unlocked if receiving grounds.
8.	☐	☐	☐	☐	Proper use of Danger Tags for the isolation points needed for personnel protection.
9.	☐	☐	☐	☐	Proper step sequencing, i.e. Sequencing shall be such that all boundary isolations are closed prior to opening any valves to vent, drain, or which would allow process flow. Breakers before Valves, System Isolation before Vent & Drain. Locations considered for efficiency of no backtracking.
10.	☐	☐	☐	☐	Proper use of Caution, Info, MOVATS/ operating permit tags and No-tag steps, **Zero** Voltage checks, if applicable. Position of HANG TAG should be considered with Notes.
11.	☐	☐	☐	☐	**IV** is for Configuration Control; refer to 0-ADM-031 for applicable systems. IV all danger tags including restoration.
12.	☐	☐	☐	☐	Special Instructions. Restoration steps for 4KV grounds if installed?
13.	☐	☐	☐	☐	Any procedural requirements with respect to the ECO.
14.	☐	☐	☐	☐	Expected plant conditions, system and alarm responses. This includes the designated unit, and the impacts associated with shared systems, and the opposite unit
15.	☐	☐	☐	☐	Unit & Train matches the equipment identified in the PWO(s) attached.
16.	☐	☐	☐	☐	**Conflict Check, AND Conflict Check Un-issued.**
17.	☐	☐	☐	☐	Any needed Label corrections or changes to the Labeling or Total Equip Databases?
18.	☐	☐	☐	☐	CR(s), needed to revise drawings, written?
19.	☐	☐	☐	☐	Guarded Equipment Signs Required (OP-AA-102-1003)?

ATTACHMENT 7
(Page 3 of 9)

ECO CHECKLIST

1st SRO Approval – Checklist #2

ECO# ____________

(✓ as appropriate)

	Y	N	N/A	**Review for Authorization to Execute ECO** (perform prior to signing "Approved by SRO")
1.	☐	☐	☐	Principle Equipment to be worked identified & All Work Orders assigned to the ECO?
2.	☐	☐	☐	Hazards, Special Instructions/Comments sections reviewed? Chemistry verification that no biocides are present prior to draining (TPCW, CCW, EDG Cooling, HVAC Chill Water)
3.	☐	☐	☐	Isolation Boundaries Reviewed? (Use two controlled documents (not PWO). If two controlled documents are not available, two SROs must review for proper isolation).
4.	☐	☐	☐	Vent & Drain paths reviewed, if applicable?
5.	☐	☐	☐	Grounds reviewed, if applicable? Restoration steps for 4KV grounds if installed?
6.	☐	☐	☐	Tagging lifted leads on Diesel powered equipment (Electrical Support)
7.	☐	☐	☐	Proper use of Caution, Info, MOVATS/ Operating permit tags and/or Non-tagged steps?
8.	☐	☐	☐	Proper use of Danger Tags for isolation points needed for personnel protection?
9.	☐	☐	☐	Proper steps sequenced & Placement Configuration identified? (OPEN, CLOSED, ON, OFF, etc..) Sequencing shall be such that all boundary isolations are closed prior to opening any valves to vent, drain, or which would allow process flow.
10.	☐	☐	☐	Any Procedural requirements with respect to the ECO?
11.	☐	☐	☐	Plant conditions acceptable? This includes the designated unit, and the impacts associated with shared systems, and the opposite unit
12.	☐	☐	☐	Redundant train operability assessed?
13.	☐	☐	☐	Pre-ECO testing required? Performed?
14.	☐	☐	☐	Applicable procedure prerequisites satisfied? Including Checklist # 4 Complete?
15.	☐	☐	☐	ECO Risk Potentials reviewed? Acceptable?
16.	☐	☐	☐	ECO Production (Generation Load Limiting) Risks considered? Acceptable?
17	☐	☐	☐	Online Risk, Load Limiting, Load threatening?
18.	☐	☐	☐	T.S., Safety Related, Admin requirements initiated? Requirements met? (EOOS)
19.	☐	☐	☐	An integrated review of PRA/PSA per WM-AA-1000 needed / completed? (EOOS)
20.	☐	☐	☐	Fire Protection Impairment (FPI) actions/paperwork initiated? (Appendix R) (EOOS)

ATTACHMENT 7
(Page 4 of 9)

ECO CHECKLIST

1st SRO Approval – Checklist #2 (Cont'd)

ECO# ______________

21.	☐	☐	☐	Containment Integrity actions/paperwork initiated? Inside Containment during Modes 1 and 2 requires OPS Manager and Phenolic tags.
22.	☐	☐	☐	Verification type properly identified? (CV, IV, SC or NV)
23.	☐	☐	☐	Mode/Condition Dependent actions initiated? Performed?
24.	☐	☐	☐	For Boundary Mod or Revision, electronic LOCK Applied?
25	☐	☐	☐	Engineering review completed, if required? Engineering review is required if Vital 120V AC or DC breaker opening is NOT proceduralized. (0-ADM-212.1 5.1.21)
26.	☐	☐	☐	**Electronically sign "Approved by SRO"**
27.	☐	☐	☐	**Independent Review** by **SM** - if Tech Spec LCO?
28.	☐	☐	☐	**Independent Review** by **SM** - if Containment Integrity?
29.	☐	☐	☐	**Independent Review** by **SM** - if Adverse impact on redundant equip or other Unit?
30.	☐	☐	☐	**EOOS Log** entry? (Tech Spec, Risk Significance, Appendix R, IST/ISI, Maint. Rule)
31.	☐	☐	☐	ECO paperwork printed? Tags printed?
32.	☐	☐	☐	ECO Application/Tag Placement **Pre-job Briefing** performed?

ATTACHMENT 7
(Page 5 of 9)

ECO CHECKLIST

2nd SRO Review/Challenge of ECO prior to Execution – Checklist #3

ECO# ____________

(✓ as appropriate)

	Y	N	N/A	Does the ECO package include the following:
1.	☐	☐	☐	Prints with highlighted isolation boundaries.
2.	☐	☐	☐	Review copy of the ECO.
3.	☐	☐	☐	Procedures, as needed.
4.	☐	☐	☐	Any other materials needed or used in the preparation of ECO.

				Review the PWO(s) to identify:
1.	☐	☐	☐	Principle Equipment
2.	☐	☐	☐	Scope of Work.
3.	☐	☐	☐	Recommended isolation points.

				Perform a Challenge of the ECO and consider the following:
1.	☐	☐	☐	Principle Equipment properly identified.
2.	☐	☐	☐	Scope of Work assigned to the ECO & schedule.
3.	☐	☐	☐	Isolation Boundaries (OPEN/CLOSED, **LOCKED** CLOSED/**LOCKED** OPEN, OFF/ON, RACKED IN/RACKED OUT. PLACED IN OFF or ON being phased out. **TAG SHARE.** (Two controlled documents used to verify proper isolation or two SROs have reviewed for proper isolation).
4.	☐	☐	☐	Proposed vent & drain paths, if applicable.
5.	☐	☐	☐	Proper grounding step and a Restoration step (EM procedurally required). Instructions to leave cubicle unlocked if receiving grounds.
6.	☐	☐	☐	Proper use of Danger Tags for the isolation points needed for personnel protection.
7.	☐	☐	☐	Proper step sequencing, i.e. Breakers before Valves, System Isolation before Vent & Drain. Locations considered for efficiency of no backtracking. Sequencing shall be such that all boundary isolations are closed prior to opening any valves to vent, drain, or which would allow process flow.
8.	☐	☐	☐	Proper use of Caution, Info, MOVATS/operating permit tags and Non-tagged steps, **Zero** Voltage checks, if applicable. Position of HANG TAG should be considered with Notes.

ATTACHMENT 7
(Page 6 of 9)

ECO CHECKLIST

2^{nd} SRO Review/Challenge of ECO prior to Execution – Checklist #3

ECO# ____________

9.	☐	☐	☐	**IV** is for Configuration Control, refer to 0-ADM-031 for applicable systems. IV all danger tags including restoration.
10.	☐	☐	☐	Special Instructions.
11.	☐	☐	☐	Any procedural requirements with respect to the ECO.
12.	☐	☐	☐	Expected plant conditions, system and alarm responses. This includes the designated unit, and the impacts associated with shared systems, and the opposite unit.
13.	☐	☐	☐	Unit & Train match the equipment identified in the PWO(s) attached.
14.	☐	☐	☐	Online Risk Monitor (OLRM) require updating?
15.	☐	☐	☐	EOOS Approved (**SM**)
16.	☐	☐	☐	Sign **"Reviewed by NPS"** block in NOMS, if not already signed by **SM**. (**SM** signs when **IV** by Shift Manager is required – see Checklist #2.)
17.	☐	☐	☐	ECO Hang/Modify 'Pre-job Brief performed?

ATTACHMENT 7
(Page 7 of 9)

ECO CHECKLIST

Clearance Walkdown Checklist #4

Clearance ID ______________ **Unit** __________

SECTION 2	Clearance Walkdown Checklist	YES	NO	N/A
1.	Are locks or seals properly identified? If NO*, list changes needed or what is required.	☐	☐	☐
2.	Are there any adjacent hazards that would affect hanging the Clearance? If YES*, last hazards or what is needed to safely hang the Clearance.	☐	☐	☐
3.	Is the Energy Release Criteria identified, appropriate, and capable of being performed? If NO*, list recommendations and return for re-write.	☐	☐	☐
4.	Are hose/fittings needed for draining/venting? If YES*, list materials needed.	☐	☐	☐
5.	Are locations correct? Are they specific enough? If NO*, initiate an ECR (Engineering Change Request) or Condition Report as needed.	☐	☐	☐
6.	Are there any elevated Clearance points that require ladders or scaffolding that is not or will not be available? If YES*, list what is required.	☐	☐	☐
7.	Is an entry into High-Rad or Contamination Area required? If YES*, determine RWP required and/or HP support required.	☐	☐	☐
8.	Is the tag sequence proper? If NO*, list concerns and return for re-write.	☐	☐	☐
9.	Are procedures listed that are needed during Clearance? If NO*, update the Clearance to reflect any required procedure.	☐	☐	☐
10.	Will any off normal "Tags Plus" equipment be necessary to prevent inadvertent operations of danger tagged components (Handwheel clam shells, etc.)? If YES*, list what would be necessary.	☐	☐	☐
11.	Are label requests required? If YES*, initiate label request and indicate labels requested.	☐	☐	☐
12.	Consider including photographs to assist the implementation of the Clearance.	☐	☐	☐
13.	Do sliding links or lifted lead points have adequate thread or clearance?	☐	☐	☐
14.	Identify other tools/equipment necessary to perform Clearance.	☐	☐	☐

COMMENTS (mandatory for any "*" response) WALK DOWN WAIVED ☐

ATTACHMENT 7
(Page 8 of 9)

ECO CHECKLIST

Authorization to Release ECO - Checklist #5

ECO# ____________

(✓ as appropriate)

	Y	N	N/A	**SRO ECO Release Authorization:**
1.	☐	☐	☐	For Boundary Mod or Revision, has **Holder Lock** been applied in NOM's?
2.	☐	☐	☐	Restoration positions and Sequence correct? (including Procedure if used - use two controlled documents)
3.	☐	☐	☐	Consider open Procedures for Restoration positions (i.e., OP-201).
4.	☐	☐	☐	Restoration positions changed from original? (If Yes, then REPRINT.)
5.	☐	☐	☐	Non-tagged items "worked on" OR "re-positioned" while ECO in place, identified?
6.	☐	☐	☐	Verification type properly identified? (CV, IV, SC or NV)
7.	☐	☐	☐	PMT's being coordinated with ECO removal?
8.	☐	☐	☐	Instructions/Comments section reviewed?
9.	☐	☐	☐	ECO Risk Potentials considered? Addressed? (Shared Tags?)
10.	☐	☐	☐	ECO Production (Generation Load Limiting) Risks considered? Addressed?
11.	☐	☐	☐	All Controllers have signed off with the Work Complete box checked?
12.	☐	☐	☐	EOOS log book has been updated for "Maintenance Complete" as applicable. Exceptions can be approved by a SM or AOM.
13.	☐	☐	☐	Walk down of job sites performed (no required, yet highly recommended)?
14.	☐	☐	☐	Online Risk Monitor (OLRM) updated?
15.	☐	☐	☐	Electronically sign "Release Authorized by".
16.	☐	☐	☐	ECO Restoration Pre-job Briefing performed?

ATTACHMENT 7

ECO CHECKLIST

Authorization to Release ECO - Checklist #5 (Cont'd)

ECO# ____________

(✓ as appropriate)

	Y	N	N/A	**ECO Closeout Activity:**
1.	☐	☐	☐	Completed ECO Release paperwork returned to WCC (or Control Room)?
2.	☐	☐	☐	EOOS Log updated? (Fire Protection Impairment, Barrier Breach, Tech Spec)
3.	☐	☐	☐	IST, ISI & ITOP requirements reviewed?
4.	☐	☐	☐	All Tags removed/accounted for (or noted if ECO Shared Tags)?
5.	☐	☐	☐	ECO forms completed?
6.	☐	☐	☐	ECO electronically closed-out?

FINAL PAGE

FPL	TURKEY POINT UNIT 3 NORMAL OPERATING PROCEDURE SAFETY RELATED **CONTINUOUS USE**	Procedure No. **3-NOP-030**
		Revision No. **9**

Title:

COMPONENT COOLING WATER SYSTEM

Responsible Department: **OPERATIONS**

Special Considerations:

> This is a Reactivity Management Procedure.

> This is an Upgraded Procedure. Initial use should include increased awareness because of potential technical and/or sequential changes to the procedure. After initial use of this procedure, provide comments back to the Procedure Upgrade Project.

> **FOR INFORMATION ONLY**
> Before use, verify revision and change documentation (if applicable) with a controlled index or document.
> DATE VERIFIED_________ INITIAL__________

Revision	Approved By	Approval Date
0	Frank Wurster	08/18/08
9	Grant Melin	09/23/11

UNIT #	UNIT 3
DATE	
DOCT	PROCEDURE
DOCN	3-NOP-030
SYS	
STATUS	COMPLETED
REV	9
# OF PGS	

REVISION SUMMARY	
Rev. No.	**Description**
9	**AR 169180, 09/23/11, Roger Sablone** Enhance procedure by deleting a step in section 5.1 and adding a caution 5.9. This is in response to AR 1682178.
8	**AR 1664721, 07/01/11, Brian Fitzgerald** Added Section 5.22, Void Response.
7	**AR 1636357, 04/10/11, Brian Fitzgerald** Revised required position of CV-3-2906, 3B EMERG CONTMT COOLER OUTLET, on Attachment 2 to stem blocked OPEN per TSA 271821. Revised required position of CV-3-2903, 3B EMERG CONTMT COOLER INLET, on Attachment 2 since the control switch for 3V30B, 3B EMERG CONTMT COOLER FAN MOTOR is in STOP while TSA 271821 is implemented. Revised required position of CV-3-2810, 3B EMERG CONTMT COOLER BYPASS, on Attachment 2 since the control switch for 3V30B, 3B EMERG CONTMT COOLER FAN MOTOR Is in STOP while TSA 271821 is implemented.
6	**PCR 09-0757, 04/29/10, Christopher Boyd** **1.** Revised Section 4.2.1 Step 7 to improve wording and reduce operator burden. (CR 09-8035). **2.** Added Limitation 2.2.2.2 which in combination with 2.2.2.3 incorporates the concerns of **PCR 08-5876** for meeting TS 3.7.2.b. (CR 08-36312). **3.** Section 5.9 - Deleted Step 3 for checking only one RHR HX aligned to CCW, as this is ensured by performance of Steps 6 and 7. **PCR 09-1261** **4.** Sections 5.15, 5.16, 5.17, 5.18, 5.19, and 5.20 - Included steps prior to removing or restoring a CCW HX from/to service, to notify Control Room of resulting decrease or increase in Reactivity/Reactor Power. **PCR 09-2679** (CR 09-24287) **5.** Attachment 2 - Added NOTE for MOV-3-749A and MOV-3-749B stating that these valves may be OPEN if in Mode 4, 5, or 6 and associated RHR Loop is in operation. **PCR 09-3743** (CR 09-33304) **6.** Attachment 4 - Aligns RCP CCW flow requirements with Vendor Manual and Design Bases Document. **PCR 10-0488** (CR 09-33802)

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

<u>SECTION</u> <u>PAGE</u>

<u>ATTACHMENTS</u>

1.0 PURPOSE

This procedure provides guidance for the Startup, Shutdown, Normal Operation, and Infrequent Operation of the Component Cooling Water (CCW) System.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions

1. When the CCW headers are **NOT** cross-tied together, the standby pump starts on low pressure on B header only.

2. The Unit 3 and Unit 4 CCW systems can be cross-tied in two locations. One tie is in the supply and return to the High Head Safety Injection Pumps. The second is the PASS System Coolers. Caution must be taken when manipulating any of these valves to ensure both the supply and return valves are from the same unit.

3. Flow through ECC Outlet valves is maintained by actuator travel stop adjustment performed in 3-OSP-030.9, Component Cooling Water Flow Balance and should **NOT** be changed during normal operations. The Shift Manager and System Engineer shall be notified prior to performing adjustment or maintenance on the ECC Outlet valves or actuators. Flow through ECC Outlet Bypass Lines is maintained in accordance with 3-OP-055, Emergency Containment Cooling and Filter Systems. Any adjustment of the ECC Outlet Bypass Isolation Valves to maintain flow within the criteria specified in 3-OP-055 does **NOT** require performance of 3-OSP-030.9.

4. Changing the position of a CCW throttle valve that will increase the flow rate to a component past the nominal operator rounds range may change the flow through other heat exchangers and may invalidate the emergency flow balance established by 3-OSP-030.9. Prior to adjusting the flow past the nominal operator rounds range through any HX, with the exception of adjustments made using TCV-3-144, the System Engineer shall be consulted to determine if the adjustment may be made. When conditions require the isolation of CCW to a component, the System Engineer should be notified, and care should be taken **NOT** to use the throttle valve unless it is the only valve available to isolate the component.

2.1 Precautions (continued)

5. Starting a second CCW Pump may cause MOV-3-626, RCP Thermal Barrier CCW Outlet to close due to high flow (130 GPM). To override High Flow closure of MOV-3-626, the control switch for MOV-3-626 should be manually held in OPEN position <u>until</u> either MOV-3-749A or B is OPEN. IF a second CCW Pump is operating and MOV-3-749A or B is to be CLOSED, THEN the auto closure should be overridden until MOV-3-749A and B are CLOSED and the second CCW Pump is OFF.

6. Unless isolation is needed for emergency, CCW-supplied HXs shall **NOT** be isolated from their respective CCW return header unless the hot (process) side of the HX is isolated first.

2.2 <u>Limitations</u>

2.2.1 General

1. In MODE 1, 2, 3, and 4, the CCW System shall be OPERABLE with Three CCW Pumps and Two CCW HXs. Two CCW Pumps shall be aligned to independent 4160 Volt power supplies, and the third CCW Pump aligned to either of these 4160 Volt power supplies.

2. During normal operation the CCW System headers will be cross-tied at the Pumps and HXs.

3. To prevent CCW system damage from chlorides, the CCW pressure should always be greater than ICW pressure, and CCW HX flows should **NOT** be allowed to exceed maximum limits.

4. During normal operation CCW supply header temperature should **NOT** exceed 105°F.

5. Prior to venting or draining fluid from the CCW System, it is required that Chemistry is notified to determine if the fluid can be vented or drained to a floor drain, or if it needs to be collected in a suitable storage container.

6. Due to inoperability of the Boric Acid Evaporator System, the CCW flow to the Boric Acid Evaporator System has been secured. NCR-587-86 prohibits the use of the Boric Acid Evaporator.

7. Movement of heavy loads greater than 5 tons to OR from the SFP over the cask wash area will require Splitting CCW Headers per 0-ADM-717, Heavy Load Handling in accordance with Section 5.1 of this procedure.

2.2.1 General (continued)

8. The following CCW System maximum flow rates are allowed for system startup:

Equipment Name	Maximum Flow Rates
SIS Pump Headers (each)	38 GPM
Charging Pumps Oil Cooler Hx	171 GPM
Seal Water Heat Exchanger	227 GPM
Non-Regenerative Hx	800 GPM
Spent Fuel Pit Hx	3080 GPM (see # below)
RHR Pump Seal Water HXs (each)	30 GPM
Containment Spray Pump Seal Water HXs (each)	19 GPM
ECCs A Header	2000 GPM* / 3200 GPM** (see # below)
ECCs B Header	4000 GPM* / 6400 GPM** (see # below)
RCP Lower Bearing Oil Coolers	10 GPM
RCP Upper and Lower Bearing Oil Coolers	163 GPM
RCP Thermal Barrier Cooling Coils	30 GPM
Excessive Letdown Hx	251 GPM
Normal Containment Coolers (each)	945 GPM
Rod Drive Coolers (each)	230 GPM
PRZ Steam Sample Hx	42 GPM
PRZ Liquid Sample Hx	42 GPM
RCS Sample Hx	42 GPM
Waste Gas Compressors (each)	90 GPM
RHR HXs (each)	10,400 GPM (see # below)
CCW HXs (each)	6840 GPM***

* Maximum flow thru ECC bypass valve(s)

** Maximum flow thru ECC with outlet valve(s) open is 5000 GPM for 24 hours, then flow shall be reduced to the value indicated above. (JPN-PTN-SENP-95-026)

*** Manufacturer's maximum recommended flow limit for long term operation to minimize tube degradation in accordance with Westinghouse Letter, FPL-86-726 and FPL Letter JPE-PTPO-86-1637.

\# Flow balance performed by 3-OSP-030.9, Component Cooling Water Flow Balance any flow adjustments must be authorized by the System Engineer.

2.2.1 General (continued)

9. When aligning remotely operated valves (i.e., chain operated, reach rods, etc.), the position is required to be verified by local valve position. This requirement may be waived by the Shift Manager in cases of significant radiation exposure, which are those areas designated as high radiation areas, or areas deemed inaccessible by the Shift Manager.

10. Flow limitations for each ECC has been established as follows:

    - 2000 GPM for continuous operations (Manufacturer limit for long term erosion limits.)
    - 3200 GPM for 31 days (Post-LOCA Recirculation limit.)
    - 3600 GPM for 7 days (Erosion limit which allows for initial post accident recovery operations.)
    - 5000 GPM for 24 hours (Initial Safety Injection limit which allows for initial phases of accident response.)
    - 5500 GPM for 1 hour (Initial Safety Injection limit which allows for initial equipment response in the event of an accident.)

11. When RHR is in operation for cooldown, the following applies:

    A. IF the A RHR Loop is required to be OPERABLE, THEN the 3A or 3C CCW Pump powered from 4160 Volt Bus 3A is required to be OPERABLE to support the A RHR Loop.

    B. IF the B RHR Loop is required to be OPERABLE, THEN the 3B or 3C CCW Pump powered from 4160 Volt Bus 3B is required to be OPERABLE to support the B RHR Loop.

    C. With CCW flow isolated from an RHR HX, the RHR flow to that HX should also be isolated.

    D. With normal CCW service loads, one CCW Pump, and two CCW HXs in service, only one RHR HX should be in service.

    E. During unit cooldown with RHR System in operation, CCW supply header temperature should **NOT** exceed 120°F.

2.2.1 General (continued)

11. (continued)

F. One of the following CCW System configurations is required to valve in both RHR HXs:

(1) All CCW HXs are OPERABLE AND in service.

(2) IF only two CCW HXs are OPERABLE, THEN both non-operating CCW Pumps are in PULL-TO-LOCK, AND Technical Specification 3.7.2 entered.

(3) When Unit is in MODE 5 or MODE 6, ICW flow may be isolated to one CCW HX, provided that CCW flow is maintained to all three CCW HXs.

G. IF CCW is required to be isolated to a RHR HX while RHR is in service, AND RCS temperature greater than 180°F, THEN the RHR side of the HX shall be isolated first.

H. IF throttling of the CCW side of the RHR HX is required to limit a cooldown due to problems with FCV-3-605 or HCV-3-758, THEN the following requirements apply:

(1) Only MOV-3-749A or MOV-3-749B shall be used to prevent invalidating the CCW System flow balance.

(2) A minimum of 1000 GPM CCW flow as indicated on ultra sonic instrumentation shall be maintained for the HX with reduced CCW flow.

(3) CCW surge tank level shall be monitored to prevent overfilling due to expansion of water in RHR HX.

(4) System Engineer is aware of need to change the CCW valve positions.

12. If available, both Radiation Monitors R-17A AND R-17B should be in service during CCW System operation; however, R-17A AND R-17B are **NOT** required for CCW to perform its safety related function. When CCW Headers are cross-tied, either R-17A OR R-17B can monitor both headers. When CCW Headers are split, both R-17A AND R-17B is required to be in service to monitor both loops.

2.2.2 CCW Pumps

1. The minimum flow for any CCW Pump during continuous operation should be greater than 3235 GPM. To meet this requirement, no more than two CCW Pumps should be operated other than during pump swapping.

2. When in MODES 1, 2, 3, and 4, two CCW Pumps from independent power supplies must be operable; and if **NOT**, then restored to operable with 72 hours.

3. If CCW Pump A or B is inoperable for any reason other than the performance of 3-OSP-030.1, Component Cooling Water Pump Inservice Test or 3-OSP-030.5, Component Cooling Water Pumps Low Header Pressure Start Test, its breaker is required to be OPEN and racked out and 3D 4KV bus shall be aligned to the bus that powers the inoperable pump so that 3C CCW Pump will start on sequencer.

4. When **NOT** aligned to the sequencer, the 3C CCW Pump should **NOT** be operated. (Except for pump swapping)

5. To prevent exceeding the maximum flowrates on the CCW HXs, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.

2.2.3 CCW HXs

1. Three CCW HXs should normally be maintained in service, since periodic testing of certain equipment, i.e., RHR Pumps or ECCs, may require operating two CCW Pumps due to additional loads placed on the system.

2. MODE changes are permissible while any one CCW HX is out of service. Two CCW HXs shall be verified to be OPERABLE.

3. Flow limitations for each CCW HX have been established as follows:

   - 4063 GPM for continuous operations (TEMA limit.)

   - 6840 GPM for normal plant evolutions, such as, testing, surveillances, Hx cleaning, etc. (Manufacturer limit without vibration concerns.)

   - 7200 GPM for 31 days (Erosion and vibration limit which allows for post accident recirculation.)

   - 7500 GPM for initial Safety Injection (Erosion and vibration limit.)

2.2.3 CCW HXs (continued)

4. To prevent exceeding the maximum CCW HX flowrates, the following limitations apply:

   A. When in MODES 1 through 6, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.

   B. When the reactor is Defueled, AND the following conditions are met, then the number of operating CCW Pumps may equal the number of operating CCW HXs, and ICW flow to the out of service CCW HXs isolated:

      - CCW flow is maintained between 3235 GPM for minimum pump flow requirements and 6840 GPM for maximum HX flow limits.

      - To prevent an automatic start of a second CCW Pump, either place the control switches for the non-operating CCW Pumps in Pull-to-Lock OR rack-out the associated pump breakers.

      - In order to minimize long term tube-side erosion of the CCW HXs, the ICW flow rate to each CCW HX should **NOT** exceed 10,000 GPM during normal operation. The ICW flow rate may be increased to 12,850 GPM for each CCW heat exchanger for a 72-hour period to accommodate heat exchanger or basket strainer cleanings.

5. To prevent exceeding the maximum CCW HX flowrates, ONLY five of the following six loads should be attached to the CCW Header at one time: [UFSAR]

   - CCW to/from NCC/CRDM Coolers (counts as one load.)

   - CCW to/from ECCs (counts as one load for each cooler.)

   - CCW to/from RHR HXs (counts as one load for each Hx.)

   When only two CCW HXs are available and both RHR HXs are aligned to CCW, two CCW Pumps will be placed in PULL-TO-LOCK to ensure the above load restrictions are met.

6. Any reference to MAX TOTAL CCW Header flow assumes only two CCW HXs in service for accident analysis reasons.

2.2.4 CCW Head Tank and Surge Tank

1. CCW Head Tank level shall be greater than 10% at all times when in Mode 1 through 3. IF in Mode 1 through 3, AND CCW Head Tank level is **NOT** greater than 10%, THEN CCW Head Tank level should be restored to greater than 10% within 24 hours unless an extension request is submitted and approved by PNSC.

2. Operation with the CCW System level in the CCW Surge Tank will reduce the margin to the setpoint for CCW Pump auto-start.

3. The following precautions apply to CCW Head Tank overflow:

   - CCW Head Tank level will rise much faster than CCW Surge Tank level for a given fill rate. Extreme caution shall be exercised during filling evolutions.

   - Overflow of the CCW Head Tank should be avoided due to potential depletion of waste processing system resins.

   - A margin of approximately 40 gallons exists between the CCW Head Tank high level alarm (85%) and overflow conditions.

   - When evolutions are to be performed that may result in CCW Head Tank overflow, prior isolation of the overflow line should be considered.

   - A CCW Head Tank high level alarm (85%) will result in automatic closure of RCV-3-609, COMP CLG HEAD VENT. IF it is determined that the CCW Head Tank has overflowed, THEN the control switch for RCV-3-609 is required to be maintained in the CLOSED position until the CCW Head Tank level is restored to on-scale and the overflow line has been drained.

   - Operation with the CCW Head Tank solid or near solid with RCV-3-609, COMP CLG HEAD VENT, closed increases the potential for discharge of molybdated water to the WHT via lifting of RV-3-707.

4. An increase in CCW Head Tank level may be caused by voiding.

3.0 PREREQUISITES

None

4.0 NORMAL OPERATIONS

4.1 Startup

4.1.1 CCW System Startup

1. **CHECK** the following:

   A. The following systems are available to support the CCW System:

   - Instrument Air System
   - Intake Cooling Water System
   - Radiation Monitoring System Monitors R17A and R17B
   - Demineralized Water System
   - Primary Water System

   B. The following have been completed:

   - Attachment 1, Component Cooling Water Valve Alignment
   - Attachment 2, Component Cooling Water System Control Switch Alignment
   - Attachment 3, Component Cooling Water System Breaker Alignment

   C. The following plant electrical systems are in service to support CCW System operation:

   - IF starting CCW PUMP A, THEN 4160 Volt Bus 3A
   - IF starting CCW PUMP B, THEN 4160 Volt Bus 3B
   - IF starting CCW PUMP C, THEN 4160 Volt Bus 3D
   - 480V MCC 3B
   - 480V MCC 3C
   - 480V MCC 3D

4.1.1 CCW System Startup (continued)

1. (continued)

D. The Alternate Shutdown Panel alignment has been verified by satisfactory completion of 3-NOP-300, Alternate Shutdown Panel, for the following equipment:

- MOV-3-1418, CCW From Normal Containment Cooler
- 3B CCW Pump
- MOV-3-716B, RCP CCW Inlet
- MOV-3-626, RCP Thermal Barrier CCW Outlet

CAUTION

To prevent exceeding maximum CCW HX flowrates, ONLY five of the following six loads should be attached to the CCW Header at one time:

- CCW to/from NCC/CRDM Coolers (counts as one load.)
- CCW to/from ECCs (counts as one load for each cooler.)
- CCW to/from RHR HXs (counts as one load for each Hx.)

IF only two CCW HXs are in-service AND both RHR HXs are aligned to CCW, THEN two CCW Pumps are required to be placed in PULL-TO-LOCK to ensure the above load restrictions are met.

2. START one CCW PUMP:

A. IF starting 3A CCW PUMP, THEN:

(1) ENSURE the following are greater than 1/3 full:

- Pump Inboard Bearing Oiler level
- Pump Outboard Bearing Oiler level

4.1.1 CCW System Startup (continued) **INITIAL**

2. A. (continued)

(2) **ENSURE** the following are OPEN:

- 3-1482, CCW PUMP A INBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-1483, CCW PUMP A OTBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-701A, CCW PUMP A INLET

(3) **CHECK** suction pressure indicated on PI-3-1095A.

(4) **CLOSE** 3-703A, CCW PUMP A DISCHARGE.

(5) **THROTTLE** 3-703A, CCW PUMP A DISCHARGE to approximately 15 turns OPEN.

NOTE

Motor starting limits are as follows:

- With motor at ambient temperature, two successive starts are allowed (the motor must coast to rest between starts).
- With motor at operating temperature, one start is allowed. Subsequent starts require that the motor is allowed to cool by standing idle for one hour or running for one half hour.

(6) **START** 3A CCW PUMP from VPB.

(7) Slowly **OPEN** 3-703A, CCW PUMP A DISCHARGE. ______

______
IV

4.1.1 CCW System Startup (continued) **INITIAL**

2. (continued)

B. IF starting 3B CCW PUMP, THEN:

(1) **ENSURE** the following are greater than 1/3 full:

- Pump Inboard Bearing Oiler level
- Pump Outboard Bearing Oiler level

(2) **ENSURE** the following CLOSED:

- 3-1484, CCW PUMP B INBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-1485, CCW PUMP B OTBD MECH SEAL COOLANT SUPPLY ISOL VLV

(3) **ENSURE** 3-701B, CCW PUMP B INLET, OPEN.

(4) **CHECK** suction pressure indicated on PI-3-1095B.

(5) **CLOSE** 3-703B, CCW PUMP B DISCHARGE.

(6) **THROTTLE** 3-703B, CCW PUMP B DISCHARGE to approximately 15 turns OPEN.

NOTE

Motor starting limits are as follows:

- With motor at ambient temperature, two successive starts are allowed (the motor must coast to rest between starts).
- With motor at operating temperature, one start is allowed. Subsequent starts require that the motor is allowed to cool by standing idle for one hour or running for one half hour.

(7) **START** 3B CCW PUMP from VPB.

(8) Slowly **OPEN** 3-703B, CCW PUMP B DISCHARGE. ________

________ IV

4.1.1 CCW System Startup (continued)

INITIAL

2. (continued)

> **CAUTION**
>
> IF **NOT** aligned to sequencer, THEN 3C CCW Pump should **NOT** be operated.

C. IF starting 3C CCW PUMP, THEN:

(1) **ENSURE** the following are greater than 1/3 full:

- Pump Inboard Bearing Oiler level
- Pump Outboard Bearing Oiler level

(2) **ENSURE** the following are OPEN:

- 3-1486, CCW PUMP C INBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-1487, CCW PUMP C OTBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-701C, CCW PUMP C INLET

(3) **CHECK** suction pressure indicated on PI-3-1095C.

(4) **CLOSE** 3-703C, CCW PUMP C DISCHARGE.

(5) **THROTTLE** 3-703C, CCW PUMP C DISCHARGE to approximately 15 turns OPEN.

> **NOTE**
>
> - With motor at ambient temperature, two successive starts are allowed (the motor must coast to rest between starts).
> - With motor at operating temperature, one start is allowed. Subsequent starts require that the motor is allowed to cool by standing idle for one hour or running for one half hour.

(6) **START** 3C CCW PUMP from VPB.

(7) Slowly **OPEN** 3-703C, CCW PUMP C DISCHARGE. ______

______
IV

4.1.1 CCW System Startup (continued) **INITIAL**

3. **ADJUST** CCW System flow rates equal to or just above the Minimum Normal Operating Flow Rates specified in Attachment 4, Component Cooling Water Flow Rates.

4. **NOTIFY** System Engineer to perform 3-OSP-030.9, Component Cooling Water Flow Balance.

5. IF only one RHR HX is aligned to CCW, THEN **PLACE** remaining CCW Pumps in Standby at VPB:

   - IF **NOT** started, THEN **PLACE** 3A CCW PUMP in AUTO. ______ ______ IV
   - IF **NOT** started, THEN **PLACE** 3B CCW PUMP in AUTO. ______ ______ IV
   - IF **NOT** started, THEN **PLACE** 3C CCW PUMP in AUTO. ______ ______ IV

6. IF only two CCW HXs are in-service, AND both RHR HXs are aligned to CCW, THEN **PERFORM** the following to prevent exceeding maximum CCW HX flowrates:

   A. **REFER TO** Technical Specification 3.7.2.

   B. **PLACE** remaining CCW Pumps in PULL-TO-LOCK at VPB:

      - IF **NOT** started, THEN **PLACE** 3A CCW PUMP in PULL-TO-LOCK. ______ ______ IV
      - IF **NOT** started, THEN **PLACE** 3B CCW PUMP in PULL-TO-LOCK. ______ ______ IV
      - IF **NOT** started, THEN **PLACE** 3C CCW PUMP in PULL-TO-LOCK. ______ ______ IV

4.1.1 CCW System Startup (continued)

7. **NOTIFY** Chemistry to check that CCW System is within the required chemistry limits.

8. IF directed by Chemistry, THEN **PERFORM** Feed and Bleed of CCW System per Section 5.11.

4.2 Operation

INITIAL

4.2.1 Swapping CCW Pumps or Startup of Additional CCW Pump

CAUTION

- To prevent exceeding CCW HX maximum flowrates, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.
- The minimum flow for any CCW Pump during continuous operation should be greater than 3235 GPM. To meet this requirement, no more than two CCW Pumps should be operated, other than during CCW Pump swaps.

1. IF swapping CCW PUMPS, THEN **ENSURE** all available CCW HXs are in-service.

2. IF starting 3A CCW PUMP, THEN:

   A. **ENSURE** the following at 3A CCW PUMP:

   - Pump Inboard Bearing Oiler level greater than 1/3 full
   - Pump Outboard Bearing Oiler level greater than 1/3 full

   B. **ENSURE** the following are OPEN:

   - 3-1482, CCW PUMP A INBD MECH SEAL COOLANT SUPPLY ISOL VLV
   - 3-1483, CCW PUMP A OTBD MECH SEAL COOLANT SUPPLY ISOL VLV
   - 3-701A, CCW PUMP A INLET
   - 3-703A, CCW PUMP A DISCHARGE.

   C. **REQUEST** that Chemistry determine if the fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

   D. IF 3A CCW PUMP is **NOT** in Standby, THEN **VENT** 3A CCW PUMP casing from 3-703F, CCW PUMP A CASING VENT.

   E. **ENSURE** 3-703F, CCW PUMP A CASING VENT is CLOSED. ________

____
IV

4.2.1 Swapping CCW Pumps or Startup of Additional CCW Pump (continued) **INITIAL**

3. IF starting 3B CCW PUMP, THEN:

A. **ENSURE** the following at 3B CCW PUMP:

- Pump Inboard Bearing Oiler level greater than 1/3 full
- Pump Outboard Bearing Oiler level greater than 1/3 full

B. **ENSURE** the following CLOSED :

- 3-1484, CCW PUMP B INBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-1485, CCW PUMP B OTBD MECH SEAL COOLANT SUPPLY ISOL VLV

C. **ENSURE** the following OPEN:

- 3-701B, CCW PUMP B INLET
- 3-703B, CCW PUMP B DISCHARGE

D. **REQUEST** that Chemistry determine if the fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

E. IF 3B CCW PUMP is **NOT** in Standby, THEN **VENT** 3B CCW PUMP casing from 3-703G, CCW PUMP B CASING VENT.

F. **ENSURE** 3-703G, CCW PUMP B CASING VENT is CLOSED. ______

______
IV

4.2.1 Swapping CCW Pumps or Startup of Additional CCW Pump (continued) **INITIAL**

CAUTION

When **NOT** aligned to the sequencer, the 3C CCW Pump should **NOT** be operated. (Except for pump swaps)

4. IF starting 3C CCW PUMP, THEN:

A. **ENSURE** the following at 3C CCW PUMP:

- Pump Inboard Bearing Oiler level greater than 1/3 full
- Pump Outboard Bearing Oiler level greater than 1/3 full

B. **ENSURE** the following OPEN:

- 3-1486, CCW PUMP C INBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-1487, CCW PUMP C OTBD MECH SEAL COOLANT SUPPLY ISOL VLV
- 3-701C, CCW PUMP C INLET
- 3-703C, CCW PUMP C DISCHARGE

C. **REQUEST** that Chemistry determine if the fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

D. IF 3C CCW PUMP is **NOT** in Standby, THEN **VENT** 3C CCW PUMP casing from 3-703H, CCW PUMP C CASING VENT.

E. **ENSURE** 3-703H, CCW PUMP C CASING VENT is CLOSED. ______

______ IV

4.2.1 Swapping CCW Pumps or Startup of Additional CCW Pump (continued)

NOTE

Motor starting limits are as follows:

- With motor at ambient temperature, two successive starts are allowed (the motor must coast to rest between starts).
- With motor at operating temperature, one start is allowed. Subsequent starts require that the motor is allowed to cool by standing idle for one hour or running for one half hour.

CAUTION

- Starting a second CCW Pump may cause MOV-3-626, RCP THERMAL BARRIER CCW OUTLET to close, due to high flow (130 GPM). To override High Flow closure of MOV-3-626, control switch for MOV-3-626 should be manually held in OPEN position until either MOV-3-749A or B is OPEN.
- Starting a second CCW Pump may cause RV-715 to lift.
- IF swapping CCW Pumps AND only two CCW HXs are in-service, THEN the offgoing CCW PUMP should be shutdown without delay.

5. **START** oncoming CCW PUMP from VPB.

6. IF swapping CCW Pumps, THEN **STOP** offgoing CCW PUMP from VPB.

7. IF starting an additional CCW PUMP, THEN **ENSURE** the total CCW Hx flow rates is within the Maximum Normal Operating Flow Rate, as specified in Attachment 4, Component Cooling Water Flow Rates.

4.3 Shutdown

4.3.1 Shutdown of One CCW Pump in Modes 1 through 4

1. **STOP** offgoing CCW PUMP from VPB.

2. **ENSURE** CCW System flow rates are within the Minimum and Maximum Normal Operating Flow Rates specified in Attachment 4, Component Cooling Water Flow Rates.

5.0 INFREQUENT OPERATIONS

5.1 Alignment of CCW System for Split Header Operation

CAUTION

- This procedure section only splits CCW Headers between CCW PUMP A and CCW PUMP B.
- WHEN CCW Headers are split:
  - 3A ECC and 3A RHR HX are considered inoperable.
  - IF any ECC or CCW Pump becomes inoperable for reasons other than splitting of the CCW headers, THEN two ECCs shall be considered inoperable.
  - The standby CCW Pump will start only upon low pressure on CCW Header B.
  - Prior to performing this section, review 0-ADM-051, Outage Risk Assessment, for the duration of single CCW pump operation to evaluate impact to outage risk.

1. **CHECK** the following:
   - All CCW Pumps are OPERABLE.
   - All ECCs are OPERABLE.
   - 3A EDG is OPERABLE.
   - 3B EDG is OPERABLE.
   - 4A EDG is OPERABLE.
   - 4B EDG is OPERABLE.
   - CCW PUMP A is operating.
   - CCW PUMP B is operating.
   - Three CCW HXs are in-service.
   - RCS temperature is greater than 350°F OR less than 180°F.
   - Both Radiation Monitors R-17A AND R-17B are in service.
2. **ENSURE** MOV-3-749A, RHR HX 3A CCW OUTLET is CLOSED.

5.1 Alignment of CCW System for Split Header Operation (continued)

INITIAL

3. **OPEN** Breaker 30721 for RHR HX COOLING WATER ISOL MOV-3-749A.

4. **INITIATE** an ECO to tag Breaker 30721 in OFF.

5. **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT to CLOSE at VPB.

6. IF during the performance of the following steps, LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB indicates 100%, THEN **MAINTAIN** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in CLOSE <u>until</u> directed otherwise at the end of this section.

7. **OPEN** 3-835F, CCW HDR A SUPPLY TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

8. **CLOSE** 3-835E, CCW HDR B SUPPLY TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

9. **OPEN** 3-835G, CCW HDR A RETURN FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

10. **CLOSE** 3-835H, CCW HDR B RETURN FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

11. **CLOSE** the following:

    A. 3-787F, CCW HX OUTLET HDR SECTIONALIZING ______ ______ IV

    B. 3-787E, CCW HX OUTLET HDR SECTIONALIZING ______ ______ IV

5.1 Alignment of CCW System for Split Header Operation (continued) **INITIAL**

11. (continued)

C. 3-787C, CCW PUMP DISCHARGE SECTIONALIZING ______ ______ IV

D. 3-787A, CCW PUMP SUCTION HDR SECTIONALIZING ______ ______ IV

12. **ENSURE** CCW System flow rates are within Minimum and Maximum Normal Operating Flow Rates specified in Attachment 4, Component Cooling Water Flow Rates.

13. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is above 85% THEN **PERFORM** Section 5.12.

14. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is stable below 85%, AND CCW Head Tank Overflow Line is drained, THEN **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in AUTO. ______ ______ IV

5.2 Restoration of CCW System from Split Header Operation

INITIAL

1. IF during the performance of the following steps, LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB indicates 100%, THEN **MAINTAIN** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in CLOSE until directed otherwise at the end of this section.

2. **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT to CLOSE.

3. **OPEN** the following:

   A. 3-787A, CCW PUMP SUCTION HDR SECTIONALIZING ______ ______ IV

   B. 3-787C, CCW PUMP DISCHARGE SECTIONALIZING ______ ______ IV

   C. 3-787E, CCW HX OUTLET HDR SECTIONALIZING ______ ______ IV

   D. 3-787F, CCW HX OUTLET HDR SECTIONALIZING ______ ______ IV

   E. 3-835H, CCW HDR B RETURN TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX ______ ______ IV

4. **CLOSE** 3-835G, CCW HDR A RETURN FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

5. **OPEN** 3-835E, CCW HDR B SUPPLY FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ ______ IV

5.2 Restoration of CCW System from Split Header Operation (continued)

INITIAL

6. **CLOSE** 3-835F, CCW HDR A SUPPLY TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX. ______ / ______ IV

7. IF operation of two CCW Pumps is **NOT** required, THEN **SHUTDOWN** <u>one</u> CCW Pump per Section 4.3.1 or Section 5.9.

8. **RELEASE** related ECO to Breaker 30721 for RHR HX COOLING WATER ISOL MOV-3-749A.

9. **PLACE** Breaker 30721 for RHR HX COOLING WATER ISOL MOV-3-749A in ON.

10. IF RHR cooling is required AND two RHR HXs are required for operation, THEN **RESTORE** the RHR HX operation per 3-OP-050, Residual Heat Removal System.

11. **EXIT** any Technical Specification Action Statements entered due to CCW Split Header Operation.

12. **ENSURE** CCW System flow rates are within Minimum and Maximum Normal Operating Flow Rates specified in Attachment 4, Component Cooling Water Flow Rates.

13. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is above 85%, THEN **PERFORM** Section 5.12.

14. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is stable below 85%, AND CCW Head Tank Overflow Line is drained, THEN **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in AUTO. ______ / ______ IV

5.3 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 4 CCW System

INITIAL

NOTE

The following steps should be performed without delay to minimize time of entry into Technical Specification Action Statements.

CAUTION

CCW to Unit 3 HHSI Pumps should normally be supplied from Unit 3, except when:

- Unit 3 is in MODE 5 or 6, AND
  Unit 4 is in MODE 1, 2, 3, or 4.
- FIC-658B, FLOW IND CTRL FOR CCW RETURN FM SI PP'S is isolated for maintenance.
- General Operating Procedure or Shift Manager directs otherwise.

1. **PLACE** the following in PULL-TO-LOCK:

   - 3A SAFETY INJECTION PUMP ______ ______ IV

   - 3B SAFETY INJECTION PUMP ______ ______ IV

2. **ENSURE** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS is LOCKED CLOSED. ______ ______ IV

3. **ENSURE** 3-793, UNIT 3 CCW HDR B SUPPLY TO SI PUMPS is LOCKED CLOSED. ______ ______ IV

5.3 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 4 CCW System (continued) **INITIAL**

4. IF realigning CCW to HHSI Pumps during, or in preparation for, a refueling outage, AND cycling of the following valves is required for 3-OSP-030.7, THEN:

   A. **OPEN** then **CLOSE** 4-708F, UNIT 4 CCW HDR B RETURN FROM SI PUMPS. ______ ______ IV

   B. **CLOSE** then **OPEN** 838B, CCW HDR B SUPPLY TO SI PUMP 3A. ______ ______ IV

   C. **UNLOCK** and **OPEN** 838D, CCW HDR A SUPPLY TO SI PUMP 3A.

   D. **CLOSE** and **LOCK** 838D, CCW HDR A SUPPLY TO SI PUMP 3A. ______ ______ IV

   E. **CLOSE** then **OPEN** 838F, CCW HDR B SUPPLY TO SI PUMP 3B. ______ ______ IV

   F. **UNLOCK** and **OPEN** 838H, CCW HDR A SUPPLY TO SI PUMP 3B.

   G. **CLOSE** and **LOCK** 838H, CCW HDR A SUPPLY TO SI PUMP 3B. ______ ______ IV

   H. **CLOSE** then **OPEN** 838A, CCW HDR B RETURN FROM SI PUMP 3A. ______ ______ IV

   I. **UNLOCK** and **OPEN** 838C, CCW HDR A RETURN FROM SI PUMP 3A.

5.3 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 4 CCW System (continued) **INITIAL**

4. **(continued)**

   J. **CLOSE** and **LOCK** 838C, CCW HDR A RETURN FROM SI PUMP 3A. ______ ______ IV

   K. **CLOSE** then **OPEN** 838E, CCW HDR B RETURN FROM SI PUMP 3B. ______ ______ IV

   L. **UNLOCK** and **OPEN** 838G, CCW HDR A RETURN FROM SI PUMP 3B.

   M. **CLOSE** and **LOCK** 838G, CCW HDR A RETURN FROM SI PUMP 3B. ______ ______ IV

5. **UNLOCK** and **OPEN** 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS.

6. **LOCK** OPEN 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

Concurrent Verification

7. **UNLOCK** and **THROTTLE** 4-708F, UNIT 4 CCW HDR B RETURN FROM SI PUMPS to maintain 20 to 30 GPM on FIC-658B. ______ ______ CV

8. **LOCK** 4-708F, UNIT 4 CCW HDR B RETURN FROM SI PUMPS. ______ ______ IV

5.3 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 4 CCW System (continued) **INITIAL**

9. **PLACE** the following in Standby (mid position) at Unit 3 VPB:

   - 3A SAFETY INJECTION PUMP ______ ______ IV

   - 3B SAFETY INJECTION PUMP ______ ______ IV

10. At Unit 3 VPB, **ATTACH** Information Tags indicating current CCW alignment on the following Control Switches:

    - 3A SAFETY INJECTION PUMP
    - 3B SAFETY INJECTION PUMP

11. At Unit 4 VPB, **ATTACH** Information Tags indicating current CCW alignment on the following Control Switches:

    - 3A SAFETY INJECTION PUMP
    - 3B SAFETY INJECTION PUMP

5.4 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 3 CCW System — INITIAL

NOTE

The following steps should be performed expeditiously to minimize time of entry into Technical Specification Action Statements.

CAUTION

Component Cooling Water to Unit 3 HHSI Pumps should normally be supplied from Unit 3, except when:

- Unit 3 is in MODE 5 or 6, AND
  Unit 4 is in MODE 1, 2, 3, or 4.
- FIC-658B, FLOW IND CTRL FOR CCW RETURN FM SI PP'S is isolated for maintenance.
- General Operating Procedure or Shift Manager directs otherwise.

1. **PLACE** the following in PULL-TO-LOCK:
   - 3A SAFETY INJECTION PUMP ______ ______ IV
   - 3B SAFETY INJECTION PUMP ______ ______ IV

2. **ENSURE** 4-708F, UNIT 4 CCW HDR B RETURN FROM SI PUMPS is LOCKED CLOSED. ______ ______ IV

3. **ENSURE** 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS is LOCKED CLOSED. ______ ______ IV

5.4 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 3 CCW System (continued) **INITIAL**

4. IF realigning CCW to HHSI Pumps during a refueling outage AND cycling of 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS is required for 3-OSP-030.7, THEN:

   A. **OPEN** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS.

   B. **CLOSE** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS. ______ ______ IV

5. **ENSURE** 3-793, UNIT 3 CCW HDR B SUPPLY TO SI PUMPS is LOCKED OPEN. ______ ______ IV

Concurrent Verification

6. **UNLOCK** and **THROTTLE** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS to maintain 20 to 30 GPM on FIC-658B. ______ ______ CV

7. **LOCK** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS. ______ ______ IV

8. **PLACE** the following in Standby (mid position) at Unit 3 VPB:

   - 3A SAFETY INJECTION PUMP ______ ______ IV

   - 3B SAFETY INJECTION PUMP ______ ______ IV

5.4 Aligning Unit 3 HHSI Pumps Cooling Water to the Unit 3 CCW System (continued)

9. At Unit 3 VPB, **REMOVE** Information Tags indicating previous CCW alignment on the following Control Switches:

- 3A SAFETY INJECTION PUMP
- 3B SAFETY INJECTION PUMP

10. At Unit 4 VPB, **REMOVE** Information Tags indicating previous CCW alignment on the following Control Switches:

- 3A SAFETY INJECTION PUMP
- 3B SAFETY INJECTION PUMP

5.5 Chemical Addition to CCW System

INITIAL

> **CAUTION**
>
> All applicable safety precautions and PPE requirements of 0-ADM-033, PTN Industrial Safety Program is required to be complied with.

1. **CHECK** that Chemistry is available with the necessary chemicals to be added to the CCW System.
2. **ENSURE** the following are CLOSED:
   - 3-705N, CHEM POT FEEDER CCW SUPPLY
   - 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A
   - 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B
3. **OPEN** the following:
   A. 3-705L, CHEM POT FEEDER DRAIN
   B. 3-746G, CHEM POT FEEDER CHEMICAL FILL
   C. 3-705M, CHEM POT FEEDER VENT
4. **ENSURE** Chem Pot Feeder is empty.
5. **CLOSE** 3-705L, CHEM POT FEEDER DRAIN.
6. **OPEN** CHEM POT cover.
7. **DIRECT** Chemistry to add chemicals to Chem Pot Feeder.
8. WHEN chemicals have been added to Chem Pot Feeder, THEN **CLOSE** 3-746G, CHEM POT FEEDER CHEMICAL FILL. ________

   ________ IV
9. **CLOSE** CHEM POT cover.
10. **CLOSE** 3-705M, CHEM POT FEEDER VENT.
11. **OPEN** 3-705N, CHEM POT FEEDER CCW SUPPLY.
12. IF adding chemicals to Header A, THEN **OPEN** 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A.

5.5 Chemical Addition to CCW System (continued)

INITIAL

13. IF adding chemicals to Header B, THEN **OPEN** 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B.

14. AFTER at least 5 minutes of chemical addition, THEN **ENSURE** the following are CLOSED:

    - 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A ______ ______ IV

    - 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B ______ ______ IV

15. **CLOSE** 3-705N, CHEM POT FEEDER CCW SUPPLY. ______ ______ IV

16. IF additional chemicals are to be added, THEN **REPEAT** Section 5.5 Step 3 through Section 5.5 Step 15.

17. IF chemicals being added to CCW System contain biocide, THEN **NOTIFY** Chemistry to collect the water drained out of the Chem Pot Feeder, in the following step, into a catch container for proper disposal.

18. **OPEN** 3-705L, CHEM POT FEEDER DRAIN.

19. **OPEN** 3-705M, CHEM POT FEEDER VENT.

20. WHEN Chem Pot Feeder is completely drained, THEN **CLOSE** 3-705M, CHEM POT FEEDER VENT. ______ ______ IV

21. **CLOSE** 3-705L, CHEM POT FEEDER DRAIN. ______ ______ IV

5.6 Chemical Addition to CCW Surge Tank

INITIAL

CAUTION

All applicable safety precautions and PPE requirements of 0-ADM-033, PTN Industrial Safety Program is required to be complied with.

1. **CHECK** that Chemistry is available with the necessary chemicals to be added to the CCW System.

2. **ENSURE** the following are CLOSED:

    - 3-705N, CHEM POT FEEDER CCW SUPPLY
    - 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A
    - 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B
    - 3-705A, OLD CHEM POT FEEDER CCW SUPPLY

3. **CLOSE** 3-705J, CHEM POT FEEDER OUTLET TO CCW HDR B.

4. **OPEN** the following:

    - 3-705L, CHEM POT FEEDER DRAIN
    - 3-705M, CHEM POT FEEDER VENT
    - 3-746G, CHEM POT FEEDER CHEMICAL FILL

5. **ENSURE** Chem Pot Feeder is empty.

6. **CLOSE** 3-705L, CHEM POT FEEDER DRAIN.

7. **OPEN** CHEM POT cover.

8. **DIRECT** Chemistry to add chemicals to Chem Pot Feeder.

9. WHEN chemicals have been added to Chem Pot Feeder, THEN **CLOSE** 3-746G, CHEM POT FEEDER CHEMICAL FILL. ________

    ________ IV

10. **CLOSE** CHEM POT cover.

11. **CLOSE** 3-705M, CHEM POT FEEDER VENT.

5.6 Chemical Addition to CCW Surge Tank (continued) **INITIAL**

> **NOTE**
>
> 3-705F and 3-705C are located in the New Fuel Room.

12. **OPEN** the following:

A. 3-705F, OLD CHEM POT FEEDER OUTLET TO CCW HDR B

B. 3-705C, ISO VLV FOR OLD CHEM POT FEEDER TO CCW SURGE TANK

C. 3-705N, CHEM POT FEEDER CCW SUPPLY

D. 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B

13. AFTER at least 5 minutes of chemical addition, THEN **CLOSE**:

A. 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B ________ ________ IV

B. 3-705N, CHEM POT FEEDER CCW SUPPLY ________ ________ IV

C. 3-705F, OLD CHEM POT FEEDER OUTLET TO CCW HDR B ________ ________ IV

D. 3-705C, ISO VLV FOR OLD CHEM POT FEEDER TO CCW SURGE TANK. ________ ________ IV

14. IF chemicals being added to Surge Tank contain biocide, THEN **NOTIFY** Chemistry to collect the water drained out of the Chem Pot Feeder, in the following step, into a catch container for proper disposal.

15. **OPEN** 3-705L, CHEM POT FEEDER DRAIN.

16. **OPEN** 3-705M, CHEM POT FEEDER VENT.

17. **ALLOW** Chem Pot Feeder to completely drain.

5.6 Chemical Addition to CCW Surge Tank (continued)

INITIAL

18. **CLOSE** 3-705M, CHEM POT FEEDER VENT. ______ ______ IV

19. **CLOSE** 3-705L, CHEM POT FEEDER DRAIN. ______ ______ IV

20. **OPEN** 3-705J, CHEM POT FEEDER OUTLET TO CCW HDR B. ______ ______ IV

5.7 Filling CCW Header 3A from CCW Header 3B via Chemical Pot Feeder

1. **ENSURE** PI-3-612 is aligned to provide pressure indication of the operating CCW Pump.

2. **INSTALL** Vent Rigs on the following:
   - 3-709A, CCW HDR A VENT
   - 3-10-283, EMERG CONT CLR A CCW INLET VENT
   - 3-10-748, ECC A RETURN TO CCW HDR VENT VALVE
   - 3-746E, RHR HX A SHELL SIDE VENT

3. **UNLOCK** and **CLOSE** 3-710A, CCW HDR A SURGE TANK ISOL.

4. **ENSURE** CCW Head Tank Level between 10% and 85%.

5. **ENSURE** the following are CLOSED:
   - 3-705L, CHEM POT FEEDER DRAIN
   - 3-705M, CHEM POT FEEDER VENT
   - 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A
   - 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B
   - 3-705D, OLD CHEM POT FEEDER OUTLET TO CCW HDR A
   - 3-746G, CHEM POT FEEDER CHEMICAL FILL

6. **ENSURE** the following are OPEN:
   - 3-705, CHEM POT FEEDER CCW SUPPLY
   - 3-705H, CHEM POT FEEDER OUTLET TO CCW HDR A

7. **ESTABLISH** communication between the following:
   - Control Room
   - Operator at Chemical Pot Feeder
   - Operator venting CCW Header 3A

8. **OPEN** 3-705N, CHEM POT FEEDER CCW SUPPLY.

5.7 Filling CCW Header 3A from CCW Header 3B via Chemical Pot Feeder (continued)

NOTE

- The following step will require coordination between the three Operators to fill and vent CCW Header 3A, while maintaining CCW Head Tank Level between 10% and 85%.
- The following step may be repeated as required until the fill and vent is completed.

9. **FILL** and **VENT** CCW Header 3A by concurrently performing the following steps:

   A. **MONITOR** LI-3-614A, LEVEL IND FOR CCW HEAD TANK.

   B. **THROTTLE** 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A as necessary to fill CCW Header 3A while maintaining CCW Head Tank Level between 10% and 85%.

   C. **MAKE UP** to CCW Surge Tank as necessary to maintain CCW Head Tank Level between 10% and 85% as follows:

      (1) **ENSURE** 3-711B, CCW HDR B MAKEUP WATER ISOL is OPEN.

      (2) **ENSURE** 3-710B, CCW HDR B SURGE TANK ISOL is LOCKED OPEN.

      (3) **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

   D. **VENT** CCW Header 3A from the following:

      (1) 3-709A, CCW HDR A VENT

      (2) 3-709B, CCW HDR A-B VENT

      (3) 3-10-283, EMERG CONT CLR A CCW INLET VENT

      (4) 3-10-748, ECC A RETURN TO CCW HDR VENT VALVE

      (5) 3-746E, RHR HX A SHELL SIDE VENT and 3-765A, RHR HX A SHELL SIDE VENT

5.7 Filling CCW Header 3A from CCW Header 3B via Chemical Pot Feeder (continued) **INITIAL**

10. WHEN Fill and Vent is complete, THEN:

A. **CLOSE** 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A. ______ ______ IV

B. **CLOSE** 3-705N, CHEM POT FEEDER CCW SUPPLY. ______ ______ IV

C. **ENSURE** the following are CLOSED:

- 3-709A, CCW HDR A VENT ______ ______ IV
- 3-709B, CCW HDR A-B VENT ______ ______ IV
- 3-10-283, EMERG CONT CLR A CCW INLET VENT ______ ______ IV
- 3-10-748, ECC A RETURN TO CCW HDR VENT VALVE ______ ______ IV
- 3-746E, RHR HX A SHELL SIDE VENT ______ ______ IV
- 3-765A, RHR HX A SHELL SIDE VENT ______ ______ IV
- MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK. ______ ______ IV

5.7 Filling CCW Header 3A from CCW Header 3B via Chemical Pot Feeder (continued) **INITIAL**

10. (continued)

D. ENSURE 3-711B, CCW HDR B MAKEUP WATER ISOL is OPEN. ______ ______ IV

E. ENSURE the following are LOCKED OPEN:

- 3-710A, CCW HDR A SURGE TANK ISOL. ______ ______ IV
- 3-710B, CCW HDR B SURGE TANK ISOL. ______ ______ IV

5.8 Filling CCW Header 3B from CCW Header 3A via Chemical Pot Feeder

1. **ENSURE** PI-3-612 is aligned to provide pressure indication of the operating CCW Pump.

2. **INSTALL** VENT Rigs on the following:

   - 3-709C, CCW HDR B VENT
   - 3-10-284, EMERG CONT CLR C CCW INLET VENT
   - 3-10-282, EMERG CONT CLR B CCW INLET VENT
   - 3-746F, RHR HX B SHELL SIDE VENT
   - 3-10-690, ECC B RETURN TO CCW HDR VENT VALVE

3. **UNLOCK** and **CLOSE** 3-710B, CCW HDR B SURGE TANK ISOL.

4. **ENSURE** CCW Head Tank Level between 10% and 85%.

5. **ENSURE** the following are CLOSED:

   - 3-705L, CHEM POT FEEDER DRAIN
   - 3-705M, CHEM POT FEEDER VENT
   - 3-705G, CHEM POT FEEDER OUTLET TO CCW HDR A
   - 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B
   - 3-705F, OLD CHEM POT FEEDER OUTLET TO CCW HDR B
   - 3-746G, CHEM POT FEEDER CHEMICAL FILL

6. **ENSURE** the following are OPEN:

   - 3-705, CHEM POT FEEDER CCW SUPPLY
   - 3-705J, CHEM POT FEEDER OUTLET TO CCW HDR B

5.8 Filling CCW Header 3B from CCW Header 3A via Chemical Pot Feeder (continued)

7. **ESTABLISH** communication between the following:
   - Control Room
   - Operator at Chemical Pot Feeder
   - Operator venting CCW Header 3B

8. **OPEN** 3-705N, CHEM POT FEEDER CCW SUPPLY.

NOTE

- The following step will require coordination between the three operators to fill and vent CCW Header 3B, while maintaining CCW Head Tank Level between 10% and 85%.
- The following step may be repeated as required until the fill and vent is completed.

9. **FILL** and **VENT** CCW Header 3B by concurrently performing the following steps:

   A. **MONITOR** LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB.

   B. **THROTTLE** 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B as necessary to fill CCW Header 3B while maintaining CCW Head Tank Level between 10% and 85%.

   C. **MAKE UP** to CCW Surge Tank as necessary to maintain CCW Head Tank Level between 10% and 85% as follows:

      (1) **OPEN** 3-711A, CCW HDR A MAKEUP WATER ISOL.

      (2) **ENSURE** 3-710A, CCW HDR A SURGE TANK ISOL is LOCKED OPEN.

      (3) **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

5.8 Filling CCW Header 3B from CCW Header 3A via Chemical Pot Feeder (continued) <u>**INITIAL**</u>

9. (continued)

D. **VENT** CCW Header 3B from the following:

- 3-709C, CCW HDR B VENT
- 3-10-284, EMERG CONT CLR C CCW INLET VENT
- 3-10-282, EMERG CONT CLR B CCW INLET VENT
- 3-746F, RHR HX B SHELL SIDE VENT and 3-765B, RHR HX B SHELL SIDE VENT
- 3-10-690, ECC B RETURN TO CCW HDR VENT VALVE

10. WHEN Fill and Vent is complete, THEN:

A. **CLOSE** 3-705K, CHEM POT FEEDER OUTLET TO CCW HDR B. ______ ______ IV

B. **ENSURE** the following are CLOSED:

- MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK ______ ______ IV
- 3-711A, CCW HDR A MAKEUP WATER ISOL. ______ ______ IV
- 3-709C, CCW HDR B VENT ______ ______ IV
- 3-10-284, EMERG CONT CLR C CCW INLET VENT ______ ______ IV

5.8 Filling CCW Header 3B from CCW Header 3A via Chemical Pot Feeder (continued) **INITIAL**

10. B. (continued)

- 3-10-282, EMERG CONT CLR B CCW INLET VENT ______ ______ IV
- 3-746F, RHR HX B SHELL SIDE VENT ______ ______ IV
- 3-765B, RHR HX B SHELL SIDE VENT ______ ______ IV
- 3-10-690, ECC B RETURN TO CCW HDR VENT VALVE ______ ______ IV

C. **CLOSE** 3-705N, CHEM POT FEEDER CCW SUPPLY. ______ ______ IV

D. **ENSURE** the following are LOCKED OPEN:

- 3-710A, CCW HDR A SURGE TANK ISOL. ______ ______ IV
- 3-710B, CCW HDR B SURGE TANK ISOL. ______ ______ IV

5.9 Placing CCW in Single Pump Operation in Modes 5, 6, or Defueled

CAUTION

Prior to performing this section, review 0-ADM-051, Outage Risk Assessment, for the duration of single CCW pump operation to evaluate impact to outage risk.

1. **CHECK** that Unit is in one of the following:
   - MODE 5 - Cold Shutdown
   - MODE 6 - Refueling
   - Defueled
2. **CHECK** RCS Temperature is less than 180°F.
3. **ENSURE** the following Fan Motors are **NOT** operating:
   - 3A EMERG CNTMT COOLER
   - 3B EMERG CNTMT COOLER
   - 3C EMERG CNTMT COOLER
4. **ENSURE** the following are CLOSED:
   - CV-3-2908, 3A EMERG CNTMT COOLER OUTLET
   - CV-3-2906, 3B EMERG CNTMT COOLER OUTLET
   - CV-3-2907, 3C EMERG CNTMT COOLER OUTLET
5. IF two RHR Pumps are operating, THEN **STOP** one RHR Pump.

5.9 Placing CCW in Single Pump Operation in Modes 5, 6, or Defueled (continued)

CAUTION

IF Unit is **NOT** Defueled, THEN opening both 3-757C and 3-757D will disable FCV-3-605 from performing its designed function.

6. IF RHR Loop A is in service, THEN:

A. **ENSURE** 3-757C, RHR HX B BYPASS HDR ISOLATION is LOCKED CLOSED.

B. **ENSURE** MOV-3-749B, RHR HX 3B CCW OUTLET, is CLOSED.

7. IF RHR Loop B is in service, THEN:

A. **ENSURE** 3-757D, RHR HX A BYPASS HDR ISOLATION is LOCKED CLOSED.

B. **ENSURE** MOV-3-749A, RHR HX 3A CCW OUTLET, is CLOSED.

8. **STOP** one CCW Pump.

9. IF **NOT** Defueled, THEN **INITIATE** an ECO to hang Caution tags on VPB RHR Controls indicating the current alignment of the following:

- 3-757D, RHR HX A BYPASS HDR ISOLATION
- 3-757C, RHR HX B BYPASS HDR ISOLATION

5.10 Restoring CCW from Single Pump Operation in Modes 5 or 6

INITIAL

1. **ENSURE** all available CCW HXs are in service.

CAUTION

- To prevent exceeding CCW HX maximum flowrates, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.
- Motor starting duty limits are as follows:
  - With motor at ambient temperature, two successive starts are allowed (the motor must coast to rest between starts).
  - With motor at operating temperature, one start is allowed. Subsequent starts require that the motor is allowed to cool by standing idle for one hour or running for one half hour.
- When **NOT** aligned to the sequencer, the 3C CCW Pump should **NOT** be operated. (Except for pump swapping)

2. **START** one CCW Pump.
   - 3A CCW PUMP
   - 3B CCW PUMP
   - 3C CCW PUMP

3. **PLACE** the Standby CCW Pump in AUTO.
   - 3A CCW PUMP ______ ______ IV
   - 3B CCW PUMP ______ ______ IV
   - 3C CCW PUMP ______ ______ IV

4. IF Caution Tags were used, THEN **RELEASE** ECO to Caution Tags on VPB RHR Controls indicating the current alignment of 3-757C and 3-757D, RHR Hx Bypass Hdr Isolations.

5.10 Restoring CCW from Single Pump Operation in Modes 5 or 6 (continued) **INITIAL**

5. **ENSURE** the following are **OPEN**:

- 3-757D, RHR HX A BYPASS HDR ISOLATION ______ ______ IV
- MOV-3-749A, RHR HX 3A CCW OUTLET ______ ______ IV
- 3-757C, RHR HX B BYPASS HDR ISOLATION ______ ______ IV
- MOV-3-749B, RHR HX 3B CCW OUTLET ______ ______ IV

5.11 Feed and Bleed of the CCW System

1. **ENSURE** 3A CCW Pump is operating.

2. **CHECK** that Maintenance has connected a hose from 3-702D, CCW PUMP A DISCHARGE DRAIN, to the Molybdate Storage Tank.

3. IF Molybdate Storage Tank is greater than 1/2 full, THEN **DRAIN** Molybdate Storage Tank per 0-OP-061.13.

4. **NOTIFY** Chemistry of commencing the CCW Feed and Bleed.

5. IF in MODE 1, 2, or 3, THEN:

   A. **REQUEST** that Chemistry estimate the volume of Feed and Bleed necessary to achieve the desired chemistry change.

> **NOTE**
>
> One cycle of CCW Head Tank Level between 10% and 85% is approximately 240 gallons.

   B. **DETERMINE** the number of cycles of CCW Head Tank Level between 10 and 85% that are necessary to achieve the required volume of Feed and Bleed: ________ cycles

   C. **PLACE** RCV-3-609, CCW HEAD TANK VENT in CLOSE.

   D. **FEED** and **BLEED** CCW:

      (1) **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

      (2) WHEN LI-3-614A, LEVEL IND FOR CCW HEAD TANK is between 80 and 85%, THEN **CLOSE** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

      (3) **ESTABLISH** direct communications between Control Room and the operator at 3-702D, CCW PUMP A DISCHARGE DRAIN.

      (4) **THROTTLE** OPEN 3-702D, CCW PUMP A DISCHARGE DRAIN.

5.11 Feed and Bleed of the CCW System (continued) **INITIAL**

5. D. (continued)

> **CAUTION**
>
> WHEN in MODE 1, 2 or 3, LI-3-614A, LEVEL IND FOR CCW HEAD TANK is required to be maintained greater than 10% at all times.

(5) WHEN LI-3-614A, LEVEL IND FOR CCW HEAD TANK is between 10 and 15%, THEN **CLOSE** 3-702D, CCW PUMP A DISCHARGE DRAIN.

E. **REPEAT** Section 5.11 Step 5.D as necessary to achieve the required volume of Feed and Bleed determined previously.

F. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is stable below 85%, AND CCW Head Tank Overflow Line is drained, THEN **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in AUTO. ______

______ IV

6. IF in MODE 4, 5, 6 or Defueled, AND CCW System level is being maintained in the CCW Head Tank, THEN:

A. **PLACE** RCV-3-609, CCW HEAD TANK VENT in CLOSE.

B. **FEED** and **BLEED** CCW:

(1) **ESTABLISH** direct communications between Control Room and operator at 3-702D, CCW PUMP A DISCHARGE DRAIN.

(2) **THROTTLE** OPEN 3-702D, CCW PUMP A DISCHARGE DRAIN.

(3) WHEN LI-3-613A, LEVEL IND FOR CCW SURGE TANK is between 50 and 55%, THEN **CLOSE** 3-702D, CCW PUMP A DISCHARGE DRAIN.

(4) **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

(5) WHEN LI-3-614A, LEVEL IND FOR CCW HEAD TANK is between 50 and 85%, THEN **CLOSE** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

5.11 Feed and Bleed of the CCW System (continued) **INITIAL**

6. (continued)

C. IF an additional Feed and Bleed is recommended by Chemistry, THEN **REPEAT** Section 5.11 Step 6.B.

D. IF LI-3-614A, LEVEL IND FOR CCW HEAD TANK on VPB is stable below 85%, AND CCW Head Tank Overflow Line is drained, THEN **PLACE** RCV-3-609, COMPONENT COOLING HEAD TANK VENT in AUTO. ______

______
IV

7. IF in MODE 4, 5, 6 or Defueled, AND CCW System level is being maintained in the Surge Tank, THEN:

A. **FEED** and **BLEED** CCW:

(1) **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

(2) WHEN LI-3-613A, LEVEL IND FOR CCW SURGE TANK is between 75 and 85%, THEN **CLOSE** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

(3) **ESTABLISH** direct communications between Control Room and operator at 3-702D, CCW PUMP A DISCHARGE DRAIN.

(4) **THROTTLE** OPEN 3-702D, CCW PUMP A DISCHARGE DRAIN.

(5) WHEN LI-3-613A, LEVEL IND FOR CCW SURGE TANK is between 50 and 55%, THEN **CLOSE** 3-702D, CCW PUMP A DISCHARGE DRAIN.

B. IF an additional Feed and Bleed is recommended by Chemistry, THEN **REPEAT** Section 5.11 Step 7.A.

8. **NOTIFY** Chemistry of completing the CCW Feed and Bleed.

9. **NOTIFY** Maintenance to remove hose from 3-702D, CCW PUMP A DISCHARGE DRAIN.

5.11 Feed and Bleed of the CCW System (continued) **INITIAL**

10. ENSURE the following are CLOSED:

- MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK ______ ______ IV

- 3-702D, CCW PUMP A DISCHARGE DRAIN ______ ______ IV

5.12 Lowering CCW System Level

1. IF Chemistry directs CCW fluids to be drained into the Molybdate Storage Tank, THEN **ENSURE** adequate available volume in Molybdate Storage Tank.

2. **ESTABLISH** direct communications between Control Room AND the Operator performing system draining.

NOTE

Unless directed otherwise by Chemistry, drain hoses are required to be routed to the Molybdate Storage Tank. IF permitted by Chemistry, drain hoses may be routed to the storm drains.

3. **PERFORM** the following at any secured CCW PUMP:

   - IF draining from 3A CCW Pump, THEN **CONNECT** a drain hose from 3-702D, CCW PUMP A DISCHARGE DRAIN.
   - IF draining from 3B CCW Pump, THEN **CONNECT** a drain hose from 3-702E, CCW PUMP B DISCHARGE DRAIN.
   - IF draining from 3C CCW Pump, THEN **CONNECT** a drain hose from 3-702F, CCW PUMP C DISCHARGE DRAIN.

4. **NOTIFY** Control Room of commencing CCW System draining.

5. **LOWER** CCW System Level as follows:

   - IF draining from 3A CCW PUMP, THEN **THROTTLE** OPEN 3-702D, CCW PUMP A DISCHARGE DRAIN.
   - IF draining from 3B CCW PUMP, THEN **THROTTLE** OPEN 3-702E, CCW PUMP B DISCHARGE DRAIN.
   - IF draining from 3C CCW PUMP, THEN **THROTTLE** OPEN 3-702F, CCW PUMP C DISCHARGE DRAIN.

5.12 Lowering CCW System Level (continued) **INITIAL**

6. WHEN notified by Control Room that CCW System is at desired level, THEN:

   A. IF draining from 3A CCW PUMP, THEN:

      (1) **CLOSE 3**-702D, CCW PUMP A DISCHARGE DRAIN. ______ ______ IV

      (2) **REMOVE** drain hose from 3-702D.

      (3) **CAP** 3-702D.

   B. IF draining from 3B CCW PUMP, THEN:

      (1) **CLOSE 3**-702E, CCW PUMP B DISCHARGE DRAIN. ______ ______ IV

      (2) **REMOVE** drain hose from 3-702E.

      (3) **CAP** 3-702E.

   C. IF draining from 3C CCW PUMP, THEN:

      (1) **CLOSE 3**-702F, CCW PUMP C DISCHARGE DRAIN. ______ ______ IV

      (2) **REMOVE** drain hose from 3-702F.

      (3) **CAP** 3-702F.

7. IF no additional draining is to be performed, THEN **ENSURE** Drain Hose at CCW PUMP is stored.

8. IF CCW System high level resulted in an CCW Head Tank overflow, THEN **PERFORM** Draining CCW Head Tank Overflow Line per Section 5.13.

5.13 Draining CCW Head Tank Overflow Line

INITIAL

1. **CONNECT** a drain hose to 3-1021, CCW HEAD TANK OVERFLOW LINE DRAIN VALVE.

2. **ROUTE** the drain hose discharge to a 55 gallon drum or equivalent suitable container.

3. **OPEN** 3-1021, CCW HEAD TANK OVERFLOW LINE DRAIN VALVE.

4. WHEN CCW Head Tank Overflow Line is drained, THEN **CLOSE** 3-1021, CCW HEAD TANK OVERFLOW LINE DRAIN VALVE. ________
________ IV

5. **CHECK** LI-3-614A, LEVEL IND FOR CCW HEAD TANK indicates on-scale.

6. **PLACE** RCV-3-609, CCW HEAD TANK VENT in AUTO. ________
________ IV

7. **CHECK** RCV-3-609, CCW HEAD TANK VENT indicates OPEN.

8. IF no additional draining is to be performed, THEN **ENSURE** drain hose at 3-1021, CCW HEAD TANK OVERFLOW LINE DRAIN VALVE is removed and stored.

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator

INITIAL

1. **CHECK** the following:

   - Unit 3 is in MODE 1, 2, 3, or 4.
   - Unit 4 is in MODE 1, 2, 3, or 4.
   - CCW flow to the Unit 3 HHSI Pumps is aligned to Unit 3.
   - CCW flow to the Unit 4 HHSI Pumps is aligned to Unit 4.
   - Unit 3 CCW headers are cross-tied.
   - Unit 4 CCW headers are cross-tied.

NOTE

- The following steps should be performed without delay to minimize time of entry into Technical Specification Action Statements.
- The following steps align Unit 3 HHSI Pumps to be supplied from CCW Header 4B with return flow to CCW Header 4A.

2. **ALIGN** Unit 3 HHSI Pumps Cooling Water to Unit 4 CCW System:

   A. **PLACE** the following in PULL-TO-LOCK:

   - 3A SAFETY INJECTION PUMP ______ ______ IV
   - 3B SAFETY INJECTION PUMP ______ ______ IV

   B. **CLOSE** and **LOCK** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS. ______ ______ IV

   C. **CLOSE** and **LOCK** 3-793, UNIT 3 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator (continued) **INITIAL**

2. (continued)

D. **CLOSE** 838A, CCW HDR B RETURN FROM SI PUMP 3A. ______ ______ IV

E. **CLOSE** 838E, CCW HDR B RETURN FROM SI PUMP 3B. ______ ______ IV

F. **UNLOCK** and **OPEN** 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

G. **LOCK** OPEN 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

H. **OPEN** 838C, CCW HDR A RETURN FROM SI PUMP 3A. ______ ______ IV

I. **OPEN** 838G, CCW HDR A RETURN FROM SI PUMP 3B. ______ ______ IV

J. **RECORD** flow indication on FIC-658A:

__________ GPM

Concurrent Verification

K. **UNLOCK** and **THROTTLE** 4-708E, UNIT 4 CCW HDR A RETURN FROM SI PUMPS to maintain flow on FIC-658A at 20 to 30 GPM greater than flow recorded in above step. ______ ______ CV

L. **LOCK** 4-708E, UNIT 4 CCW HDR A RETURN FROM SI PUMPS in this throttled position. ______ ______ IV

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator (continued) **INITIAL**

2. (continued)

> **NOTE**
>
> HHSI Pump CCW Return Flow in the following step should be between 40 and 60 GPM.

M. **RECORD** flow indication on FIC-658A:

__________ GPM

N. **PLACE** the following in Standby (mid position) at Unit 3 VPB:

- 3A SAFETY INJECTION PUMP ______ ______ IV
- 3B SAFETY INJECTION PUMP ______ ______ IV

3. **NOTIFY** Shift Manager that FIC-658B is isolated for maintenance.

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator (continued) **INITIAL**

4. WHEN maintenance on FIC-658B is complete, THEN **ALIGN** Unit 3 HHSI Pumps Cooling Water to Unit 3 CCW System:

A. **PLACE** the following in PULL-TO-LOCK:

- 3A SAFETY INJECTION PUMP ______ ______ IV

- 3B SAFETY INJECTION PUMP ______ ______ IV

B. **CLOSE** and **LOCK** the following:

- 838C, CCW HDR A RETURN FROM SI PUMP 3A ______ ______ IV

- 838G, CCW HDR A RETURN FROM SI PUMP 3B ______ ______ IV

C. **OPEN** 838A, CCW HDR B RETURN FROM SI PUMP 3A. ______ ______ IV

D. **OPEN** 838E, CCW HDR B RETURN FROM SI PUMP 3B. ______ ______ IV

E. **UNLOCK** and **CLOSE** 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS.

F. **LOCK** CLOSED 4-793, UNIT 4 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

G. **UNLOCK** and **OPEN** 3-793, UNIT 3 CCW HDR B SUPPLY TO SI PUMPS.

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator (continued) **INITIAL**

4. (continued)

H. **LOCK** OPEN 3-793, UNIT 3 CCW HDR B SUPPLY TO SI PUMPS. ______ ______ IV

Concurrent Verification

I. **UNLOCK** and **THROTTLE** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS to maintain 20 to 30 GPM on FIC-658B. ______ ______ CV

J. **UNLOCK** and **THROTTLE** 4-708E, UNIT 4 CCW HDR A RETURN FROM SI PUMPS to maintain 20 to 30 GPM on FIC-658A. ______ ______ CV

NOTE

Annunciator X 3/6, SI PP COOLING WATER LO FLOW setpoint is 16.8 GPM.

CAUTION

CCW Flow in the following step should **NOT** be reduced below 13.6 GPM.

K. IF post-maintenance testing of FIC-658B is required, THEN:

(1) **THROTTLE** CLOSED 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS, until Annunciator X 3/6, SI PP COOLING WATER LO FLOW alarms.

(2) **CHECK** FIC-658B indicates approximately 17 GPM.

5.14 Maintenance Alignment for FIC-658B, Unit 3 HHSI Pumps CCW Return Flow Indicator (continued) **INITIAL**

4. K. (continued)

Concurrent Verification

(3) **THROTTLE** 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS to maintain 20 to 30 GPM on FIC-658B. ______ CV

L. WHEN flow is balanced and stabilized at 20 to 30 GPM on both FIC–658A AND FIC-658B, THEN **LOCK** the following:

- 4-708E, UNIT 4 CCW HDR A RETURN FROM SI PUMPS ______ CV
- 3-708F, UNIT 3 CCW HDR B RETURN FROM SI PUMPS ______ CV

M. **PLACE** the following in Standby (mid position) at Unit 3 VPB:

- 3A SAFETY INJECTION PUMP ______ IV
- 3B SAFETY INJECTION PUMP ______ IV

5. **NOTIFY** Shift Manager that:

- FIC-658B is returned to service.
- Unit 3 HHSI Pumps Cooling Water is aligned to Unit 3 CCW System.

5.15 Removing 3A CCW HX from Service

INITIAL

1. **CHECK** the necessary ECO is available for 3A CCW HX.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

CAUTION

- To prevent exceeding the maximum flowrates on the CCW HXs, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.
- Prior to removing a CCW HX from service CCW Pump C is required to be OFF, unless it is aligned to automatically start on the sequencer due to another pump being out of service.

3. IF two CCW Pumps are operating, THEN **STOP** one CCW PUMP.

CAUTION

When a CCW HX is removed from service, the CCW flow is required to be isolated except as described below:

- When Unit is in MODE 5 or MODE 6, (regardless of whether the affected HX tube bundle is filled with water or drained), then ICW may be isolated to one CCW HX, provided that CCW flow remains aligned to all three CCW HXs. In this configuration, the non-running CCW Pumps are **NOT** required to be placed in PULL-TO-LOCK.
- Following plant shutdown after plant has been Defueled greater than 72 hours, AND maintenance requires the ICW System to be operated in a split-header configuration, THEN ICW may be isolated to two CCW HXs with CCW flow aligned to two CCW HXs. One CCW HX will operate in the bypass mode and will **NOT** remove heat from the system. (This alignment was analyzed by Engineering Technical Response Memorandum, dated April 3, 2008).

4. IF both RHR HXs are in service, THEN:

   A. **PLACE** both non-operating CCW Pumps in PULL-TO-LOCK. ______

   ______ IV

   B. **ENTER** the LCO Action Statement for CCW Pumps.

5.15 Removing 3A CCW HX from Service (continued)

5. **REMOVE** 3A CCW HX from service:

CAUTION

Removing a CCW HX from service will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

A. **NOTIFY** Control Room that 3A CCW HX is being removed from service which will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

B. **CLOSE** 3-712A, CCW HEAT EXCHANGER 3A INLET ISOL VALVE.

C. **CLOSE** 3-50-371, ICW TO CCW HX 3A INLET ISOL.

D. **OPEN** 3-50-585, CCW TO HX 3A ICW TUBESIDE VENT.

E. **CLOSE** and **LOCK** 3-50-380, CCW HX 3A ICW OUTLET ISOL.

F. **CHECK** areas between the CCW HX drain valves and the floor drains are clear of electrical or other sensitive equipment.

NOTE

While draining the HX Waterbox, care should be taken to prevent exceeding the floor drain capacity.

G. **OPEN** 3-50-374, CCW HX 3A ICW TUBESIDE DRN.

H. **OPEN** 3-50-377, CCW HX 3A ICW OUTLET PX-1468 ROOT.

6. **INITIATE** ECO for 3A CCW HX.

7. **REFER TO** 3-OP-019, Intake Cooling Water System for ICW Operation with CCW HX 3A out of service.

5.16 Removing 3B CCW HX from Service

INITIAL

1. **CHECK** the necessary ECO is available for 3B CCW HX.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

CAUTION

- To prevent exceeding the maximum flowrates on the CCW HXs, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.
- Prior to removing a CCW HX from service, C CCW Pump is required to be OFF, unless it is aligned to automatically start on the sequencer due to another pump being out of service.

3. IF two CCW Pumps are operating, THEN **STOP** one CCW PUMP.

CAUTION

When a CCW HX is removed from service, the CCW flow is required to be isolated except as described below:

- When Unit is in MODE 5 or MODE 6, (regardless of whether the affected HX tube bundle is filled with water or drained), then ICW may be isolated to one CCW HX, provided that CCW flow remains aligned to all three CCW HXs. In this configuration, the non-running CCW Pumps are **NOT** required to be placed in PULL-TO-LOCK.
- Following plant shutdown after plant has been Defueled greater than 72 hours, AND maintenance requires the ICW System to be operated in a split-header configuration, THEN ICW may be isolated to two CCW HXs with CCW flow aligned to two CCW HXs. One CCW HX will operate in the bypass mode and will **NOT** remove heat from the system. (This alignment was analyzed by Engineering Technical Response Memorandum, dated April 3, 2008).

4. IF both RHR HXs are in service, THEN:

   A. **PLACE** both non-operating CCW Pumps in PULL-TO-LOCK. _______

   _______ IV

   B. **ENTER** the LCO Action Statement for CCW Pumps.

5.16 Removing 3B CCW HX from Service (continued)

5. **REMOVE** 3B CCW HX from service:

> **CAUTION**
>
> Removing a CCW HX from service will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

A. **NOTIFY** Control Room that 3B CCW HX is being removed from service which will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

B. **CLOSE** 3-712B, CCW HEAT EXCHANGER 3B INLET ISOL VALVE.

C. **CLOSE** 3-50-361, ICW TO CCW HX 3B INLET ISOL.

D. **OPEN** 3-50-365, CCW TO HX 3B ICW TUBESIDE VENT.

E. **CLOSE** and **LOCK** 3-50-370, CCW HX 3B ICW OUTLET ISOL.

F. **CHECK** areas between the CCW HX drain valves and the floor drains are clear of electrical or other sensitive equipment.

> **NOTE**
>
> While draining the HX Waterbox, care should be taken to prevent exceeding the floor drain capacity.

G. **OPEN** 3-50-364, CCW HX 3B ICW TUBESIDE DRN.

H. **OPEN** 3-50-367, CCW HX 3B ICW OUTLET PX-1470 ROOT.

6. **INITIATE** ECO for 3B CCW HX.

7. **REFER TO** 3-OP-019, Intake Cooling Water System for ICW Operation with CCW HX 3B out of service.

5.17 Removing 3C CCW HX from Service

INITIAL

1. **CHECK** the necessary ECO is available for 3C CCW HX.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

CAUTION

- To prevent exceeding the maximum flowrates on the CCW HXs, the number of operating CCW Pumps should be one less than the number of in-service CCW HXs.
- Prior to removing a CCW HX from service the C CCW Pump is required to be OFF, unless it is aligned to automatically start on the sequencer due to another pump being out of service.

3. IF two CCW Pumps are operating, THEN **STOP** one CCW PUMP from VPB.

CAUTION

When a CCW HX is removed from service, the CCW flow is required to be isolated except as described below:

- When Unit is in MODE 5 or MODE 6, (regardless of whether the affected HX tube bundle is filled with water or drained), then ICW may be isolated to one CCW HX, provided that CCW flow remains aligned to all three CCW HXs. In this configuration, the non-running CCW Pumps are **NOT** required to be placed in PULL-TO-LOCK.
- Following plant shutdown after plant has been Defueled greater than 72 hours, AND maintenance requires the ICW System to be operated in a split-header configuration, THEN ICW may be isolated to two CCW HXs with CCW flow aligned to two CCW HXs. One CCW HX will operate in the bypass mode and will **NOT** remove heat from the system. (This alignment was analyzed by Engineering Technical Response Memorandum, dated April 3, 2008).

4. IF both RHR HXs are in service, THEN:

   A. **PLACE** both non-operating CCW Pumps in PULL-TO-LOCK. ______

   ______ IV

   B. **ENTER** the LCO Action Statement for CCW Pumps.

5.17 Removing 3C CCW HX from Service (continued)

5. **REMOVE** 3C CCW HX from Service:

CAUTION

Removing a CCW HX from service will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

A. **NOTIFY** Control Room that 3C CCW HX is being removed from service which will cause CVCS Letdown line temperature to rise, resulting in a drop in Tave and Reactor Power.

B. **CLOSE** 3-712C, CCW HEAT EXCHANGER 3C INLET ISOL VALVE.

C. **CLOSE** 3-50-351, ICW TO CCW HX 3C INLET ISOL.

D. **OPEN** 3-50-355, CCW TO HX 3C ICW TUBESIDE VENT.

E. **CLOSE** and **LOCK** 3-50-382, OUTLET VLV FOR ICW DISCH FROM CCW HX 3C.

F. **CHECK** areas between the CCW HX drain valves and the floor drains are clear of electrical or other sensitive equipment.

NOTE

While draining the HX Waterbox, care should be taken to prevent exceeding the floor drain capacity.

G. **OPEN** 3-50-354, CCW HX 3C ICW TUBESIDE DRN.

H. **OPEN** 3-50-357, CCW HX 3C ICW OUTLET PX-1472 ROOT.

6. **INITIATE** ECO for 3C CCW HX.

7. **REFER TO** 3-OP-019, Intake Cooling Water System for ICW Operation with CCW HX 3C out of service.

5.18 Restoring 3A CCW HX to Service

INITIAL

1. **CHECK** ECO for 3A CCW HX is released.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

> **CAUTION**
>
> Restoring a CCW HX to service will cause CVCS Letdown line temperature to drop, resulting in a rise in Tave and Reactor Power.

3. **RESTORE** 3A CCW HX to Service:

   A. **REQUEST** that Chemistry determine if the CCW fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

   B. **NOTIFY** Control Room that the 3A CCW HX is being restored to service.

   C. **INFORM** RO of potential reactivity changes.

   D. **CLOSE** 3-50-377, CCW HX 3A ICW OUTLET PX-1468 ROOT. ______ ______ IV

   E. **CLOSE** 3-50-374, CCW HX 3A ICW TUBESIDE DRN. ______ ______ IV

   F. **CHECK** areas between the CCW HX vent valves and the floor drains are clear of electrical or other sensitive equipment.

   G. **OPEN** 3-50-371, ICW TO CCW HX 3A INLET ISOL. ______ ______ IV

   H. **VENT** 3A CCW HX from 3-50-585, CCW TO HX 3A ICW TUBESIDE VENT.

   I. **ENSURE** 3-50-585, CCW TO HX 3A ICW TUBESIDE VENT is CLOSED. ______ ______ IV

5.18 Restoring 3A CCW HX to Service (continued) **INITIAL**

3. (continued)

J. **UNLOCK** and **OPEN** 3-50-380, CCW HX 3A ICW OUTLET ISOL.

K. **LOCK** OPEN 3-50-380, CCW HX 3A ICW OUTLET ISOL. ______ ______ IV

> **CAUTION**
>
> Placing a CCW HX in service will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

L. **NOTIFY** Control Room that the following step will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

M. **OPEN** 3-712A, CCW HEAT EXCHANGER 3A INLET ISOL VALVE. ______ ______ IV

4. **NOTIFY** Control Room that the 3A CCW HX is restored to service.

5. IF non-operating CCW Pumps were placed in PULL-TO-LOCK due to the CCW HX being removed from service, THEN **PLACE** non-operating CCW Pumps in AUTO. ______ ______ IV

6. **ENSURE** CCW Pumps are restored to current plant requirements.

7. IF throttled per 3-NOP-019 with one ICW/CCW HX OOS, THEN:

A. **ENSURE** the following are LOCKED OPEN:

- 3-50-370, CCW HX 3B ICW OUTLET ISOL ______ ______ IV
- 3-50-382, OUTLET VLV FOR ICW DISCH FROM CCW HX C ______ ______ IV

5.18 Restoring 3A CCW HX to Service (continued)

7. (continued)

B. **ENSURE** the following are OPEN:

- 3-50-831A, OUTLET ISOL VALVE TPCW HX A ICW SYS
- 3-50-831B, ICW TO TPCW B HX OUTLET ISOL
- 3-50-831C, ICW TO TPCW C HX OUTLET ISOL

5.19 Restoring 3B CCW HX to Service **INITIAL**

1. **CHECK** ECO for 3B CCW HX is released.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

CAUTION

Restoring a CCW HX to service will cause CVCS Letdown line temperature to drop, resulting in a rise in Tave and Reactor Power.

3. **RESTORE** 3B CCW HX to Service:

   A. **REQUEST** that Chemistry determine if the CCW fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

   B. **NOTIFY** Control Room that the 3B CCW HX is being restored to service.

   C. **INFORM** RO of potential reactivity changes.

   D. **CLOSE** 3-50-367, CCW HX 3B ICW OUTLET PX-1470 ROOT. ______ ______ IV

   E. **CLOSE** 3-50-364, CCW HX 3B ICW TUBESIDE DRN. ______ ______ IV

   F. **CHECK** areas between the CCW HX vent valves and the floor drains are clear of electrical or other sensitive equipment.

   G. **OPEN** 3-50-361, ICW TO CCW HX 3B INLET ISOL. ______ ______ IV

   H. **VENT** 3B CCW HX from 3-50-365, CCW TO HX 3B ICW TUBESIDE VENT.

   I. **ENSURE** 3-50-365, CCW TO HX 3B ICW TUBESIDE VENT is CLOSED. ______ ______ IV

5.19 Restoring 3B CCW HX to Service (continued) **INITIAL**

3. (continued)

J. **UNLOCK** and **OPEN** 3-50-370, CCW HX 3B ICW OUTLET ISOL.

K. **LOCK** OPEN 3-50-370, CCW HX 3B ICW OUTLET ISOL. ______ ______ IV

CAUTION

Placing a CCW HX in service will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

L. **NOTIFY** Control Room that the following step will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

M. **OPEN** 3-712B, CCW HEAT EXCHANGER 3B INLET ISOL VALVE. ______ ______ IV

4. **NOTIFY** Control Room that the 3B CCW HX is restored to service.

5. IF non-operating CCW Pumps were placed in PULL-TO-LOCK due to the CCW HX being removed from service, THEN **PLACE** non-operating CCW Pumps in AUTO. ______ ______ IV

6. **ENSURE** CCW Pumps are restored to current plant requirements.

7. IF throttled per 3-NOP-019 with one ICW/CCW HX OOS, THEN:

A. **ENSURE** the following are LOCKED OPEN:

- 3-50-380, CCW HX 3A ICW OUTLET ISOL ______ ______ IV

- 3-50-382, OUTLET VLV FOR ICW DISCH FROM CCW HX C ______ ______ IV

5.19 Restoring 3B CCW HX to Service (continued)

7. (continued)

B. **ENSURE** the following are OPEN:

- 3-50-831A, OUTLET ISOL VALVE TPCW HX A ICW SYS
- 3-50-831B, ICW TO TPCW B HX OUTLET ISOL
- 3-50-831C, ICW TO TPCW C HX OUTLET ISOL

5.20 Restoring 3C CCW HX to Service

INITIAL

1. **CHECK** ECO for 3C CCW HX is released.

2. **ENSURE** an operator is in continuous communication with Control Room and is available to adjust CCW flow to the NRHX to maintain VCT temperature between 115 and 120°F.

> **CAUTION**
>
> Restoring a CCW HX to service will cause CVCS Letdown line temperature to drop, resulting in a rise in Tave and Reactor Power.

3. **RESTORE** 3C CCW HX to Service:

   A. **REQUEST** that Chemistry determine if the CCW fluid can be vented to a floor drain, or if it needs to be collected in a suitable storage container.

   B. **NOTIFY** Control Room that the 3C CCW HX is being restored to service.

   C. **INFORM** RO of potential reactivity changes.

   D. **CLOSE** 3-50-357, CCW HX 3C ICW OUTLET PX-1472 ROOT. ______ ______ IV

   E. **CLOSE** 3-50-354, CCW HX 3C ICW TUBESIDE DRN. ______ ______ IV

   F. **CHECK** areas between the CCW HX vent valves and the floor drains are clear of electrical or other sensitive equipment.

   G. **OPEN** 3-50-351, ICW TO CCW HX 3C INLET ISOL. ______ ______ IV

   H. **VENT** 3C CCW HX from 3-50-355, CCW TO HX 3C ICW TUBESIDE VENT.

   I. **ENSURE** 3-50-355, CCW TO HX 3C ICW TUBESIDE VENT is CLOSED. ______ ______ IV

5.20 Restoring 3C CCW HX to Service (continued) **INITIAL**

3. **(continued)**

J. **UNLOCK** and **OPEN** 3-50-382, OUTLET VLV FOR ICW DISCH FROM CCW HX 3C.

K. **LOCK** OPEN 3-50-382, OUTLET VLV FOR ICW DISCH FROM CCW HX 3C. ______ ______ IV

CAUTION

Placing a CCW HX in service will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

L. **NOTIFY** Control Room that the following step will cause CVCS Letdown line temperature to drop, resulting in a rise in T_{avg} and Reactor Power.

M. **OPEN** 3-712C, CCW HEAT EXCHANGER 3C INLET ISOL VALVE. ______ ______ IV

4. **NOTIFY** Control Room that the 3C CCW HX is restored to service.

5. IF non-operating CCW Pumps were placed in PULL-TO-LOCK due to the CCW HX being removed from service, THEN **PLACE** non-operating CCW Pumps in AUTO. ______ ______ IV

6. **ENSURE** CCW Pumps are restored to current plant requirements.

7. IF throttled per 3-NOP-019 with one ICW/CCW HX OOS, THEN:

A. **ENSURE** the following are LOCKED OPEN:

- 3-50-380, CCW HX 3A ICW OUTLET ISOL ______ ______ IV
- 3-50-370, CCW HX 3B ICW OUTLET ISOL ______ ______ IV

5.20 Restoring 3C CCW HX to Service (continued)

7. (continued)

B. **ENSURE** the following are OPEN:

- 3-50-831A, OUTLET ISOL VALVE TPCW HX A ICW SYS
- 3-50-831B, ICW TO TPCW B HX OUTLET ISOL
- 3-50-831C, ICW TO TPCW C HX OUTLET ISOL

5.21 Filling CCW Head/Surge Tank

INITIAL

1. IF using MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK, to fill Head/Surge Tank, THEN:

   A. **OPEN** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK.

   B. WHEN CCW Head Tank Level is between 10 and 85%, THEN **CLOSE** MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK. ______

   ______ IV

2. IF bypassing MOV-3-832, PRIMARY WATER MAKEUP TO CCW SURGE TANK, to fill Head/Surge Tank, THEN:

   A. **ENSURE** CLOSED 3-821, DEMIN WATER TO SFP.

   B. **CLOSE** 3-10-534, WTP TO SFP MAKEUP ISOLATION VALVE.

   C. **OPEN** 3-10-535, PMW TO SFP MAKEUP ISOLATION VALVE.

   D. **MONITOR** the following on VPB during performance of filling Head/Surge Tank:

      - LI-3-614A, LEVEL IND FOR CCW HEAD TANK
      - LI-3-651, SFP LEVEL

   E. **FILL** Head/Surge Tank:

      (1) IF filling through PCV-3-832, PRIMARY WTR PRESSURE CONTROL VLV TO CCW SURGE TANK, THEN **ENSURE**:

         a. 3-711A, CCW HDR A MAKEUP WATER ISOL is CLOSED.

         b. 3-737C, CCW SYSTEM DEMIN WATER/ PRIMARY WATER SUPPLY TIE is OPEN.

         c. 3-715, INLET ISOLATION VLV FOR PCV-3-832 is OPEN.

5.21 Filling CCW Head/Surge Tank (continued) **INITIAL**

2. E. (1) (continued)

d. 3-711B, CCW HDR B MAKEUP WATER ISOL is OPEN.

(2) IF bypassing PCV-3-832, PRIMARY WTR PRESSURE CONTROL VLV TO CCW SURGE TANK, THEN **OPEN** 3-711A, CCW HDR A MAKEUP WATER ISOL.

(3) While monitoring LI-3-614A, LEVEL IND FOR CCW HEAD TANK, **THROTTLE** OPEN, 3-724D, CCW SYSTEM DEMIN WATER SUPPLY.

(4) WHEN CCW Head Tank Level is between 10 and 85%, THEN **CLOSE** 3-724D, CCW SYSTEM DEMIN WATER SUPPLY. ______ ______ IV

F. **RESTORE** from filling Head/Surge Tank:

(1) **ENSURE** CLOSED 3-711A, CCW HDR A MAKEUP WATER ISOL. ______ ______ IV

(2) **CLOSE** 3-10-535, PMW TO SFP MAKEUP ISOLATION VALVE. ______ ______ IV

(3) **OPEN** 3-10-534, WTP TO SFP MAKEUP ISOLATION VALVE. ______ ______ IV

5.22 Void Response

1. IF 3A CCW pump is required to be vented, THEN **VENT** 3A CCW PUMP casing from 3-703F, CCW PUMP A CASING VENT.

2. **ENSURE** 3-703F, CCW PUMP A CASING VENT, is CLOSED.

3. IF 3B CCW pump is required to be vented, THEN **VENT** 3B CCW PUMP casing from 3-703G, CCW PUMP B CASING VENT.

4. **ENSURE** 3-703G, CCW PUMP B CASING VENT, is CLOSED.

5. IF 3C CCW pump is required to be vented, THEN **VENT** 3C CCW PUMP casing from 3-703H, CCW PUMP C CASING VENT.

6. **ENSURE** 3-703H, CCW PUMP C CASING VENT, is CLOSED.

7. IF additional venting is required, THEN **NOTIFY** the System Engineer.

6.0 RECORDS

1. The date, time, and section completed shall be entered in the Unit Narrative Log.

2. Problems encountered while performing the procedure (i.e. malfunctioning equipment, delays due to change in plant conditions, etc.) should be entered in the Unit Narrative Log.

3. Completed copies of the following shall be retained in the Shift Managers file until the next performance of the alignment:

   - Attachment 1, Component Cooling Water Valve Alignment
   - Attachment 2, Component Cooling Water System Control Switch Alignment
   - Attachment 3, Component Cooling Water System Breaker Alignment

7.0 REFERENCES AND COMMITMENTS

7.1 References

7.1.1 Implementing

1. 0-OP-061.13, Waste Disposal System - Transferring Water To The Portable Demineralizer
2. 0-ADM-033, PTN Industrial Safety Program
3. 0-ADM-717, Heavy Load Handling
4. 3-GOP-301, Hot Standby To Power Operation
5. 3-OP-019, Intake Cooling Water System
6. 3-OP-055, Emergency Containment Cooling and Filter Systems.
7. 3-NOP-300, Alternate Shutdown Panel
8. 3-OP-050, Residual Heat Removal System
9. 3-OSP-030.1, Component Cooling Water Pump Inservice Test
10. 3-OSP-030.5, Component Cooling Water Pumps Low Header Pressure Start Test
11. 3-OSP-030.7, CCW Manual Valve Operability Test (Outage)
12. 3-OSP-030.9, Component Cooling Water Flow Balance
13. 3-OSP-053.4, Containment Integrity Penetration Alignment Verification

7.1.2 Developmental

1. Technical Specification Section 3.7.2, Component Cooling Water System
2. UFSAR Sections 6.2.2, 6.5.1 and 9.3
3. Design Basis Document Volume 11 for Component Cooling Water System
4. Basis Document for *OP-30, Component Cooling Water System

7.1.2 Developmental (continued)

5. Plant Drawings 5613-M-3030 - Sheets 1 through 5, Component Cooling Water System

6. 0-ADM-114, Standardization of Acronyms and Abbreviations

7. 0-ADM-717, Heavy Load Handling

8. Miscellaneous:

   A. Westinghouse Letter FPL-86-726 (dated 7/29/86), CCW Heat Exchanger Shell Side Flow

   B. FPL Letter, JPE-PTPO-86-1637, E. Preast to J.A. Labarraque, (Dated 10/24/86), CCW Hx Shell Side Flow Limit

   C. Worthington Corp - Vendor Manual, V000266, John Crane Mechanical Seal, Vendor Drawing F-SP-12383

   D. JPN-PTN-SEMJ-94-001, Non Regen Heat Exchanger Shell Side Flow Limits (CR 93-1034)

   E. JPN-PTN-SENJ-90-114, CCW Split Header Configuration Operability Assessment, Rev 2 (Superseded by JPN-PTN-SENP-95-026)

   F. Westinghouse - Vendor Manual V000479, Model V-11001-B1, Controlled Seal Leakage Reactor Coolant Pump

   G. JPN-PTN-SENP-95-026, Safety Evaluation for CCW Flow Balance and Post Accident Alignment Requirements to Support Current and Uprated Conditions (LER 250/95-006)

   H. CR 93-938, Vibration of ECC Bypass Throttle Valves

   I. JPN-PTN-SEMS-93-044, ECC Bypass CCW Flow

   J. CR 96-643, 4B RCP Motor Lower Oil Level Alarms

   K. PLS Document Section 4

   L. JPN-PTN-SENP-95-007, Rev. 4, Safety Evaluation for Operability of RHR During Integrated Safeguards Testing

   M. CR 01-2156, 3-OP-055, Section 7.1, 7.2, and 7.3 Were Changed Incorrectly

7.1.2 Developmental (continued)

8. (continued)

N. CR 2005-15034, Water Hammer Condition Following a CCW Pump Start on a Stagnant CCW Header

O. ERT-87-003, High Chloride Concentrations in Unit 3 and 4 Component Cooling Water System, dated 11/30/87 (CTRAC Number 87-1639-34)

P. JPN-PTN-SENP-95-026, Safety Evaluation for CCW Flow Balance and Post Accident Alignment Requirements to Support Current and Uprated Conditions (LER 250/95-006) (This JPN supersedes QAO-PTN-87-512, Comment Regarding Coolant Loop CCW Hx Requirement Definitions)

Q. Non-Conformance Report 587-86, Use of Boric Acid Evaporator.

9. Plant Modifications:

A. PC/M 83-08, CCW/HHSI Flow Reversal

B. PC/M 85-137, Appendix R Valve Hand Operator Addition

C. PC/M 86-162, Removal of CCW Piping to the Primary Shield Coolers

D. PC/M 89-215, Drawing Discrepancies on P&ID 5610-M-10, Sheet 1 and 5610-M-450-57, Sheet 3

E. PC/M 89-219, Drawing Update to P&ID 5610-M-450-57, Sheets 6 and 7, CCW System (30)

F. PC/M 87-025, Replacement of Normal Containment Coolers

G. PC/M 88-077, RHR Pumps Mechanical Seals and Seal Cooler Replacement.

H. PC/M 89-581, Containment Isolation Features Design Basis Implementation (Tech Spec 3.6)

I. PC/M 91-064, Changing Pump Service Water Connections

J. PC/M 87-258, Load Center 3H & Re-powering of MCC D (3D)

7.1.2 Developmental (continued)

9. (continued)

K. PC/M 87-265, Swing Switchgear 3D and Transfer of ICW and CCW 3C Pumps

L. PC/M 93-034, CCW System Reconfiguration to HHSI Pumps Seal/Thrust Bearing Coolers

M. PC/M 94-062, CCW Surge Tank Level Transmitter Replacement

N. PC/M 95-054, Temporary Containment Cooling During Refueling Outages

O. PC/M 96-039, Spring/Setpoint Change for the Pilot Operated Lockup Vlvs for the ECC CCW Supply/Return Isolation Valves

P. PC/M 94-141, Boric Acid Evaporators and Gas Strippers Abandonment

Q. PC/M 96-092, Addition of U-3 CCW Head Tank

R. PC/M 00-016, CRN M-10471, CCW Surge Tank Level Indicator Replacement

S. PC/M 04-026, Appendix R and Safe Shutdown changes and MOV-3-716A de-energized.

T. PC/M 03-053, CCW Pump Split Type Mechanical Seal

U. PC/M 06-103, Component Cooling Water TCV-3-144 Replacement

7.1.3 Management Directives

None

7.2 <u>Commitments</u>

None

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 1 of 30)

EXCEPTIONS		
COMPONENT NUMBER	**COMPONENT DESCRIPTION**	**REMARKS**

PERSONNEL PERFORMING MANIPULATIONS	
PRINTED NAME	**INITIALS**

COMPLETION OF LINEUP			
DATE LINEUP COMPLETED:	(MM/DD/YY): / /	TIME LINEUP COMPLETED:	(HH:MM, 24 HR CLOCK): :
LINEUP COMPLETED BY:	PRINTED NAME / SIGNATURE:		

REVIEW OF LINEUP			
LINEUP REVIEWED BY:	PRINTED NAME / SIGNATURE:	DATE:	(MM/DD/YY): / /

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 2 of 30)

NOTE

Completion of this attachment fulfills the requirements as designated in 3-OSP-053.4, Containment Integrity Penetration Alignment Verification for Closed System checks.

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
	INSIDE CONTAINMENT			
3-10-704	EMERG CONT CLR A CCW INLET PRESSURE ROOT VLV TO PI-3-1544	OPEN		
3-10-283	EMERG CONT CLR A CCW INLET VENT	CLOSED & CAPPED		
3-10-285	EMERG CONT CLR A CCW OUTLET DRAIN	CLOSED & CAPPED		
3-10-705	EMERG CONT CLR A CCW OUTLET PRESSURE ROOT VLV TO PI-3-1545	OPEN		
3-10-748	ECC A RETURN TO CCW HDR VENT VALVE	CLOSED & CAPPED		
3-10-700	EMERG CONT CLR B CCW INLET PRESSURE ROOT VLV TO PI-3-1540	OPEN		
3-10-282	EMERG CONT CLR B CCW INLET VENT	CLOSED & CAPPED		
3-10-286	EMERG CONT CLR B CCW OUTLET DRAIN	CLOSED & CAPPED		
3-10-701	EMERG CONT CLR B CCW OUTLET PRESSURE ROOT VLV TO PI-3-1541	OPEN		
3-10-690	ECC B RETURN TO CCW HDR VENT VALVE	CLOSED & CAPPED		
3-10-284	EMERG CONT CLR C CCW INLET VENT	CLOSED & CAPPED		
3-10-702	EMERG CONT CLR C CCW INLET PRESSURE ROOT VLV TO PI-3-1542	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 3 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-287	EMERG CONT. CLR C CCW OUTLET DRAIN	CLOSED & CAPPED		
3-10-703	EMERG CONT CLR C CCW OUTLET PRESSURE ROOT VLV TO PI-3-1543	OPEN		
3-716E	RCPS CCW SUPPLY HDR TEST CONNECTION	CLOSED & CAPPED		
3-718A	RCP A OIL CLRS & THERMAL BARRIER CCW SUPPLY	OPEN		
3-719A	RCP A UPPER BEARING CLR CCW SUPPLY	OPEN		
3-724A	RCP A UPPER BEARING CLR CCW OUTLET	THROTTLED		
3-720A	RCP A LOWER BEARING CLR CCW SUPPLY	OPEN		
3-723A	RCP A LOWER BEARING CLR CCW OUTLET	THROTTLED		
3-728A	RCP A THERMAL BARRIER CCW OUTLET	THROTTLED		
3-718B	RCP B OIL CLRS & THERMAL BARRIER CCW SUPPLY	OPEN		
3-719B	RCP B UPPER BEARING CLR CCW SUPPLY	OPEN		
3-724B	RCP B UPPER BEARING CLR CCW OUTLET	THROTTLED		
3-720B	RCP B LOWER BEARING CLR CCW SUPPLY	OPEN		
3-723B	RCP B LOWER BEARING CLR CCW OUTLET	THROTTLED		
3-728B	RCP B THERMAL BARRIER CCW OUTLET	THROTTLED		
3-718C	RCP C OIL CLRS & THERMAL BARRIER CCW SUPPLY	OPEN		
3-719C	RCP C UPPER BEARING CLR CCW SUPPLY	OPEN		
3-724C	RCP C UPPER BEARING CLR CCW OUTLET	THROTTLED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 4 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-720C	RCP C LOWER BEARING CLR CCW SUPPLY	OPEN		
3-723C	RCP C LOWER BEARING CLR CCW OUTLET	THROTTLED		
3-728C	RCP C THERMAL BARRIER CCW OUTLET	THROTTLED		
3-725A	RCP A CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-629	OPEN		
3-726A	RCP A CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-629	OPEN		
3-727A	RCP A CCW OUTLET HDR ISOLATION	OPEN		
3-725B	RCP B CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-632	OPEN		
3-726B	RCP B CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-632	OPEN		
3-727B	RCP B CCW OUTLET HDR ISOLATION	OPEN		
3-725C	RCP C CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-635	OPEN		
3-726C	RCP C CCW OUTLET HDR FLOW ROOT VALVE TO FIC-3-635	OPEN		
3-727C	RCP C CCW OUTLET HDR ISOLATION	OPEN		
3-730A	RCP'S CCW OUTLET HDR TEST CONNECTION	CLOSED & CAPPED		
3-10-654	NORM CONT CLR A CCW INLET	OPEN		
3-10-706	NORM CONT CLR A CCW INLET PRESSURE ROOT VALVE TO PI-3-1546	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 5 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-053	NORM CONT CLR A CCW INLET VENT	CLOSED & CAPPED		
3-10-707	NORM CONT CLR A CCW OUTLET PRESSURE ROOT VALVE TO PI-3-1547	OPEN		
3-10-707A	NORM CONT CLR A CCW OUTLET INSTRUMENT VALVE TO PI-3-1547	OPEN		
3-10-708	NORM CONT CLR A CCW OUTLET FLOW ROOT VALVE TO FI-3-1444	OPEN		
3-10-681	NORM CONT CLR A CCW OUTLET FE VENT UPSTREAM OF 3-10-708	CLOSED & CAPPED		
3-10-709	NORM CONT CLR A CCW OUTLET FLOW ROOT VALVE TO FI-3-1444	OPEN		
3-10-682	NORM CONT CLR A CCW OUTLET FE VENT UPSTREAM OF 3-10-709	CLOSED & CAPPED		
3-10-655	NORM CONT CLR A CCW OUTLET	THROTTLED		
3-10-656	NORM CONT CLR B CCW INLET	OPEN		
3-10-710	NORM CONT CLR B CCW INLET PRESSURE ROOT VALVE TO PI-3-1548	OPEN		
3-10-711	NORM CONT CLR B CCW OUTLET PRESSURE ROOT VALVE TO PI-3-1549	OPEN		
3-10-711A	NORM CONT CLR B CCW OUTLET INSTRUMENT VALVE TO PI-3-1549	OPEN		
3-10-683	NORM CONT CLR B CCW OUTLET FE VENT UPSTREAM OF 3-10-712	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 6 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-712	NORM CONT CLR B CCW OUTLET FLOW ROOT VALVE TO FI-3-1445	OPEN		
3-10-684	NORM CONT CLR B CCW OUTLET FE VENT UPSTREAM OF 3-10-713	CLOSED & CAPPED		
3-10-713	NORM CONT CLR B CCW OUTLET FLOW ROOT VALVE TO FI-3-1445	OPEN		
3-10-657	NORM CONT CLR B CCW OUTLET	OPEN OR THROTTLED		
3-10-662	ROD DRIVE CLR A CCW INLET	OPEN		
3-10-722	ROD DRIVE CLR A CCW INLET PRESSURE ROOT VLV TO PI-3-1574	OPEN		
3-10-695	ROD DRIVE CLR A CCW INLET VENT	CLOSED & CAPPED		
3-10-723	ROD DRIVE CLR A CCW OUTLET PRESSURE ROOT VLV TO PI-3-1575	OPEN		
3-10-724	ROD DRIVE CLR A CCW OUTLET FLOW ROOT VLV TO FI-3-1448	OPEN		
3-10-725	ROD DRIVE CLR A CCW OUTLET FLOW ROOT VLV TO FI-3-1448	OPEN		
3-10-663	ROD DRIVE CLR A CCW OUTLET	OPEN OR THROTTLED		
3-10-658	NORM CONT CLR D CCW INLET	OPEN		
3-10-714	NORM CONT CLR D CCW INLET PRESSURE ROOT VALVE TO PI-3-1550	OPEN		
3-10-715	NORM CONT CLR D CCW OUTLET PRESSURE ROOT VALVE TO PI-3-1551	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 7 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-716	NORM CONT CLR D CCW OUTLET FLOW ROOT VALVE TO FI-3-1446	OPEN		
3-10-717	NORM CONT CLR D CCW OUTLET FLOW ROOT VALVE TO FI-3-1446	OPEN		
3-10-749	CCW RETURN HDR FROM NCC'S AND CRDM'S VENT	CLOSED & CAPPED		
3-10-659	NORM CONT CLR D CCW OUTLET	OPEN OR THROTTLED		
3-10-664	ROD DRIVE CLR B CCW INLET	OPEN		
3-10-726	ROD DRIVE CLR B CCW INLET PRESSURE ROOT VLV TO PI-3-1576	OPEN		
3-10-694	ROD DRIVE CLR B CCW INLET VENT	CLOSED & CAPPED		
3-10-727	ROD DRIVE CLR B CCW OUTLET PRESSURE ROOT VLV TO PI-3-1577	OPEN		
3-10-728	ROD DRIVE CLR B CCW OUTLET FLOW ROOT VLV TO FI-3-1449	OPEN		
3-10-729	ROD DRIVE CLR B CCW OUTLET FLOW ROOT VLV TO FI-3-1449	OPEN		
3-10-665	ROD DRIVE CLR B CCW OUTLET	OPEN OR THROTTLED		
3-10-660	NORM CONT CLR C CCW INLET	OPEN		
3-10-718	NORM CONT CLR C CCW INLET PRESSURE ROOT VALVE TO PI-3-1552	OPEN		
3-10-719	NORM CONT CLR C CCW OUTLET PRESSURE ROOT VALVE TO PI-3-1553	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 8 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-685	NORM CONT CLR C CCW OUTLET FE VENT DOWNSTREAM OF 3-10-720	CLOSED & CAPPED		
3-10-720	NORM CONT CLR C CCW OUTLET FLOW ROOT VALVE TO FI-3-1447	OPEN		
3-10-686	NORM CONT CLR C CCW OUTLET FE VENT DOWNSTREAM OF 3-10-721	CLOSED & CAPPED		
3-10-721	NORM CONT CLR C CCW OUTLET FLOW ROOT VALVE TO FI-3-1447	OPEN		
3-10-661	NORM CONT CLR C CCW OUTLET	OPEN OR THROTTLED		
3-737H	PEN 12 TEST CONN VLV ON CCW LINE DOWNSTREAM OF CHECK VLV 3-738	CLOSED & CAPPED		
3-626C	EXCESS LETDOWN HX CCW INLET HDR DRAIN	CLOSED & CAPPED		
3-737J	EXCESS LETDOWN HX CCW OUTLET HDR VENT	CLOSED & CAPPED		
3-739A	PEN 13 TEST CONN VLV ON CCW LINE DOWNSTREAM OF EXCESS LETDOWN HX	CLOSED & CAPPED		
OUTSIDE CONTAINMENT				
3-701A	CCW PUMP A INLET	OPEN		
3-701M	CCW PUMP A INLET TEST	CLOSED & CAPPED		
3-701D	CCW PUMP A SUCTION PRESSURE ROOT VLV TO PI-3-1095A & IST-3-40	OPEN		
3-703F	CCW PUMP A CASING VENT	CLOSED		
3-1482	CCW PUMP A INBD MECH SEAL COOLANT SUPPLY	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 9 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-1483	CCW PUMP A OTBD MECH SEAL COOLANT SUPPLY	OPEN		
3-703J	CCW PUMP A DISCONNECTED SAMPLE WATER SUPPLY ROOT VALVE	CLOSED		
3-703K	CCW PUMP A DISCONNECTED SAMPLE WATER SUPPLY	CLOSED		
3-701P	PI-3-1095A ISOL	OPEN		
3-701R	IST-3-40 ISOL	CLOSED		
3-1012	IST-3-40 VENT	CLOSED		
3-702D	CCW PUMP A DISCHARGE DRAIN	CLOSED & CAPPED		
3-704A	CCW PUMP A DISCHARGE PRESSURE ROOT VLV TO PI-3-640A & IST-3-45	OPEN		
3-704E	PI-3-640A ISOL	OPEN		
3-704F	IST-3-45 ISOL	CLOSED		
3-1011	IST-3-45 VENT VLV	CLOSED		
3-703A	CCW PUMP A DISCHARGE	OPEN		
3-787A	CCW PUMP SUCTION HDR SECTIONALIZING	OPEN		
3-710C	PI-3-1097 ISOL	OPEN		
3-701H	CCW PUMP SUCTION CROSS-TIE HDR VENT	CLOSED & CAPPED		
3-1184	TEMPORARY DEMINERALIZER RETURN ISOL	CLOSED		
3-701J	CCW PUMP B INLET HDR VENT	CLOSED		
3-701B	CCW PUMP B INLET	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 10 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-701N	CCW PUMP B INLET TEST	CLOSED & CAPPED		
3-701E	CCW PUMP B SUCTION PRESSURE ROOT VLV TO PI-3-1095B & IST-3-42	OPEN		
3-701T	PI-3-1095B ISOL	OPEN		
3-701V	IST-3-42 ISOL	CLOSED		
3-703G	CCW PUMP B CASING VENT	CLOSED		
3-1484	CCW PUMP B INBD MECH SEAL COOLANT SUPPLY	CLOSED		
3-1485	CCW PUMP B OTBD MECH SEAL COOLANT SUPPLY	CLOSED		
3-703L	CCW PUMP B DISCONNECTED SAMPLE WATER SUPPLY	CLOSED		
3-703M	CCW PUMP B DISCONNECTED SAMPLE WATER SUPPLY	CLOSED		
3-702E	CCW PUMP B DISCHARGE DRAIN	CLOSED & CAPPED		
3-704B	CCW PUMP B DISCHARGE PRESSURE ROOT VLV TO PI-3-640B & IST-3-34	OPEN		
3-704G	PI-3-640B ISOL	OPEN		
3-704H	IST-3-34 ISOL	CLOSED		
3-703B	CCW PUMP B DISCHARGE	OPEN		
3-703D	CCW PUMP B DISCHARGE HDR VENT	CLOSED & CAPPED		
3-787B	CCW PUMP SUCTION HDR SECTIONALIZING	OPEN		
3-701C	CCW PUMP C INLET	OPEN		
3-701F	CCW PUMP C SUCTION PRESSURE ROOT VLV TO PI-3-1095C & IST-3-30	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 11 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-701X	PI-3-1095C ISOL	OPEN		
3-701Y	IST-3-30 ISOL	CLOSED		
3-703H	CCW PUMP C CASING VENT	CLOSED		
3-1486	CCW PUMP C INBD MECH SEAL COOLANT SUPPLY	OPEN		
3-1487	CCW PUMP C OTBD MECH SEAL COOLANT SUPPLY	OPEN		
3-703N	CCW PUMP C DISCONNECTED SAMPLE WATER SUPPLY	CLOSED		
3-703P	CCW PUMP C DISCONNECTED SAMPLE WATER SUPPLY ROOT VALVE	CLOSED		
3-702F	CCW PUMP C DISCHARGE DRAIN	CLOSED & CAPPED		
3-704C	CCW PUMP C DISCHARGE PRESSURE ROOT VLV TO PI-3-640C & IST-3-35	OPEN		
3-704J	PI-3-640C ISOL	OPEN		
3-704K	3C CCW PP IST-3-35 RT	CLOSED		
3-703C	CCW PUMP C DISCHARGE	OPEN		
3-703E	CCW PUMP C DISCHARGE HDR VENT	CLOSED & CAPPED		
3-701L	CCW SUCTION HDR PRESSURE ROOT VLV TO PI-3-1096	OPEN		
3-712A	CCW HX A INLET LINE	OPEN		
3-733D	CCW HX A INLET PRESSURE ROOT VLV TO PI-3-644A	OPEN		
3-733J	CCW HX A INLET PRESSURE ISOL VLV TO PI-3-644A	OPEN		
3-712D	CCW HX A SHELL DRAIN	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 12 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-713D	CCW HX A SHELL DRAIN	CLOSED & CAPPED		
3-713G	CCW HX A OUTLET HDR VENT	CLOSED & CAPPED		
3-733A	CCW HX A OUTLET PRESSURE ROOT VLV TO PI-3-644B	OPEN		
3-733M	CCW HX A OUTLET PRESSURE ISOL VLV TO PI-3-644B	OPEN		
3-713A	CCW HEAT EXCHANGER A OUTLET	OPEN		
3-787C	CCW PUMP DISCHARGE SECTIONALIZING	OPEN		
3-705	CHEM POT FEEDER CCW SUPPLY	OPEN		
3-704D	CCW DISCHARGE HDR PRESSURE ROOT VLV TO PI-3-612 & PC-3-611	OPEN		
3-701G	PC-3-611 ISOL	OPEN		
3-701K	PI-3-612 ISOL	OPEN		
3-712B	CCW HX B INLET	OPEN		
3-733E	CCW HX B INLET PRESSURE ROOT VLV TO PI-3-644C	OPEN		
3-733K	CCW HX B INLET PRESSURE ISOL VLV TO PI-3-644C	OPEN		
3-712E	CCW HX B SHELL DRAIN	CLOSED& CAPPED		
3-713E	CCW HX B SHELL DRAIN	CLOSED & CAPPED		
3-713H	CCW HX B OUTLET HDR TEST CONNECTION	CLOSED & CAPPED		
3-733B	CCW HX B OUTLET PRESSURE ROOT VLV TO PI-3-644D	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 13 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-733G	CCW HX B OUTLET PRESSURE ISOL VLV TO PI-3-644D	OPEN		
3-713B	CCW HX B OUTLET	OPEN		
3-787D	CCW PUMP DISCHARGE SECTIONALIZING	OPEN		
3-712C	CCW HX C INLET	OPEN		
3-733F	CCW HX C INLET PRESSURE ROOT VLV TO PI-3-644E	OPEN		
3-733L	CCW HX C INLET PRESSURE ISOL VLV TO PI-3-644E	OPEN		
3-712F	CCW HX C SHELL DRAIN	CLOSED & CAPPED		
3-713F	CCW HX C SHELL DRAIN	CLOSED		
3-713J	CCW HX C OUTLET HDR TEST CONNECTION	CLOSED & CAPPED		
3-733C	CCW HX C OUTLET PRESSURE ROOT VLV TO PI-3-644F	OPEN		
3-733H	CCW HX C OUTLET PRESSURE ISOL VLV TO PI-3-644F	OPEN		
3-713C	CCW HX C OUTLET	OPEN		
3-835E	CCW HDR B SUPPLY TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX	OPEN		
3-714C	CCW HDR B FLOW ROOT VLV TO FT-3-613B	OPEN		
3-714D	CCW HDR B FLOW ROOT VLV TO FT-3-613B	OPEN		
3-709C	CCW HDR B VENT	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 14 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-787H	CCW HX OUTLET HDR SECTIONALIZING	OPEN		
3-787G	CCW HX OUTLET HDR SECTIONALIZING	OPEN		
3-709B	CCW HDR A - B VENT	CLOSED & CAPPED		
3-787F	CCW HX OUTLET HDR SECTIONALIZING	OPEN		
3-787E	CCW HX OUTLET HDR SECTIONALIZING	OPEN		
3-709A	CCW HDR A VENT	CLOSED & CAPPED		
3-714A	CCW HDR A FLOW ROOT VLV TO FT-3-613A	OPEN		
3-714B	CCW HDR A FLOW ROOT VLV TO FT-3-613A	OPEN		
3-835H	CCW HDR B RETURN FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX	OPEN		
3-835G	CCW HDR A RETURN FROM CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX	CLOSED		
3-724D	CCW SYSTEM DEMIN WATER SUPPLY	CLOSED		
3-737C	CCW SYSTEM DEMIN WATER PRIMARY WATER SUPPLY TIE	OPEN		
3-711A	CCW HDR A MAKEUP WATER ISOL	CLOSED		
3-711B	CCW HDR B MAKEUP WATER ISOL	OPEN		
3-1173	TEMPORARY DEMINERALIZER SUPPLY ISOL	CLOSED & CAPPED		
3-710A	CCW HDR A SURGE TANK ISOL	LOCKED OPEN		
3-710B	CCW HDR B SURGE TANK ISOL	LOCKED OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 15 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-705H	CHEM POT FEEDER OUTLET TO CCW HDR A	OPEN		
3-705G	CHEM POT FEEDER OUTLET TO CCW HDR A	CLOSED		
3-705J	CHEM POT FEEDER OUTLET TO CCW HDR B	OPEN		
3-705K	CHEM POT FEEDER OUTLET TO CCW HDR B	CLOSED		
3-705N	CHEM POT FEEDER CCW SUPPLY	CLOSED		
3-705M	CHEM POT FEEDER VENT	CLOSED		
3-746G	CHEM POT FEEDER CHEMICAL FILL	CLOSED		
3-705L	CHEM POT FEEDER DRAIN	CLOSED		
RCV-3-609	CCW HEAD TANK VENT	OPEN		
3-1021	CCW HEAD TANK OVERFLOW LINE DRAIN VALVE	CLOSED		
3-708A	CCW SURGE TANK LEVEL ROOT VLV TO LT-3-613	OPEN		
3-708B	CCW SURGE TANK LEVEL ROOT VLV TO LT-3-613	OPEN		
3-708C	CCW SURGE TANK LEVEL ROOT VLV TO LI-3-615	OPEN		
3-708D	CCW SURGE TANK LEVEL ROOT VLV TO LI-3-615	OPEN		
3-709	CCW SURGE TANK LOCAL SAMPLE ISOL	CLOSED & CAPPED		
3-2017	ISOL VLV FOR LT-3-613 CCW SURGE TANK	OPEN		
3-705A	OLD CHEM POT FEEDER CCW SUPPLY	CLOSED		
3-705B	OLD CCW SYSTEM DEMIN WATER SUPPLY	CLOSED		
3-705C	OLD CHEM POT FEEDER TO CCW SURGE TANK ISOL	CLOSED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 16 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-705D	OLD CHEM POT FEEDER OUTLET TO CCW HDR A	CLOSED		
3-705E	OLD CCW SYSTEM DEMIN WATER SUPPLY	CLOSED		
3-705F	OLD CHEM POT FEEDER OUTLET TO CCW HDR B	CLOSED		
3-835F	CCW HDR A SUPPLY TO CHARGING PUMPS, SPENT FUEL PIT HX, NON-REGEN HX, AND SEAL WATER HX	CLOSED		
3-715	PCV-3-832 INLET ISOLATION VLV	OPEN		
PCV-3-832	PRIMARY WTR PRESSURE CONTROL VLV TO CCW SURGE TANK	OPEN		
3-722	PI-3-1094 CCW MAKEUP LINE ROOT VLV	OPEN		
3-1014	ROOT VALVE FOR LI-3-616 OFF CCW HEAD TANK	OPEN		
3-1015	ROOT VALVE FOR LI-3-616 OFF CCW HEAD TANK	OPEN		
3-1016	CCW HEAD TANK VENT/CHEM ADDITION VALVE	CLOSED		
3-1017	ROOT VALVE FOR LT-3-614 OFF CCW HEAD TANK	OPEN		
3-1018	CCW HEAD TANK SAMPLE VALVE	CLOSED		
3-1022	ROOT VALVE FOR LT-3-614 OFF CCW HEAD TANK	OPEN		

ATTACHMENT 1

Component Cooling Water Valve Alignment

(Page 17 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
NOTE 1: Valve positions are the expected positions when BOTH Units are in Modes 1 through 4.				
3-793	UNIT 3 CCW HDR B SUPPLY TO S.I. PUMPS	LOCKED OPEN (NOTE 1)		
4-793	UNIT 4 CCW HDR B SUPPLY TO S.I. PUMPS	LOCKED CLOSED (NOTE 1)		
3-708G	UNIT 3 CCW HDR A SUPPLY TO S.I. PUMPS	LOCKED CLOSED (NOTE 1)		
4-708G	UNIT 4 CCW HDR A SUPPLY TO S.I. PUMPS	LOCKED OPEN (NOTE 1)		
838B	CCW HDR B SUPPLY TO SI PUMP 3A	OPEN (NOTE 1)		
838D	CCW HDR A SUPPLY TO SI PUMP 3A (Green Series Key)	LOCKED CLOSED (NOTE 1)		
838F	CCW HDR B SUPPLY TO SI PUMP 3B	OPEN (NOTE 1)		
838H	CCW HDR A SUPPLY TO SI PUMP 3B (Green Series Key)	LOCKED CLOSED (NOTE 1)		
838K	CCW HDR B SUPPLY TO SI PUMP 4A (Green Series Key)	LOCKED CLOSED (NOTE 1)		
838M	CCW HDR A SUPPLY TO SI PUMP 4A	OPEN (NOTE 1)		
838P	CCW HDR B SUPPLY TO SI PUMP 4B (Green Series Key)	LOCKED CLOSED (NOTE 1)		
838S	CCW HDR A SUPPLY TO SI PUMP 4B	OPEN (NOTE 1)		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 18 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
NOTE 1: Valve positions are the expected positions when BOTH Units are in Modes 1 through 4.				
3-708F	UNIT 3 CCW HDR B RETURN FROM SI PUMPS	LOCKED THROTTLED **(NOTE 1)**		
4-708F	UNIT 4 CCW HDR B RETURN FROM SI PUMPS	LOCKED CLOSED **(NOTE 1)**		
3-708E	UNIT 3 CCW HDR A RETURN FROM SI PUMPS	LOCKED CLOSED **(NOTE 1)**		
4-708E	UNIT 4 CCW HDR A RETURN FROM SI PUMPS	LOCKED THROTTLED **(NOTE 1)**		
838A	CCW HDR B RETURN FROM SI PUMP 3A	OPEN **(NOTE 1)**		
838C	CCW HDR A RETURN FROM SI PUMP 3A (Green Series Key)	LOCKED CLOSED **(NOTE 1)**		
838E	CCW HDR B RETURN FROM SI PUMP 3B	OPEN **(NOTE 1)**		
838G	CCW HDR A RETURN FROM SI PUMP 3B (Green Series Key)	LOCKED CLOSED **(NOTE 1)**		
838J	CCW HDR B RETURN FROM SI PUMP 4A (Green Series Key)	LOCKED CLOSED **(NOTE 1)**		
838L	CCW HDR A RETURN FROM SI PUMP 4A	OPEN **(NOTE 1)**		
838N	CCW HDR B RETURN FROM SI PUMP 4B (Green Series Key)	LOCKED CLOSED **(NOTE 1)**		
838R	CCW HDR A RETURN FROM SI PUMP 4B	OPEN **(NOTE 1)**		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 19 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-737E	CHARGING PUMPS OIL CLRS CCW SUPPLY	OPEN		
3-825A	CCW TO CHARGING PUMP A OIL CLR	OPEN		
3-825B	CCW FROM CHARGING PUMP A OIL CLR	THROTTLED		
3-825C	CCW TO CHARGING PUMP B OIL CLR	OPEN		
3-825D	CCW FROM CHARGING PUMP B OIL CLR	THROTTLED		
3-10-290	EMERGENCY HOSE CONNECTION TO CHARGING PUMP A OIL CLR-RETURN	CLOSED		
3-10-291	EMERGENCY HOSE CONNECTION TO CHARGING PUMP A OIL CLR-SUPPLY	CLOSED		
3-10-288	EMERGENCY HOSE CONNECTION TO CHARGING PUMP B OIL CLR	CLOSED		
3-10-289	EMERGENCY HOSE CONNECTION TO CHARGING PUMP B OIL CLR	CLOSED		
3-10-298	EMERGENCY HOSE CONNECTION TO CHARGING PUMP C OIL CLR-RETURN	CLOSED		
3-10-299	EMERGENCY HOSE CONNECTION TO CHARGING PUMP C OIL CLR-SUPPLY	CLOSED		
3-825E	CCW TO CHARGING PUMP C OIL CLR	OPEN		
3-825F	CCW FROM CHARGING PUMP C OIL CLR	THROTTLED		
3-839A	CHARGING PUMPS OIL CLRS CCW FLOW ROOT VLV TO FI-3-660	OPEN		
3-839B	CHARGING PUMPS OIL CLRS CCW FLOW ROOT VLV TO FI-3-660	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 20 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-737D	CHARGING PUMPS OIL CLRS CCW RETURN	OPEN		
3-772	SPENT FUEL PIT HX CCW SUPPLY	OPEN		
3-772A	SPENT FUEL PIT HX SHELL SIDE VENT	CLOSED & CAPPED		
3-772C	SPENT FUEL PIT HX SHELL SIDE DRAIN	CLOSED & CAPPED		
3-773A	SPENT FUEL PIT HX CCW FLOW ROOT VLV TO FI-3-622	OPEN		
3-773B	SPENT FUEL PIT HX CCW FLOW ROOT VLV TO FI-3-622	OPEN		
3-775	SPENT FUEL PIT HX CCW OUTLET	LOCKED THROTTLED		
3-776	SPENT FUEL PIT HX CCW OUTLET	OPEN		
3-777	NON-REGEN HX CCW SUPPLY	OPEN		
3-777A	NON-REGEN HX SHELL SIDE VENT	CLOSED & CAPPED		
3-777B	NON-REGEN HX SHELL SIDE DRAIN	CLOSED & CAPPED		
3-778A	NON-REGEN HX CCW FLOW ROOT VLV TO FI-3-620	OPEN		
3-778B	NON-REGEN HX CCW FLOW ROOT VLV TO FI-3-620	OPEN		
3-833	NON-REGEN HX TEMP CONTROL VLV, TCV-3-144, INLET	OPEN		
NOTE 2: TCV-3-144 is normally controlled in Automatic, and when in Automatic will be in the position demanded.				
TCV-3-144	NON-REGEN HX TEMP CONTROL VLV	THROTTLED **(NOTE 2)**		
3-841	TCV-3-144 DOWNSTREAM DRAIN	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 21 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-780	NON-REGEN HX TEMP CONTROL VLV, TCV-3-144, OUTLET	OPEN		
3-834	NON-REGEN HX TEMP CONTROL VLV, TCV-3-144, BYPASS	CLOSED		
3-781	SEAL WATER HX CCW SUPPLY	OPEN		
3-781A	SEAL WATER HX SHELL SIDE VENT	CLOSED & CAPPED		
3-781B	SEAL WATER HX SHELL SIDE DRAIN	CLOSED & CAPPED		
3-782A	SEAL WATER HX CCW FLOW ROOT VLV TO FI-3-618	OPEN		
3-782B	SEAL WATER HX CCW FLOW ROOT VLV TO FI-3-618	OPEN		
3-784	SEAL WATER HX CCW OUTLET	THROTTLED		
3-785	SEAL WATER HX CCW OUTLET	OPEN		
3-770B	RHR PUMP A & CONT SPRAY PUMP A SEAL WATER HXS CCW HDR A SUPPLY	LOCKED OPEN		
3-768A	RHR PUMP A SEAL WTR HX CCW HDR A SUPPLY	OPEN		
3-769A	RHR PUMP A SEAL WATER HX CCW HDR A OUTLET	THROTTLED		
3-769C	RHR PUMP A SEAL WATER HX OUTLET VENT	CLOSED		
3-795A	CONT SPRAY PUMP A SEAL WATER HX CCW HDR A SUPPLY	OPEN		
3-795B	CONT SPRAY PUMP A SEAL WATER HX CCW HDR A OUTLET	THROTTLED		
3-770A	RHR PUMP A & CONT SPRAY PUMP A SEAL WATER HXS CCW HDR A OUTLET	LOCKED OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 22 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-770D	RHR PUMP B & CONT SPRAY PUMP B SEAL WATER HXS CCW HDR B SUPPLY	LOCKED OPEN		
3-10-054	CCW HDR B DRAIN	CLOSED & CAPPED		
3-768B	RHR PUMP B SEAL WATER HX CCW HDR B SUPPLY	OPEN		
3-769B	RHR PUMP B SEAL WATER HX CCW HDR B OUTLET	THROTTLED		
3-769D	RHR PUMP B SEAL WATER HX OUTLET VENT	CLOSED		
3-795C	CONT SPRAY PUMP B SEAL WATER HX CCW HDR B SUPPLY	OPEN		
3-795D	CONT SPRAY PUMP B SEAL WATER HX CCW HDR B OUTLET	THROTTLED		
3-770C	RHR PUMP B & CONT SPRAY PUMP B SEAL WATER HXS CCW HDR B OUTLET	LOCKED OPEN		
3-746A	RHR HX A CCW HDR A SUPPLY	OPEN		
3-765A	RHR HX A SHELL SIDE VENT	OPEN		
3-746E	RHR HX A SHELL SIDE VENT	CLOSED & CAPPED		
3-746C	RHR HX A SHELL SIDE DRAIN	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 23 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
CAUTION 1:	The positions of valves 3-748A and B are preset as determined by CCW System flow testing. The Engineering Department Manager shall be notified prior to changing the position of these valves. 3-748A should be LOCKED OPEN at approximately 35 percent and 3-748B should be LOCKED OPEN at approximately 38 percent.			
3-748A	RHR HX A CCW HDR A OUTLET	LOCKED OPEN (CAUTION 1)		
3-748B	RHR HX B CCW HDR B OUTLET	LOCKED OPEN (CAUTION 1)		
3-746B	RHR HX B CCW HDR B SUPPLY	OPEN		
3-765B	RHR HX B SHELL SIDE VENT	OPEN		
3-746F	RHR HX B SHELL SIDE VENT	CLOSED & CAPPED		
3-746D	RHR HX B SHELL SIDE DRAIN	CLOSED & CAPPED		
3-835C	CCW HDR B SUPPLY TO RCP, CONT CLRS, ROD DRIVE CLRS, PRIMARY SHIELD, EXCESS LETDOWN HX, EVAP CLRS, & SAMPLE CLRS	OPEN		
3-835D	CCW HDR A SUPPLY TO RCP, CONT CLRS, ROD DRIVE CLRS, PRIMARY SHIELD, EXCESS LETDOWN HX, EVAP CLRS, & SAMPLE CLRS	CLOSED		
3-10-870	PEN 21 TEST CONN VLV ON CCW LINE UPSTREAM OF MOV-3-1417	CLOSED & CAPPED		
3-10-871	CCW LINE TO NCC TEST CONNECTION VALVE DOWNSTREAM OF MOV-3-1417	CLOSED & CAPPED		

ATTACHMENT 1

Component Cooling Water Valve Alignment

(Page 24 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-737F	PEN 12 TEST CONN VLV ON CCW LINE UPSTREAM OF 3-737A	CLOSED & CAPPED		
3-737A	EXCESS LETDOWN HX CCW SUPPLY ISOL	OPEN		
3-737G	PEN 12 TEST CONN VLV ON CCW LINE DOWNSTREAM OF 3-737A	CLOSED & CAPPED		
3-716C	PEN 3 TEST CONN VLV ON CCW LINE UPSTREAM OF MOV-3-716A	CLOSED & CAPPED		
3-716D	PEN 3 TEST CONN VLV ON CCW LINE DOWNSTREAM OF MOV-3-716B	CLOSED & CAPPED		
3-10-867	PEN 44A TEST CONN VLV ON CCW LINE UPSTREAM OF CV-3-2905	CLOSED & CAPPED		
3-10-874	PEN 44A TEST CONN VLV CCW TO ECC LINE DOWNSTREAM OF CV-3-2905	CLOSED & CAPPED		
3-10-868	PEN 44B TEST CONN VLV ON CCW LINE UPSTREAM OF CV-3-2903	CLOSED & CAPPED		
3-10-875	PEN 44B TEST CONN VLV CCW TO ECC LINE DOWNSTREAM OF CV-3-2903	CLOSED & CAPPED		
3-10-869	PEN 44C TEST CONN VLV ON CCW LINE UPSTREAM OF CV-3-2904	CLOSED & CAPPED		
3-10-876	PEN 44C TEST CONN VLV CCW TO ECC LINE DOWNSTREAM OF CV-3-2904	CLOSED & CAPPED		
3-10-651	CCW HDR A TIE TO EMERG CONT CLR C	CLOSED		
3-10-650	CCW HDR B TIE TO EMERG CONT CLR C	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 25 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-40-1899	SAFE SHUTDOWN CV-3-2903 MANUAL CONTROL VENT VALVE	Sealed in NORMAL		
3-40-1900	SAFE SHUTDOWN CV-3-2903 MANUAL CLOSE AIR ISOLATION VALVE	Sealed in NORMAL		
3-40-1901	SAFE SHUTDOWN CV-3-2905 MANUAL CONTROL VENT VALVE	Sealed in NORMAL		
3-40-1902	SAFE SHUTDOWN CV-3-2905 MANUAL CLOSE AIR ISOLATION VALVE	Sealed in NORMAL		
3-40-2479	CV-3-2906, POLV AIR-FAIL TEST VLV (OPENING CYLINDER SIDE)	Sealed in NORMAL		
3-40-2480	CV-3-2906, POLV AIR-FAIL TEST VLV (CLOSING CYLINDER SIDE)	Sealed OPEN		
3-40-2481	CV-3-2907, POLV AIR-FAIL TEST VLV (OPENING CYLINDER SIDE)	Sealed in NORMAL		
3-40-2482	CV-3-2907, POLV AIR-FAIL TEST VLV (CLOSING CYLINDER SIDE)	Sealed OPEN		
3-40-2483	CV-3-2908, POLV AIR-FAIL TEST VLV (OPENING CYLINDER SIDE)	Sealed in NORMAL		
3-40-2484	CV-3-2908, POLV AIR-FAIL TEST VLV (CLOSING CYLINDER SIDE)	Sealed OPEN		
3-10-039	CCW HDR A TO EMERG CONT CLR A DRAIN	CLOSED & CAPPED		
3-10-040	CCW HDR B TO EMERG CONT CLRS B & C DRAIN	CLOSED & CAPPED		
3-10-054	CCW HDR B TO EMERG CONT CLR B & C DRAIN	CLOSED		
3-740A	EXCESS LD HX CCW OUTLET HDR ROOT VLV TO FI-3-624	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 26 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-740B	EXCESS LD HX CCW OUTLET HDR ROOT VLV TO FI-3-624	OPEN		
3-739B	PEN 13 TEST CONN VLV ON CCW LINE DOWNSTREAM OF CV-3-739	CLOSED & CAPPED		
3-737B	EXCESS LD HX CCW OUTLET HDR ISOLATION	THROTTLED		
3-739C	PEN 13 TEST CONN VLV ON CCW LINE DOWNSTREAM OF 3-737B	CLOSED & CAPPED		
3-835A	CCW RETURN HDR A ISOL	CLOSED		
3-835B	CCW RETURN HDR B ISOL	OPEN		
3-626A	PEN 43 TEST CONN VLV ON CCW LINE UPSTREAM OF MOV-3-626	CLOSED & CAPPED		
3-626B	PEN 43 TEST CONN VLV ON CCW LINE DOWNSTREAM OF MOV-3-626	CLOSED & CAPPED		
3-736	RCP'S THERMAL BARRIERS CCW OUTLET HDR ISOLATION	OPEN		
3-626D	PEN 43 TEST CONN VLV ON CCW LINE DOWNSTREAM OF 3-736	CLOSED & CAPPED		
3-730B	PEN 4 DRAIN/TEST CONN VLV ON CCW LINE UPSTREAM OF MOV-3-730	CLOSED & CAPPED		
3-730C	PEN 4 DRAIN/TEST CONN VLV ON CCW LINE DOWNSTREAM OF MOV-3-730	CLOSED & CAPPED		
3-743A	RCP'S BEARING CLRS CCW OUTLET HDR HIGH PRESS ROOT VLV TO FI-3-677	OPEN		
3-743B	RCP'S BEARING CLRS CCW OUTLET HDR LOW PRESS ROOT VLV TO FI-3-677	OPEN		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 27 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-732	RCP BEARING OIL COOLERS CCW OUTLET HDR ISOLATION	OPEN		
3-730E	PEN 4 TEST CONN VLV ON CCW LINE DOWNSTREAM OF 3-732	CLOSED & CAPPED		
3-10-736	CCW HDR FROM NORM CONT AND ROD DRIVE CLRS FI-3-1462 H. P. ROOT VALVE	OPEN		
3-10-737	CCW HDR FROM NORM CONT AND ROD DRIVE CLRS FI-3-1462 L. P. ROOT VALVE	OPEN		
3-10-872	CCW LINE FROM NCC AND CRDMS PENETRATION 22 TEST CONNECTION VALVE UPSTREAM OF MOV-3-1418	CLOSED & CAPPED		
3-10-873	PEN 22 TEST CONN VLV ON CCW LINE DOWNSTREAM OF MOV-3-1418	CLOSED & CAPPED		
3-10-861	ECC RETURN TO CCW PEN 45A TEST CONN VLV UPSTREAM OF CV-3-2908 & CV-3-2814	CLOSED & CAPPED		
3-10-862	PEN 45A TEST CONN VLV ON CCW LINE DOWNSTREAM OF CV-3-2908 & CV-3-2814	CLOSED & CAPPED		
3-10-672	EMERG CLR A CCW OUTLET HDR BYPASS LINE ISOLATION	OPEN		
3-10-738	EMERG CLR A CCW OUTLET HDR ROOT VLV TO FT-3-1464	OPEN		
3-10-739	EMERG CLR A CCW OUTLET HDR ROOT VLV TO FT-3-1464	OPEN		
3-10-863	ECC RETURN TO CCW PEN 45B TEST CONN VLV UPSTREAM OF CV-3-2906 & CV-3-2810	CLOSED & CAPPED		
3-10-864	PEN 45B TEST CONN VLV ON CCW LINE DOWNSTREAM OF CV-3-2906 & CV-3-2810	CLOSED & CAPPED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 28 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-10-670	EMERG CLR B CCW OUTLET HDR BYPASS LINE ISOLATION	OPEN		
3-10-865	ECC RETURN TO CCW PEN 45C TEST CONN VLV UPSTREAM OF CV-3-2907 & CV-3-2812	CLOSED & CAPPED		
3-10-866	PEN 45C TEST CONN VLV ON CCW LINE DOWNSTREAM OF CV-3-2907 & CV-3-2812	CLOSED & CAPPED		
3-10-671	EMERG CLR C CCW OUTLET HDR BYPASS LINE ISOLATION	OPEN		
3-10-652	EMERG CLR C TIE TO CCW HDR B	OPEN		
3-10-653	EMERG CLR C TIE TO CCW HDR A	CLOSED		
3-10-740	EMERG CLRS B & C CCW OUTLET HDR ROOT VLV TO FT-3-1465	OPEN		
3-10-741	EMERG CLRS B & C CCW OUTLET HDR ROOT VLV TO FT-3-1465	OPEN		
3-786A	SAMPLE CLRS CCW SUPPLY	OPEN		
3-781C	PZR STM SMPL DRN	CLOSED		
3-781D	PZR STM SMPL DRN	CLOSED		
3-781E	RX COOLANT SMPL DRN	CLOSED		
3-788A	PRZ STEAM SAMPLE CLR CCW OUTLET	THROTTLED		
3-788B	PRZ LIQUID SAMPLE CLR CCW OUTLET	THROTTLED		
3-788C	REACTOR COOLANT SAMPLE CLR CCW OUTLET	THROTTLED		
3-781F	SAMPLE CLRS CCW OUTLET HDR TEST CONN.	CLOSED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 29 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3-781G	SAMPLE CLRS CCW OUTLET HDR TEST CONN.	CLOSED		
3-781H	SAMPLE CLRS CCW OUTLET HDR TST CONN.	CLOSED		
3-774A	SAMPLE CLRS CCW OUTLET ROOT VLV TO FI-3-643	OPEN		
3-774B	SAMPLE CLRS CCW OUTLET ROOT VLV TO FI-3-643	OPEN		
3-786B	SAMPLE CLRS CCW OUTLET HDR ISOLATION	OPEN		
3-789A	PASS, GAS COMPRESSORS, & BA EVAP CCW SUPPLY	OPEN		
0-826A	WASTE GAS COMPRESSOR A CCW SUPPLY	OPEN		
0-826D	WASTE GAS COMPRESSOR B CCW SUPPLY	OPEN		
0-826B	WASTE GAS COMPRESSOR A CCW OUTLET	THROTTLED		
0-826C	WASTE GAS COMPRESSOR A CCW OUTLET	OPEN		
0-826E	WASTE GAS COMPRESSOR B CCW OUTLET	THROTTLED		
0-826F	WASTE GAS COMPRESSOR B CCW OUTLET	OPEN		
3-792A	BA EVAP CONCENTRATOR CCW SUPPLY	WIRED CLOSED		
3-829	BA EVAP CONDENSATE CLR CCW SUPPLY	WIRED CLOSED		
3-792B	BA EVAP CCW OUTLET	WIRED CLOSED		
3-789B	P.A.S.S. GAS COMPRESSORS, & BA EVAP CCW OUTLET	OPEN		
0-779A	UNIT 3 - UNIT 4 CCW TIE BTWN BA EVAP AND WASTE GAS COMPRESSORS (INLET)	LOCKED CLOSED		

ATTACHMENT 1
Component Cooling Water Valve Alignment
(Page 30 of 30)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
0-779B	UNIT 3 - UNIT 4 CCW TIE BTWN BA EVAP AND WASTE GAS COMPRESSORS (OUTLET)	LOCKED CLOSED		
0-827A	P.A.S.S. CCW SUPPLY	OPEN		
0-821B	WASTE EVAP CCW SUPPLY	CLOSED & CAPPED		
0-730G	WASTE EVAP CCW OUTLET	CLOSED & CAPPED		
0-730H	WASTE EVAP CCW OUTLET	CLOSED		
0-790C	P.A.S.S. CCW OUTLET HDR VENT	CLOSED & CAPPED		
0-790D	P.A.S.S. CCW OUTLET HDR VENT	CLOSED & CAPPED		
0-828	P.A.S.S. CCW OUTLET	OPEN		
0-827B	P.A.S.S. CCW OUTLET	OPEN		
6733	VENT FOR CHILLED WATER SUPPLY FROM TEMP CONTAINMENT CHILLER	CLOSED & CAPPED		
6734	DRAIN FOR CHILLED WATER SUPPLY FROM TEMP CONTAINMENT CHILLER	CLOSED & CAPPED		
6735	VENT FOR CHILLED WATER RETURN TO TEMP CONTAINMENT CHILLER	CLOSED & CAPPED		
6736	DRAIN FOR CHILLED WATER RETURN TO TEMP CONTAINMENT CHILLER	CLOSED & CAPPED		
3-5169	ISOL VLV ON CCW INLET TO PASS SAMPLE COOLER	OPEN		
3-5170	ISOL VLV ON CCW OUTLET FROM PASS SAMPLE COOLER	OPEN		

ATTACHMENT 2
Component Cooling Water System
Control Switch Alignment
(Page 1 of 4)

EXCEPTIONS		
COMPONENT NUMBER	**COMPONENT DESCRIPTION**	**REMARKS**

PERSONNEL PERFORMING MANIPULATIONS	
Printed Name	**Initials**

Completion Of Lineup			
DATE LINEUP COMPLETED:	(MM/DD/YY): / /	TIME LINEUP COMPLETED:	(HH:MM, 24 HR CLOCK): :
LINEUP COMPLETED BY:	PRINTED NAME / SIGNATURE:		

Review Of Lineup			
LINEUP REVIEWED BY:	PRINTED NAME / SIGNATURE:	DATE:	(MM/DD/YY): / /

ATTACHMENT 2
Component Cooling Water System
Control Switch Alignment
(Page 2 of 4)

COMPONENT NOUN DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
NOTE 1: Normally OPEN with associated Breaker 30743 LOCKED OFF.			
MOV-3-716A, RCP CCW INLET	OPEN **(NOTE 1)**		
MOV-3-716B, RCP CCW INLET	OPEN		
MOV-3-730, RCP BEARING CCW OUTLET	OPEN		
CV-3-739, EXCESS L/D HX OUTLET	OPEN		
MOV-3-1417, CCW TO NORMAL CONTAINMENT COOLER	OPEN		
MOV-3-1418, CCW FROM NORMAL CONTAINMENT COOLER	OPEN		
MOV-3-626, RCP SEAL CLG WATER OUTLET	OPEN		
CV-3-2905, 3A EMERG CONTMT COOLER INLET	OPEN		
NOTE 2: Normally CLOSED while TSA 271821 is implemented. Control switch for 3V30B, 3B EMERG CNTMT COOLER FAN MOTOR is in STOP while TSA 271821 is implemented.			
CV-3-2903, 3B EMERG CONTMT COOLER INLET	CLOSED **(NOTE 2)**		
CV-3-2904, 3C EMERG CONTMT COOLER INLET	OPEN		

ATTACHMENT 2
Component Cooling Water System
Control Switch Alignment
(Page 3 of 4)

COMPONENT NOUN DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
NOTE 3: Normally CLOSED. When opened, position is maintained by a limiter. Prior to any maintenance on these valves, the Engineering Department shall be notified to ensure that the limiter position on the valves is maintained.			
CV-3-2908, 3A EMERG CONTMT COOLER OUTLET	CLOSED (NOTE 3)		
CV-3-2814, 3A EMERG CONTMT COOLER BYPASS	OPEN		
NOTE 4: Normally OPEN while TSA 271821 is implemented. A stem block is installed that restrains the valve open and will be removed when the actuator has been repaired or replaced.			
CV-3-2906, 3B EMERG CONTMT COOLER OUTLET	OPEN (NOTE 4)		
NOTE 5: Normally CLOSED. Control switch for 3V30B, 3B EMERG CNTMT COOLER FAN MOTOR is in STOP while TSA 271821 is implemented.			
CV-3-2810, 3B EMERG CONTMT COOLER BYPASS	CLOSED (NOTE 5)		
CV-3-2907, 3C EMERG CONTMT COOLER OUTLET	CLOSED (NOTE 2)		
CV-3-2812, 3C EMERG CONTMT COOLER BYPASS	OPEN		

ATTACHMENT 2
Component Cooling Water System
Control Switch Alignment
(Page 4 of 4)

COMPONENT NOUN DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
NOTE 6: If in Mode 4, 5, or 6 AND associated RHR Loop is in operation, then valve may be OPEN.			
MOV-3-749A, 3A RHR HX COMP COOLING OUTLET	CLOSED (NOTE 6)		
MOV-3-749B, 3B RHR HX COMP COOLING OUTLET	CLOSED (NOTE 6)		
RCV-3-609, COMP CLG HEAD VENT	OPEN		

ATTACHMENT 3
Component Cooling Water System Breaker Alignment
(Page 1 of 3)

EXCEPTIONS		
COMPONENT NUMBER	**COMPONENT DESCRIPTION**	**REMARKS**

PERSONNEL PERFORMING MANIPULATIONS	
PRINTED NAME	**INITIALS**

COMPLETION OF LINEUP			
DATE LINEUP COMPLETED:	(MM/DD/YY): / /	TIME LINEUP COMPLETED:	(HH:MM, 24 HR CLOCK): :
LINEUP COMPLETED BY:	PRINTED NAME / SIGNATURE:		

REVIEW OF LINEUP			
LINEUP REVIEWED BY:	PRINTED NAME / SIGNATURE:	DATE:	(MM/DD/YY): / /

ATTACHMENT 3
Component Cooling Water System Breaker Alignment
(Page 2 of 3)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
3A 4160V Switchgear Room				
3AA12	COMPONENT COOLING WATER PUMP 3A	Racked IN		
		Blue Light ON		
		White Light ON		
		Red or Green Light ON		
		L/R Switch in REMOTE		
		Lockout RESET		
3B 4160V Switchgear Room				
3AB13	COMPONENT COOLING WATER PUMP 3B	Racked IN		
		Blue Light ON		
		White Light ON		
		Red or Green Light ON		
		Lockout RESET		
3D 4160V Switchgear Room				
3AD04	COMPONENT COOLING WATER PUMP 3C	Racked IN		
		Blue Light ON		
		White Light ON		
		Red or Green Light ON		
		Normal/Isolate Switch in NORM		
		Lockout RESET		

ATTACHMENT 3
Component Cooling Water System Breaker Alignment
(Page 3 of 3)

COMPONENT NUMBER	COMPONENT DESCRIPTION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY
	480V MCC 3B			
30617	RHR HX 3B CCW OUTLET, MOV-3-749B	ON		
30624	CCW RETURN FROM NORMAL CONTAINMENT COOLERS, MOV-3-1418	ON		
30637	CCW RETURN FROM RCP'S BEARING COOLERS, MOV-3-730	ON		
30638	CCW RETURN FROM RCP'S THERMAL BARRIERS, MOV-3-626	ON		
30639	CCW SUPPLY TO RCP'S OIL COOLERS AND THERMAL BARRIERS, MOV-3-716B	ON		
	480V MCC 3D			
30822	CCW TO NCCS, ROD DRIVE COOLERS, AND PRIMARY SHIELD COOLERS, MOV-3-1417	ON		
	480V MCC 3C			
30721	RHR HX 3A CCW OUTLET, MOV-3-749A	ON		
30743	CCW SUPPLY TO RCP'S OIL COOLERS AND THERMAL BARRIERS, MOV-3-716A	LOCKED OFF		
30775	PRIMARY WATER MAKEUP TO CCW SURGE TANK, MOV-3-832	ON		

ATTACHMENT 4
Component Cooling Water Flow Rates
(Page 1 of 4)

NOTE

1. Maximum rates are acceptable provided the MAX TOTAL flow is maintained less than 13,680 GPM (6840 GPM for single CCW Hx).
2. Minimum flow through the ECC Bypass valves should be adjusted to provide greater than 0 GPM per indication or audibly for each ECC. Due to cooler discharge valve leakage, it is acceptable for the measured flow to exceed 250 GPM to each cooler if the throttle valve is closed. The maximum ECC flowrate is 3200 GPM per cooler for 31 days, or 5000 GPM for 24 hours and 5500 gallons for 1 hour. The method for setting the bypass flows and flow limits are contained in 3-NOP-055.

COMPONENT	FLOW ADJUSTMENT VALVE(S)	FLOW INDICATION	NORMAL OPERATING FLOW RATES (GPM)		Initials
			Minimum	Maximum (Note 1)	
SIS Pumps A Hdr	3-708E	FIC-658A	20	30	
SIS Pumps B Hdr	3-708F	FIC-658B	20	30	
Charging Pumps Oil Clrs Hx	3-825B 3-825D 3-825F	FI-3-660	150	165	
Seal Water Hx	3-784	FI-3-618	100	200	
Non-Regen Hx	TCV-3-144	FI-3-620 or FI-3-620A	100	800	

CAUTION

Spent Fuel Pit Hx flow is adjusted by Flow Balance per 3-OSP-030.9.
Any additional flow adjustment must be authorized by the System Engineer.

Spent Fuel Hx	3-775	FI-3-622	1200 (See Caution)	2800 (See Caution)	

ATTACHMENT 4
Component Cooling Water Flow Rates
(Page 2 of 4)

COMPONENT	FLOW ADJUSTMENT VALVE(S)	FLOW INDICATION	NORMAL OPERATING FLOW RATES (GPM)		Initials
			Minimum	Maximum (Note 1)	
RHR Pump A Seal Water Hx	3-769A	FI-3-637	8.5	14	
RHR Pump B Seal Water Hx	3-769B	FI-3-638	8.5	14	
CS Pump A Seal Water Hx	3-795B	FI-3-657	12	17.5	
CS Pump B Seal Water Hx	3-795D	FI-3-659	12	17.5	

CAUTION

ECC A & B Hdr flows are adjusted by Flow Balance per 3-OSP-030.9.
Any additional flow adjustment must be authorized by the System Engineer.

ECC A Hdr	3-672	FI-3-1472 (LCL) FI-3-1470 (VPB)	>0 (See Caution) (Note 2)	1000 (See Caution) (Note 2)	
ECC B Hdr	3-670 3-671	FI-3-1473 (LCL) FI-3-1471 (VPB)	>0 (See Caution) (Note 2)	2000 (See Caution) (Note 2)	
RCP 3A Lower Brng Oil Cooler	3-723A	FI-3-628	5	10	
RCP 3B Lower Brng Oil Cooler	3-723B	FI-3-631	5	10	
RCP 3C Lower Brng Oil Cooler	3-723C	FI-3-634	5	10	

ATTACHMENT 4
Component Cooling Water Flow Rates
(Page 3 of 4)

COMPONENT	FLOW ADJUSTMENT VALVE(S)	FLOW INDICATION	NORMAL OPERATING FLOW RATES (GPM)		Initials
			Minimum	Maximum (Note 1)	
RCP 3A Upper & Lower Brng Oil Coolers	3-724A	FIC-629	155	170	
RCP 3B Upper & Lower Brng Oil Coolers	3-724B	FIC-632	155	170	
RCP 3C Upper & Lower Brng Oil Coolers	3-724C	FIC-635	155	170	
RCP 3A Thermal Barrier Cooling Coils	3-728A	FI-3-630	21	28	
RCP 3B Thermal Barrier Cooling Coils	3-728B	FI-3-633	21	28	
RCP 3C Thermal Barrier Cooling Coils	3-728C	FI-3-636	21	28	
Excess Letdown Hx	3-737B	FI-3-624	>0	238	
Rod Drive Clr A	3-10-663	FI-3-1448	220	228	
Rod Drive Clr B	3-10-665	FI-3-1449	220	228	
Waste Gas Comp A	3-826B	FI-3-666	20	30	
Waste Gas Comp B	3-826E	FI-3-665	20	30	

ATTACHMENT 4
Component Cooling Water Flow Rates
(Page 4 of 4)

COMPONENT	FLOW ADJUSTMENT VALVE(S)	FLOW INDICATION	NORMAL OPERATING FLOW RATES (GPM)		Initials
			Minimum	Maximum (Note 1)	
NOTE: Minimum flowrates for NCC is that flowrate required to maintain containment temperature less than 120°F. NCC flowrates are re-verified in 3-GOP-301, Hot Standby to Power Operation at NOP/NOT. Any additional flow adjustment must be authorized by System Engineer.					
NCC A	3-10-655	FI-3-1444	0	740	
NCC B	3-10-657	FI-3-1445	0	740	
NCC C	3-10-661	FI-3-1447	0	740	
NCC D	3-10-659	FI-3-1446	0	740	
Prz Steam Sample Hx	3-788A	FI-3-615A	20	35	
Prz Liquid Sample Hx	3-788B	FI-3-615B	20	35	
Rx Coolant Sample Hx	3-788C	FI-3-615C	20	35	

CAUTION

RHR A and B Hx flows are adjusted by Flow Balance per 3-OSP-030.9, Component Cooling Water Flow Balance. Any additional flow adjustment must be authorized by the System Engineer, and done using a clamp-on flow instrument.

RHR A Hx	3-748A	N/A	4500	5000	
RHR B Hx	3-748B	N/A	4500	5000	

scope of work to be performed prior to authorization.

4.3 ECO Executors – Performs ECO steps in the order written (unless previously noted) in the field and hangs tags associated with the ECO.

5.0 INSTRUCTIONS

5.1 Perform the appropriate section of the Use of the NOMS Software: Index for Clearance performance.

Use of the NOMS Software: Index

I. Start the ECO MODULE

II. Open the ECO MANAGER

III. Create a new SECTION

IV. Enter new Section descriptive information

V. Attach applicable WORK ORDERS to the Section

VI. Generate the specific CLEARANCE POINTS

VII. SECTION VERIFICATION: signature update

VIII. Print SECTION COVER PAGE, SECTION TAG HANG LIST and TAGS

IX. Hang the tags

X. TAG VERIFICATION For Hanging: first and second verification

XI. SECTION VERIFICATION: signature update

XII. Sign-on CONTROLLERS and HOLDERS

XIII. Sign-off CONTROLLERS and HOLDERS

XIV. SECTION VERIFICATION: signature update; US Removal Authority and print out of the

TAGS TO BE REMOVED LIST

XV. REMOVE the tags TO BE REMOVED FROM LIST

XVI US REMOVAL AUTHORIZATION and Resolution of a Restoration Conflict

XVII. TAG VERIFICATION for Restoration: first and second verification

XVIII. SECTION VERIFICATION: signature update, Tags Verified Removed

XIX. Closeout of ECO Number

XX. Using the Drag and Drop Method to Generate New Clearance Points

XXI. Printing of Necessary Documents

XXII. Attaching Work Orders

XXIII. Work Order Manager

XXIV. NOMS for the SM/US

XXV. Boundary Modification & Revisions

XXVI. Clearance Walkdown Requirements

I. **Start the ECO MODULE.**

A. The ECO Preparer – Checklist #1 should be obtained and filled out, with all appropriate steps either checked or N/A'd as applicable during the preparation process.

B. Click on Clearance Module icon.

C. Log In:
1. Your LOGIN ID is your SLID.
2 Your PASSWORD is the last 4 digits of your SS# (unless it has been changed).
   a. To change your password use the Change Password function found under Options on the ECO Module tool bar.

II. **Open the ECO MANAGER**

A. Click on FILE located on the ECO Module tool bar. A second option is to click on the "open file folder" icon on the toolbar.

B. Click on OPEN.

1. This operation will display the ECO LIST in the upper left corner of the screen.

C. Next single click on the (+) sign to the left of "ACTIVE ECO's".

This operation will open an ECO LIST, which consists of all ECO's in the Active ECO category. On the left half of the window, the Active ECO's will be displayed in a "tree" format arranged in increasing numerical order. The same information will be displayed as a list on the right half of the screen.

1. The ECO numbering format is: Unit designator - Year - Month - Sequential ECO Number (example: 4-00-11-001)

2. The ADD button located at the bottom of the ECO List is used to generate a new ECO number.

D. Create a New ECO Number:
   1. Click the Add button on the lower left hand corner of the screen
   2. From the drop down menu, select ECO (even for Caution Tags).
   3. Click OK
   4. Fill in the ECO number using the format from II.C.I.
   5. You will be prompted that you have successfully created an ECO number.

Now re-expand the active ECO list; scroll down to the new number and double click that number.

Formatted: Bullets and Numbering

Complete the following fields with as much detail as possible
Component to be worked (must match TEDB exactly)
Clearance boundaries
Scope of work
d) Unit

Formatted: Bullets and Numbering

NOTE

IF the component to be worked is NOT in TEDB then place the component description to be worked in the Clearance boundaries

Select the ECO verification Tab
Highlight the "Opened By" line
Double click on the user block; your name will automatically fill in. This will lock all paths entered in the ECO, no changes can be made after electronically signed.

Formatted: Bullets and Numbering

G. Select the ECO SECTION List tab. (This can also be performed using III).
   1. Select "NEW"
   2. Enter the new section name. Then hit the TAB key.
      a. For most non-outage sections, use the equipment identification, name or description.

b. For outage sections, use the predefined "ZONES". This allows tag sharing which reduces the need for multiple tags hanging on a single piece of equipment, thereby reducing man-hours, and man-rem needed to hang multiple overlapping ECOs.

III. **Create a new SECTION (This can also be performed using II.G)**

A. Re-expand the active ECO list, scroll down to the new number and right click that number. Select "Create New Active ECO Section".

1. Under freeform, type "IN THE EQUIPMENT, DECRIPTION OR ZONE.
2. Hit the TAB key, then click on "Create New Active ECO Section".
3. "YES", when prompted to open new section, depress the TAB key (the section name will automatically fill in).

IV. **Enter new Section descriptive information.**

A. Expand the appropriate ECO by single clicking on the (+) sign for the ECO. This will display all of the sections in this ECO.

B. If you Double click on the section number in the expanded tree, the SECTION DETAIL will open in the edit mode.

C. The Component to be worked ID number must match the TEDB designation **EXACTLY**. Search the Equipment Manager for TEDB designations.

D. The remaining fields, Section Description, Reason, Hazards, and Special instructions, are freeform fields; i.e. any information may be entered into these fields, try to be as descriptive as possible.

E. Select the ATTRIBUTES tab and complete the attributes field. This is especially important for field #2 Safety Related and field #9 Containment Integrity.
1. Requested By may be left blank, however, for online clearances this should be the work week (WWxxx). Add an "E" at the end if the clearance is emergent (WWxxxE).

V. **Attach applicable WORK ORDERS to the Section.**

A. Click on WORK ORDER(s), TAB on the top of the ECO Section Screen.
   1. For this screen the left half of the screen is used by Operations to attach (add) work orders to this specific section; the right half is for the maintenance technician to sign on /sign-off of specific work orders for this section.

B. Click on ADD, located at the lower left corner of the window.

   1. A pick-list will drop down from the Work Order data entry field, located in the upper left corner of the window.

C. Scroll down the pick-list to the desired work order, then click on that number. The number should be displayed in the box, click on the save button at the bottom of the screen. Alternatively, the work order number can be entered to find it on the list.

D. Click on ADD to add a second work order. Repeat steps B and C as many times as necessary to add all of the applicable work orders.

E. If the work order number is *not* available on the pick list, go to work order manager (steam shovel icon) and add the work order number and other applicable information.

F. For information:

   1. Once this Section has been hung and verified, the maintenance personnel (technician level) will be able to sign-on/sign-off individual work orders using the right hand side of this screen.

VI. **Generate the specific CLEARANCE POINTS.**

A. Click on ECO SECTION TAGS TAB.

B. Click on the ADD button located at the lower left corner of the active window.

C. Enter the Equipment ID for the desired clearance point. This equipment ID must exactly match the equipment ID as defined in the TEDB. If the component is not in the TEDB, then the component can NOT be used as a clearance point! Equipment ID's can only be used once in any ECO Section. Procedure numbers that have been entered in the equipment database can be used to document non-tagged steps.

D. Determination of the tag type

1. Click on the Tag type for the specific clearance to be edited/modified. (i.e. Danger, Caution, info tag, none or restoration checklist)

2. Select the desired tag type from the pick list.

E. Determination of the Placement Configuration.

1. Click on the specific clearance point in the corresponding Placement Configuration.

2. Drop down pick list will appear in the Placement Configuration field.

3. Click the desired position.

4. Repeat for the remaining points.

F. Sequence clearance points:

1. Click on the clearance point to be moved.

2. Use up and down arrows located at the lower right of the screen to move the selected point up of down in the placement sequence.

3. When done, click the RESEQUENCE button on the bottom of the screen to renumber the points for posting.

   a. The restoration sequence will default to the reverse of the posting sequence. The Restoration sequence can be modified at a later time.

4. To assign the same placement sequence to multiple clearance points, directly edit the Placement Sequence field.
   a. Click on the desired field.
   b. Delete the current sequence number.
   c. Enter (type) the desired sequence number. Click Save - DO NOT click Re- sequence.

5. Determination of the Restoration Configuration (restored position).

CAUTION

Ensure that the Restoration Position is appropriate for the current plant Mode and System/Component Configuration.

- **Unless otherwise specified P&ID positions are Mode 1**
- **Unless otherwise specified, procedure lineup attachments are for Mode 5**

   a. When preparing an ECO release, two sources shall be used to determine the as-left component position. These sources shall be included in the ECO package and should include controlled documents such as:
      1) P&ID drawings
      2) The appropriate procedure section
      3) Breaker List

   b. Click on the specific clearance point in the Correspondence Restoration Configuration. Restoration Configurations can be filled in later.

   c. A drop down pick list will appear in the Restoration position Field.

   d. Click on the desired cleared position.

   e. Repeat for the remaining points.

G. Re-sequence the order for removing the tags (if required):

1. Click on the corresponding Restoration Sequence field.

2. Modify the contents of the field to the desired sequence.

3. Click the SAVE button on the tool bar - do **NOT** click Re-sequence.

H. Perform an on-demand conflict check by clicking the CONFLICT CHECK button located on the bottom of the Section Tags window. CONFLICT CHECK UN-ISSUED will warn of conflicts with other prepared ECO Sections that have not been approved.

1. Checks this section's tags against the tags in all of the sections of all of the active ECO's for both units:
   a. Tag type conflicts
   b. Position conflicts.

2. A pop-up window will display the results of the conflict check. Conflicts can be printed out for investigation and corrections.

I. ECO Preparer – Verify Checklist #1 is filled out with all appropriate steps either checked or N/A'd as applicable. Upon completion, the ECO preparer shall sign the ECO "Prepared By" block under the ECO Section Verification tab in the ECO module.

J. ECO Reviewer – Verify Checklist #1 is filled out with all appropriate steps either checked or N/A'd as applicable. Upon completion, the ECO Reviewer signs "LMD 1 or 4 Review "block under the ECO Section Verification tab in the ECO module.

SECTION VERIFICATION: signature update

Formatted: Bullets and Numbering

A. The 1st SRO Approval – Checklist #2 and 2nd SRO Review/Challenge of ECO Prior to Execution – Checklist #3 need to be performed during the Approval Section steps

B. Click on SECTION VERIFICATION

C. Double click on appropriate signature

1. Prepared By - this signature may be reversed, i.e. erased, by clicking on the Sign-Off button. Changes to the ECO Section by another person will require signing off the original author.
2. US Reviewed By:
   a. Conflict check will be performed automatically.
   b. An electronic signature is required in order to produce a Section Tag Hang List.
   c. Section tags can not be printed until this signature has been entered.
   d. Non-reversible signature.

3. SM Reviewed By - this signature may be reversed, this signature is NOT required by the NOMS module, but is required by 0-ADM-212 for certain systems.

4. Verified Executed - this signature is non-reversible, and can only be signed once the Tags have been first and second verified in the computer.

VIII. **Print SECTION COVER PAGE, SECTION TAG HANG LIST and TAGS.**

A. Click on the printer button on the tool bar. Alternatively you can right click on the desired section on the ECO List Tree.

B. Select the item to print by placing a "check mark" in the desired boxes.

C. Print the following using the 'print' button:

NOTE:
A Section Tag List MUST always have a Section Cover Sheet attached. The Section Cover Sheet is the only record of the approval status (signatures) for the Section hang List.

1. ECO Cover Sheet
2. Section Cover Sheet

Formatted: Bullets and Numbering

3. Section Tag Hang list

D. Tags are printed by clicking on the Print Tags button.
Tag print types selections are:

1.	Danger	Danger Tag
2.	Caution	Yellow Caution tag (LLRT, ILRT tags)
3.	Info	Clearance Information Tags (does not print a tag)
4.	MOVATS	Red and Blue stripes
5.	Operating Permit	Red and Blue Stripes

IX. HANG THE TAGS

A. Prior to Hanging Tags, the ECO Hang/Modify Pre-Job Brief portion of the ECO Manipulations Pre-Job Brief and Discussion Items – Checklist #5 should be performed. The checklist needs to be maintained with the package for ECO Removal Pre-Job Brief performance.

B. During the ECO Hang/Modify Pre-Job Brief components that will be repositioned should be Red Circle for additional Human Performance measures.

X. TAG VERIFICATION for Hanging: first and second verification.

A. Click on SECTION TAGS

B. Double click on Placement First Verifier or Placement Second Verification for the desired clearance point. This will display a drop down menu. Clicking on a selection from the drop down menu will perform that function and attach the current time, date and your name to the point(s).
1. VERIFY - attests to placement of this point only.
2. VERIFY ALL - attests to placement of all points for this ECO section.

> **Note:**
> **The un-verify functions will not remove any information once the data has been saved.**

3. UN-VERIFY - removes the First Verification information for this point only.

4. N/A VERIFICATION - used by an SRO to identify that the Second Verification is not required for this clearance point. WCCS approval to N/A verification when having Danger Tags.

XI. SECTION VERIFICATION: signature update

> **Note:**
> **The un-verify is no longer an option.**

A. Click on SECTION VERIFICATION.

B. Click on Verified Executed.
   1. Will not permit sign-on unless all required points are second verified or N/A.

C. Double click on the user block and your name will automatically fill in.

XII. Sign-on CONTROLLERS and HOLDERS.

A. A CONTROLLER (Section holder) must be signed-on the section to permit any HOLDER (Work Order Holder) to sign-on the section. This is a function of the software.

B. CONTROLLER (Section Holder).

   1. Click on the Controller tab.

      a. The sign-on and sign-off buttons at the bottom of the screen will be active (black) provided the Section has been posted and verified.

   2. Click SIGN-ON.

   3. The controller's name will automatically appear upon signing on.

   4. Each discipline must have a controller assigned.

5. Click SAVE button on the tool bar.

C. Holders (Work order holders).

1. Click on the WORK ORDERS.
2. Click a specific work order in the left side of the window.
3. Click SIGN-ON.
4. The holders name will appear after signed on.
5. More than one person can hold (sign-on) a Work Order.
6. Click SAVE button on the tool bar.

D. For individuals who do not have computer access or clearance ID/password a paper copy ECO Holder Form (Form 533) can be opened by the Controller for that discipline.

E. HOLDERS (E-MARKER)

1. Controller signs onto the clearance.
2. Controller starts an ECO Holder Form (Form 533) for the specific job and provides this to the WCCS.
3. WCCS signs onto the clearance as a Holder using the following discipline ID/Password.

   Mechanical: LMD1 / PTNLMD1
   I&C: LMD2 / PTNLMD2
   Electrical: LMD3 / PTNLMD3
   Projects: LMD4 / PTNLMD4
   HP: LMD5 / PTNLMD5

4. Engineering and vendors will sign under the discipline work order they are supporting.

XIII. **Sign-off CONTROLLERS and HOLDERS.**

A. All Work Order holders must sign-off the section to permit the applicable discipline CONTROLLER to sign-off the section. This is a software function.

B. Holders (Work Order holders).

1. Click on the WORK ORDER.
2. Click a specific work order in the left side of the window.

> **Note:**
> **More than one person can hold (sign-on) a Work Order**

3. Click on the appropriate name.
4. Click SIGN-OFF.
5. Click SAVE button on the tool bar.

C. CONTROLLERS (Section Holders).

1. Click on CONTROLLERS.

> **Note:**
> **More than one person can hold (sign-on) a Work Order**

2. Click on the appropriate name.
3. Click SIGN-OFF.
4. Click SAVE button on the tool bar.

D. All CONTROLLERS must be signed-off of the section to permit release of the section.

XIV. SECTION VERIFICATION: signature update; US Removal Authority and print out of the TAGS TO BE REMOVED LIST.

A. The Authorization to Release ECO – Checklist #4 should be performed and verified complete as part of the Release Section.

B. Click SECTION VERIFICATION.
Qualified ECO writer should sign:
Work Complete after verifying all "hard "copies are completely filled out.
2) Equipment I/S boundary checked.
3) Click on the ECO Section Tags folder to prepare the release order and verify restoration checklist.

Formatted: Bullets and Numbering

NOTE

Special attention should be given to components inside the boundary that were worked, to be verified in the correct position. A separate system walk-down cannot replace the position verification during the ECO release.

4) Release Review, verify proper releasing order ("Tags to Remove" button) and check for restoration conflicts ("Restoration Conflicts" button). For each component, provide the US with two separate verifications of Configuration Control, such as P& ID and proceeding alignment sheet, or notify WCCS if not available.

Formatted: Bullets and Numbering

C. US REMOVAL AUTHORITY.
NOTE MANUALLY ALIGN PRINTER PRIOR TO NEXT STEP

1. Double click on user block - see the next section of this handout if a Restoration Conflict Message is displayed when the sign-on is attempted.

NOTE: Ensure that the computer reflects the desired positions for the components. DO NOT rely on a hard copy printout of the releasing positions for final approval

2. Within the Tags-to-Remove pop-up window.

   Click on AUTHORIZATION REMOVAL.
   1) Will print the Tags-to-Remove List.
   2) Will update the database for the US signature for removal authority.

   Formatted: Bullets and Numbering

   b. If you click on PRINT.

      1) Will print an unauthorized (information-only) Tags-to-Remove List. An "unauthorized" watermark banner on the printout identifies the unauthorized status.

3. Will NOT update the database for the US signature for removal authority.

XV. **REMOVE the tags, TO BE REMOVED FROM LIST.**

A. Prior to Removing Tags, the Removal Pre-Job Brief portion of the ECO Manipulations Pre-Job Brief and Discussion Items – Checklist #5 should be performed. The checklist was to be maintained with the package for performing this step.

B. <u>During</u> the ECO Removal Pre-Job Brief components that will be repositioned should be Red Circle for additional Human Performance measures.

XVI. **US REMOVAL AUTHORITY and Resolution of a Restoration Conflict.**

A. A restoration conflict occurs when at least one Restoration Configuration specified on the section to be authorized for removal does not agree with the corresponding Placement Configuration for at least one other approved section. Just as with the placement conflict check, the restoration conflict check is done globally, i.e. all ECO's are screened for conflicts.

B. A Restoration Conflict pop-up window will be displayed if the US Removal Authority Sign-on is initiated and a restoration conflict exists.

C. The actual position conflicts and affected Sections will appear in the pop-up window.

Two options are provided:

1. If the Placement Configuration for the specific component, which is in conflict, is acceptable as the Restoration Configuration then click YES for accepting the Placement Configuration.

    a. The Restoration Configuration on the section to be authorized for removal will be automatically updated to agree with the (current) Placement Configuration for the conflicting section(s).

    b. The removal process for the Section may proceed. Remember that the components that produced the restoration conflict, will have the up-dated restoration configurations.

2. If the Placement Configuration for the specific component, which is in conflict, is NOT acceptable as the Restoration Configuration then click NO; the removal process for the Section will not be permitted to continue.

XVII. **TAG VERIFICATION for Restoration: first and second verification.**

A. Click on SECTION TAGS

B. Double click on Restoration First Verifier or Restoration Second Verification for the desired clearance point. This will display a drop down menu. Clicking on a selection from the drop down menu will perform that function and attach the current time, date and your name to the point(s).

1. VERIFY - attests to restoration of this point only.

2. VERIFY ALL - attests to restoration of all points for this ECO section.

<u>Note:</u>
The UN-VERIFY functions will not remove any information after tags verified removed

3. UN-VERIFY - removes the First Verification information for this point only.

4. UN-VERIFY ALL - removes the First Verification information for all points of this ECO section.

5. N/A VERIFICATION - used by an SRO to identify that the Second Verification is not required for this clearance point.

XVIII. **SECTION VERIFICATION: signature update; Tags Verified Removed**

A. Click on SECTION VERIFICATION
   1. Click on appropriate signature, usually completed by a Qualified ECO writer. This function will not permit sign-on unless all points are first and second verified for restoration or N/A.

B. Click on SIGN ON - this will update the appropriate field with the signed-on individual's initial.

XIX. **Closeout of ECO Number.**

Return to ECO Manager screen
   Double -click on ECO number to be closed, this will change the screen to "edit" mode
   Click ECO verification tab.
   Highlight "Closed By", sign for ECO closure, this is normally performed by a Qualified ECO writer

Formatted: Bullets and Numbering

SRO Return to ECO manager screen
   Expand the "tree view" for the ECO to be archived
   "Right " click on the section or sections to be archived, and select "print".
3) Print "Tags with Verification" and "ECO Section Cover Sheet".
4) Choose "Archive".
5) Once all sections have been archived perform step 2, only this time highlight the ECO number.

C. The ECO and all sections associated with that ECO have now been archived.
D. Process complete.

XX. Using the Drag-n-drop Method to Generate New Clearance Points.

A. Display EQUIPMENT MANAGER and SECTION TAGS in a dual-window display: (Tile Vertical).

1. Click on ECO SECTION TAGS.

2. Cascade the Windows by clicking on the cascade button of the tool bar.

3. Click on the ECO MANAGER - will move to the front.

   a. Minimize the ECO MANAGER by clicking on the "_" button in the upper right corner of the ECO MANAGER

4. Open the EQUIPMENT MANAGER by clicking on the "key" on the tool bar.

5. Close the Search Criteria pop-up window by clicking on the "x" in the upper right corner of the Search Criteria window.

6. Click on the vertical dual-window display button on the tool bar.

7. Both the ECO SECTION TAGS and EQUIPMENT MANAGER windows should be displayed side by side on the same screen. This will provide for a drag-and-drop of clearance points from the EQUIPMENT MANAGER to the ECO SECTION TAGS.

<u>THE EQUIPMENT MANAGER SEARCH FEATURE.</u>

1. Open Equipment Search by clicking on the Equipment Manager icon (shaped like a key) on the ECO toolbar.

2. Search criteria:

   a. Use wild card operator in the Free Form ID Field.
   b. Bracket search string using "%", i.e. %MOV% will search for all components whose component ID contains "MOV'

c. Use pick-list for system type and unit field:
Click "OK" to start search.

Formatted: Bullets and Numbering

3. Search return will be an EQUIPMENT LIST tree.

B. Drag-and-drop from the EQUIPMENT LIST tree to the ECO SECTION TAGS.

1. Click and hold the left button on the desired component and "drag" to the SECTION TAGS.

2. Release the mouse button to "drop".

3. To enter clearance points without drag-and-drop.

   a. Click NEW on the bottom of the ECO SECTION TAGS.

   b. Enter component ID number in the clearance point field.

   c. Press ENTER.

   d. A pop-up window will appear if the equipment ID number you have entered is not a valid TEDB data point. Acknowledge the error by clicking the OK button and try again.

4. Close the Equipment Manager window.

5. Restore the Section Tags to a full display page by clicking on the middle of the three icons located at the upper right corner of the Section Tags window.

XXI. Printing necessary Documents

1. Once the ECO has been **approved** to hang by the US, the ECO coversheet, ECO section Coversheet, Tag ***HANG*** list and tags may be printed.

At the ECO manager screen select the ECO that you wish to print
Open the original tag list section

Formatted: Bullets and Numbering

Single "click" on the printer ICON (3^{rd} from left on the tool bar)

3. Place a check mark in the box next to the desired items.

4. Click on print.

Attaching Work Orders

Formatted: Bullets and Numbering

Work orders may be attached to an ECO at any time up to the verification signature for "Release Review"

Work Orders should be attached to the ECO after all clearance points have been added to the ECO and BEFORE the US signs for review. WCCS approval is required for the qualified ECO writer to attach a Work Order after the US review. Verify proper boundaries and required restoration checklist steps for added Work Orders.

Formatted: Bullets and Numbering

Work orders are added via the Work Order tab in the ECO section list, (using "add" button in the lower left hand side of the screen). This is a pull down menu.

Formatted: Bullets and Numbering

Work Order Manager (this should be filled in by the schedulers)

Formatted: Bullets and Numbering

If the work order is NOT listed in the pull down menu (see xxii.3 above), it
will have to be added by the individual writing the ECO.

a) Go to the ECO module screen after login select the Work Order Manager icon (steam shovel).
Select "Add" enter the work order number (NOT WORK REQUEST #).
Work order status, this will be used for the LMD,1= Mech., 2=I&C, 3=Elect., etc.
Work order opened , date and time automatically.
Work order closed filled in when holder signs off as work complete.
Equipment ID- self explanatory.
Work order description, fill in as suggested boundaries and Work Scope.
Click "SAVE", repeat steps as necessary to add work orders.

Formatted: Bullets and Numbering

The previous steps will take the place of a clearance request

XXIV. NOMS FOR THE SM/US

A. Change a Password

Open NOMS "UTILITY" module
Single click on the first icon on the button bar (a hand pointing right)
Click on the "+" near User List
Scroll down to the desired name (there are duplicates so ensure you choose the one that has a SLID in the user ID *and* Login ID field)
Single click on the 8th ICON from the ***RIGHT*** (a key with an F next to it)
Enter a new password for the individual, IF this change is for an Operator, the handheld computer will ***not*** recognize this new password until the handheld is downloaded *or* uploaded at least once.

Formatted: Bullets and Numbering

B. To add a component (for use in clearances)

Open NOMS Equipment Database.
Under "FILE", choose open Equipment list.
3) When search screen opens up, click cancel, Under "FILE" choose New Equipment Item.
Fill in the new equipment ID, description, unit, system and plant.

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

This is the most important part

Under "Config. Type" choose the" * "(2nd selection) (the first selection is a # sign).

Formatted: Bullets and Numbering

Fill out tag size "Large" (tags will not print without this selection).
E-mail the WCCS with the component added.

There are over 100,000 records in the database make sure the component you are adding is NOT there BEFORE you add anything. We don't want this database to become as corrupted as the PCON database.

XXV. BOUNDARY MODIFICATIONS AND REVISIONS

CAUTION **Complete a Clearance Boundary Modification Form** **(Attachment 4 in 0-ADM-212)**

24

1. During an ECO Boundary Modification and/or Revision the ECO Checklists should be used as necessary based on complexity of the ECO and/or WCS discretion. At a minimum, Checklist #5 should be performed and maintained with the package.
2. At times it will be necessary to modify an existing approved ECO, this will be done via a boundary modification. In NOMS the concept of a Boundary Mod is you first create a replica of the ECO, then you modify this replica as needed. If you need to add components, then you add tagging steps to the replica. If you need to shrink your boundary then delete the steps on the replica that are no longer needed. Then when the original ECO is released only those components not kept in the replica will be released.
3. Identify ECO (section) to be modified From ECO manager select the current approved "section", this is most probably the "Original Tag List".
4. Open the section to be modified in the "edit" mode.
5. Under **section detail** tab, click "copy to active".

When pop-up screen appears type applicable NEW section number, i.e. BM1, BM2, etc.,

Formatted: Bullets and Numbering

Hit the "Tab" key.

If this is a **NON**-Work Stoppage type Boundary Mod " VERIFY that all three boxes are **checked** to copy over the work order #, holders and controllers. Then click "copy active ECO section to active".

If this is a **Work Stoppage Boundary Mod** , UN-CHECK the box labeled and Work Order Holders. Then click "copy active ECO section to active.

Modify the ECO as necessary to accommodate the needs of the requesting department

Sign: Prepared (Qualified ECO writer)

AFTER REVIEW , Sign: US Review

You can now print out a new section cover sheet including any new

tags necessary for the Boundary MOD, IF adding tags you will print out a new "Section Tag HANG List" for Boundary Mod 1

Complete the necessary "section verification" signatures up to and including "Verified Executed"

IF this was a Work Stoppage type boundary Mod, Once it is approved AND Verified Executed, the work orders, and Holders can once again be attached to the new section (Boundary Mod).

Print out a new section tag HANG list (if necessary).

1. Print out a new Section Cover Sheet and return the control form to the applicable Maintenance disciplines.

IF REMOVING TAGS

6. If the need arises to remove tags in order to perform the Boundary Mod then you will proceed as if you were going to release the "active / original" section of the ECO.

IF NON Work Stoppage type Boundary Mod, it is now possible for the Maintenance personnel to "sign off" the old ECO section and release the necessary tags to complete the Boundary Modification. The new ECO Section is their boundary.

Formatted: Bullets and Numbering

Sign all signature blocks associated with an ECO release (of the old Tag List), after the new section approval. Upon the old section release approval by the US (to release unneeded tags) the only tags which will be authorized to release will be the ones that are not incorporated in the Boundary modification.

Now it will be necessary to complete the process by performing the administrative requirements.

1) Verify all signatures which were "signed" in the computer are signed on the hard copy of the section to be released (Original Tag List).

Attach the boundary mod section cover sheet to the original ECO.

Formatted: Bullets and Numbering

Attach the new section tag hang list to the ECO.

Attach the boundary mod section tag HANG list (if used) to the original ECO.

6. A Revision is performed in the ECO module exactly like a Boundary Mod and does not require the use of the forms. The difference is that

revisions are usually performed on ECOs that no one is an active controller. Since no one "owns" the ECO there would be no controllers to approve a Boundary Mod. Revisions may be performed on actively held ECOs if it does not alter the ECO boundary, i.e. adding vent or drain rigs, adding an annunciator to the ASL, adding a restoration step, info tags, or no Tag steps.

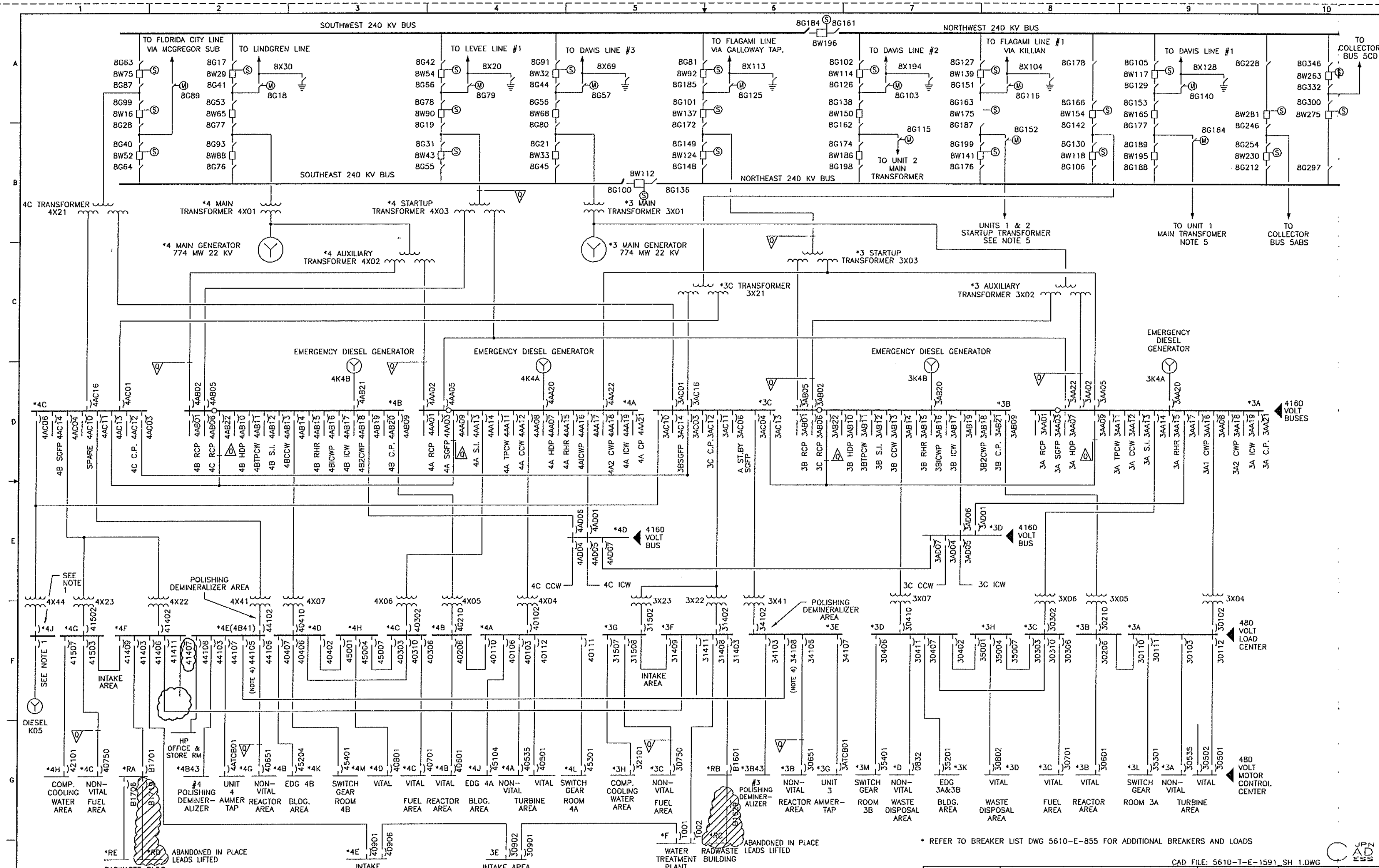
XXVI. **Clearance Walkdown Requirements**

1) Normally conducted by Operations personnel to be completed by T-3 point in the 13-week scheduling process.
2) Utilize Checklist #4 to conduct the walkdown.
3) May be waived by Operations supervision or other site designated Clearance coordinators for justifiable reason, such as:
   i. Emergent Clearance that no reasonable benefit from conducting a walkdown is expected since the Clearance is to be hung in the near future (1-2 days).
   ii. Repetitive Clearance, which the needs are well understood, such as bi-monthly diving activities.
   iii. Resource limitations prevent the ability to complete the walkdown. This should not be the normal practice.
4) If the Clearance Walkdown is waived, document the basis and authorizing supervisor on Checklist # 4 (Clearance Walkdown Checklist) Comments.

6.0 REFERENCES/COMMITMENT DOCUMENTS

0-ADM-212.1
PTN PMAI #PM00-06-015
PTN PMAI #PM00-07-073
4. CR 07-37638

Formatted: Bullets and Numbering



NOTES:

1) SEE 5610-E-1522 FOR ADDITIONAL INFORMATION
2) DELETED
3) DELETED
4) 480V TIE-LINE BETWEEN LOAD CENTERS 3E & 4E IS A TEMPORARY MAINTENANCE TIE AND ITS USE IS CONTROLLED BY PROCEDURE 3/4-OP-006.
5) NOTIFY NPS PRIOR TO COMMENCING WORK ON THIS SYSTEM.

REV	DATE	REVISION	BY	CH	APP	APP
59	7-6-06	ISSUED AS-BUILT PER PC/M 06-004.	RV	BB	-	TBH
58	10/2/04	ISSUED AS-BUILT PER CRN-E-16572(PC/M 03-106).	RV	JPG	-	TS
62	02-10-11	ISSUED AS-BUILT PER EC 246965 (PC/M 09-053).	RV	RH	TPF	MA
61	01-11-11	ISSUED AS-BUILT PER EC 242534 (PC/M 09-124).	RV	RH	-	LG
60	11-16-06	ISSUED AS-BUILT PER PC/M 08-053.	RV	JPG	-	KCP

CAD FILE: 5610-T-E-1591_SH 1.DWG

FPL

TURKEY POINT NUCLEAR UNITS 3 & 4

OPERATING DIAGRAM
ELECTRICAL
DISTRIBUTION

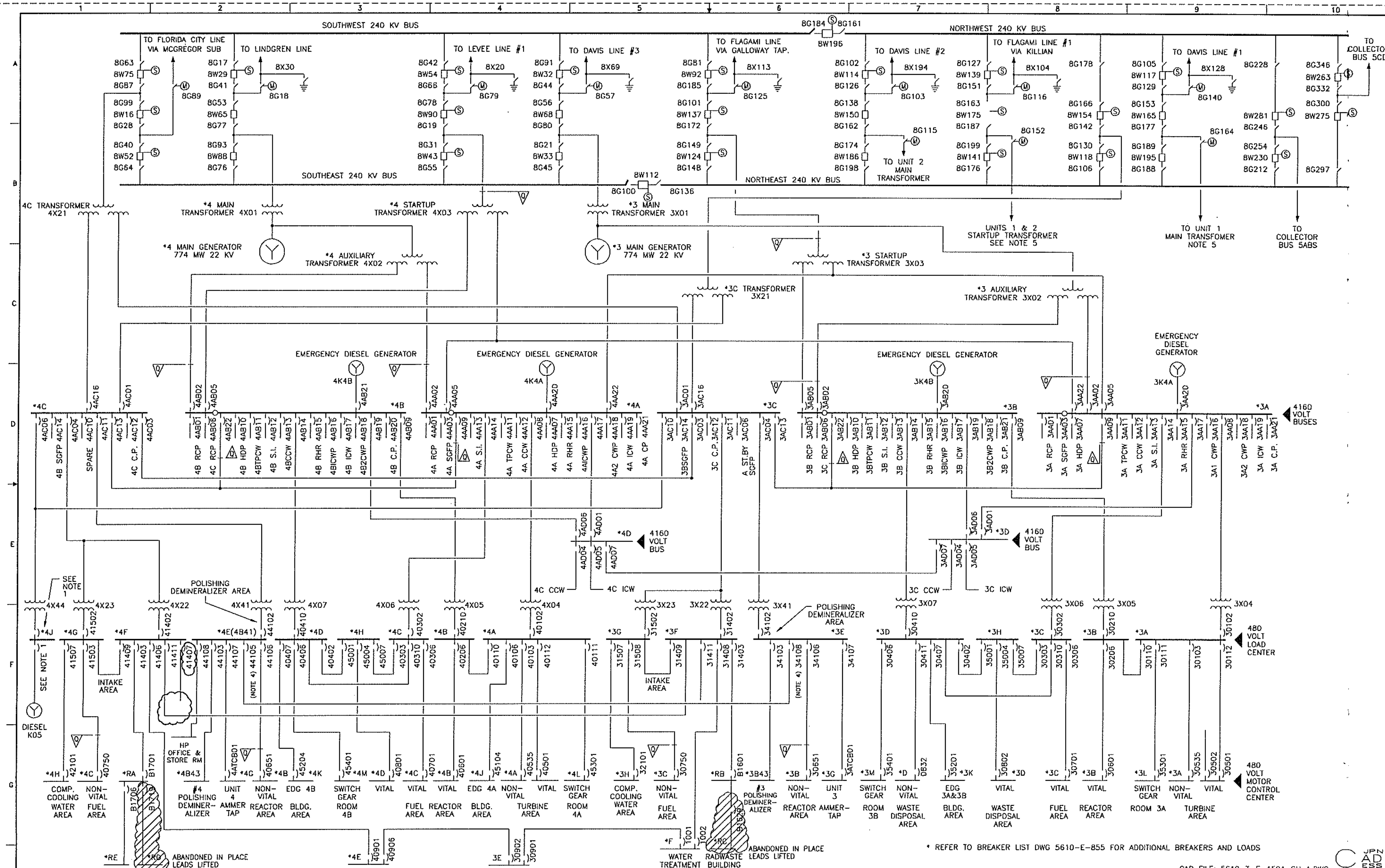
POD

DRAWING NUMBER 5610-T-E-1591

SYS -

SHEET 1

REV 62



* REFER TO BREAKER LIST DWG 5610-E-855 FOR ADDITIONAL BREAKERS AND LOADS

NOTES:

1) SEE 5610-E-1522 FOR ADDITIONAL INFORMATION
2) DELETED
3) DELETED
4) 480V TIE-LINE BETWEEN LOAD CENTERS 3E & 4E IS A TEMPORARY MAINTENANCE TIE AND ITS USE IS CONTROLLED BY PROCEDURE 3/4-OP-006.
5) NOTIFY NPS PRIOR TO COMMENCING WORK ON THIS SYSTEM.

59	7-6-05	ISSUED AS-BUILT PER PC/M 05-004.	RV	BB	-	TBH
58	10/2/04	ISSUED AS-BUILT PER CRN-E-16572(PC/M 03-106).	RV	JPG	-	TS
62	02-10-11	ISSUED AS-BUILT PER EC 246965 (PC/M 09-053).	RV	RH	TPF	MA
61	01-11-11	ISSUED AS-BUILT PER EC 242534 (PC/M 09-124).	RV	RH	-	LG
60	11-16-06	ISSUED AS-BUILT PER PC/M 06-053.	RV	JPG	-	KCP
REV	DATE	REVISION	BY	CH	APP	APP

FPL

TURKEY POINT NUCLEAR UNITS 3 & 4

OPERATING DIAGRAM
ELECTRICAL
DISTRIBUTION

POD

DRAWING NUMBER 5610-T-E-1591

SHEET 1

SYS -

REV 62

5610-T-E-1591_SH_1.DWG

B R E A K E R   L I S T

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
25		E-200 E-230 E-307-7	3B05	FEED FROM MCC 3A (BKR 30521) VIA 3X034 DUP-064	LP34 MAIN
25		E-303-54 E-334 E-307-7	MTR HTR	REACTOR COOLANT PP 3A(3P200A); NOTE: SEE BKR 3AA01 DUP-064	LP34-5
25		E-303-54 E-337 E-307-7	MTR HTR	REACTOR COOLANT PP 3B(3P200B); NOTE: SEE BKR 3AB01 DUP-064	LP34-6
25		E-303-54 E-336 E-307-7	MTR HTR	CIRC WTR PP 3A1 (3P7A); NOTE: SEE BKR 3AA16 DUP-064	LP34-11
25		E-303-54 E-337 E-307-7	MTR HTR	REACTOR COOLANT PP 3C (3P200C); NOTE: SEE BKR 3AB06 DUP-064	LP34-12
25		E-303-54 E-336 E-307-7	MTR HTR	CIRC WTR PP 3A2 (3P7C); NOTE: SEE BKR 3AA18 DUP-064	LP34-17
25		E-303-54 E-339 E-307-7	MTR HTR	CIRC WTR PP 3B1 (3P7B); NOTE: SEE BKR 3AB16 DUP-064	LP34-18
25		E-303-54 E-336	SPC HTR	5KV SWGR 3A CUB 18 HTRS DUP-064	LP34-23
25		E-303-54 E-339 E-307-7	MTR HTR	CIRC WTR PP 3B2 (3P7D); NOTE: SEE BKR 3AB18 DUP-064	LP34-24
25		E-303-54 E-230 E-307-7		SPARE DUP-064	LP34-29
25		E-303-54 E-339 E-307-7	SPC HTR	5KV SWGR 3B CUB 18HTS DUP-064	LP34-30
25		E-303-54 E-334 E-307-7	MTR HTR	STM GEN FEED PP 3A(3P1A); NOTE: SEE BKR 3AA03 DUP-064	LP34-33

CODES: NAB-NOT AS BUILT
RES-RESERVED

B R E A K E R   L I S T

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
25				SPARE NOTE: SEE BKR 3AB03	LP34-34
25		E-303-54 E-334 E-307-7	MTR HTR	SWGR 3AA02 & 3AB05 FANS DUP-064	LP34-35
25		E-303-54 E-337 E-307-7	MTR HTR	SWGR 3AB02 & 3AA05 FANS DUP-064	LP34-36
25		E-303-54 E-336 E-307-7	MTR HTR	INTAKE COOLING PP 3A (3P9A); NOTE: SEE BKR 3AA19 DUP-064	LP34-37
25		E-303-54 E-339 E-307-7	MTR HTR	INTAKE COOLING PP 3B (3P9B); NOTE: SEE BKR 3AB17 DUP-064	LP34-38
25		E-303-54 E-468 E-307-7	SPC HTR	MISCELLANEOUS CONTROL DEVICES IN RELAY RACK 3QR47; NOTE: SEE BKRS 3D01-20, 3P0610, LP38-21 DUP-064	LP34-39
254				SPARE (PC/M 87-265)	LP34-40
25		E-303-54 E-336 E-307-7	MTR HTR	CONDENSATE PP 3A(3P6A); NOTE: SEE BKR 3AA21 DUP-064	LP34-41
25		E-303-54 E-339 E-307-7	MTR HTR	CONDENSATE PP 3B (3P6B) DUP-064	LP34-42
25		E-303-54 E-230 E-307-8	3P04	FEED FROM LP34 DUP-064	LP34A MAIN
25		E-303-54 E-334 E-307-8	MTR HTR	HTR DRAIN PP 3A (3P3A); NOTE: SEE BKR 3AA07 DUP-064	LP34A-43
504		E-303-54 E-307-8		SPARE (PC/M 04-150)	LP34A-44

CODES: NAB-NOT AS BUILT
RES-RESERVED

B R E A K E R   L I S T

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
7		E-303-54 E-335 E-307-8	MTR HTR	TURB PLANT COOLING WTR PP 3A(3P11A); NOTE: SEE BKR 3AA11	LP34A-45
7		E-303-54 E-338 E-307-8	MTR HTR	TURB PLANT COOLING WTR PP 3B (3P11B) NOTE: SEE BKR 3AB11	LP34A-46
7		E-303-54 E-335 E-307-8	MTR HTR	COMPONENT COOLING WTR PP 3A (3P211A) NOTE: SEE BKR 3AA12	LP34A-47
7		E-303-54 E-338 E-307-8	MTR HTR	COMPONENT COOLING WTR PP 3B (3P211B) NOTE: SEE BKR 3AB13	LP34A-48
7		E-303-54 E-335 E-307-8	MTR HTR	SAFETY INJECTION PP 3A (3P215A); NOTE: SEE BKR 3AA13	LP34A-49
7		E-303-54 E-338 E-307-8	MTR HTR	SAFETY INJECTION PP 3B (3P215B); NOTE: SEE BKR 3AB12	LP34A-50
7		E-303-54 E-341 E-307-8	MTR HTR	TURB AUX OIL PP; NOTE: SEE BKR 30312	LP34A-51
252				SPARE (PC/M 87-265)	LP34A-52
232		E-303-54 E-341 5613E28SH28J	MTR HTR	SPENT FUEL PIT PP (3P212A & B) NOTE: SEE BKR 30309 (PC/M 89-272)	LP34A-53
379		E-303-54 E-342	SPC HTR	EMERGENCY LOAD SEQUENCER-3A(3C23A) (CRN-E-15307 PC/M 95-099) NOTE: SEE BKRS 3D01-4, 3D01-29, 3P07-15	LP34A-54
7		E-303-54 E-340 E-307-8	MTR HTR	CHARGING PP 3A (3P201A); NOTE: SEE BKR 30105	LP34A-55
7		E-303-54 E-340 E-307-8	MTR HTR	CHARGING PP 3B (3P201B); NOTE: SEE BKR 30203	LP34A-56

CODES: NAB-NOT AS BUILT
RES-RESERVED

B R E A K E R   L I S T

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
7		E-303-54 E-340 E-307-8	MTR HTR	CONTAIN SPRAY PP 3A (3P214A); NOTE: SEE BKR 30109	LP34A-57
517		E-303-54 E-341 E-307-8	MTR HTR	CONTAIN SPRAY PP 3B (3P214B) CRN-E-16957(PC/M 03-106) NOTE: SEE BKR 30403 DUP-064	LP34A-58
502		E-303-54 E-340 E-307-8	MTR HTR	CRD MG SET 3A (3S6); NOTE: SEE BRK 30108 (PC/M 04-117)	LP34A-59
502		E-303-54 E-341 E-307-8	MTR HTR	CRD MG SET 3B (3S7); NOTE: SEE BKR 30401 (PC/M 04-117)	LP34A-60
7		E-303-54 E-345 E-307-8	MTR HTR	TURNING GEAR OIL PP (3P31); NOTE: SEE BKR 30510	LP34A-61
348		E-303-54 E-357 E-307-8	MTR HTR	EMERG BEARING OIL PP (3P30); NOTE: SEE BKR 3D31-27 (PC/M 94-054 CRN-E-15010)	LP34A-62
7		E-303-54 E-345 E-307-8	MTR HTR	TURNING GEAR DRIVE 3A (3T08); NOTE: SEE BKR 30512	LP34A-63
387		E-303-54 E-1279 E-27,26E	PWR	DEWPOINT METER MI-3-6430 (PC/M 93-108)	LP34A-64
7		E-303-54 E-345 E-307-8	MTR HTR	AIR SIDE SEAL OIL PP (3P36) NOTE:SEE BKR 30505	LP34A-65
7		E-303-54 E-346 E-307-8	MTR HTR	CONDENSATE TRANSFER PP 3A (3P5) NOTE: SE BKR 30574	LP34A-66
7		E-303-54 E-345 E-307-8	MTR HTR	NORMAL CONTAINMENT COOLER 3A (3V1A) NOTE: SEE BKR 30518	LP34A-67
366		E-303-54 E-341 E-307-8	MTR HTR	CHARGING PP 3C (3P201C) (CRN-E-15198 PC/M 95-031) NOTE: SEE BKR 35008	LP34A-68

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
7		E-303-54 E-336 E-307-8	MTR HTR	RESIDUAL HT REMOVAL PP 3A (3P210A) NOTE: SEE BKR 3AA15	LP34A-69
7		E-303-54 E-339 E-307-8	MTR HTR	RESIDUAL HT REMOVAL PP 3B (3P210B) NOTE: SEE BKR 3AB15	LP34A-70
7		E-303-54 E-307-8	SPC HTR	480V LC 3A(3B01) & 3B(3B02) SPACE HTRS	LP34A-71
155		E-303-54 E-307-8	HTR/XDR	480V LC 3C(3B03) SPACE HTRS/PRESSURIZER AC CONTROLLER PWR METERING TRANSDUCER & 480V LC 3D(3B04) SPACE HTRS. (PC/M 87-011)	LP34A-72
12				SPARE	LP34A-73
379		E-343 E-303-54	SPC HTR	EMERGENCY LOAD SEQUENCER PANEL-3B (3C23B) (CRN-E-15307 PC/M 95-099) NOTE: SEE BREAKERS 3D23-5, 3D23-9, 3P08-13	LP34A-74
7		E-151	PWR	RAD-3-6417 WIDE RANGE NOBLE GAS RADIATION MONITOR & AIR EJECTOR PCM 80-131	LP34A-75
7				SPARE	LP34A-76
340		E-303-54 E-51 E-40	PWR	CATHODIC PROT RECT 3A1 (3E7A1) INLET PANEL 3C475 (PC/M 93-023) CONDENSER WATERBOX 3AN	LP34A-77
340		E-303-54 E-55 E-40	PWR	CATHODIC PROT RECT 3A1 (3E7A3) OUTLET PANEL 3C477 (PC/M 93-023) CONDENSER WATERBOX 3AN	LP34A-78
340		E-303-54 E-51 E-40	PWR	CATHODIC PROT RECT 3B1 (3E7A2) INLET PANEL 3C479 (PC/M 93-023) CONDENSER WATERBOX 3BN	LP34A-79
340		E-303-54 E-55 E-40	PWR	CATHODIC PROT RECT 3B1 (3E7A4) OUTLET PANEL 3C481 (PC/M 93-023) CONDENSER WATERBOX 3BN	LP34A-80

CODES: NAB-NOT AS BUILT
RES-RESERVED

B R E A K E R   L I S T

INPUT DATA FILE PTP.BL.44

LP34 / LP34A (UNIT 3 4160V SWGR. RM.) (3P04)

CODE	HEATER BREAKER	SCHEMATIC LOCATION PNL SCHED.	EQUIP. NO. CKT DESC	EQUIPMENT AND OR LOCATION	BREAKER NUMBER
340		E-303-54 E-51 E-40	PWR	CATHODIC PROT RECT 3A2 (3E7B1) INLET PANEL 3C483 (PC/M 93-023) CONDENSER WATERBOX 3AS	LP34A-81
340		E-303-54 E-55 E-40	PWR	CATHODIC PROT RECT 3A2 (3E7B3) OUTLET PANEL 3C485 (PC/M 93-023) CONDENSER WATERBOX 3AS	LP34A-82
340		E-303-54 E-153 E-40	PWR	CATHODIC PROT RECT 3B2 (3E7B2) INLET PANEL 3C487 (PC/M 93-023) CONDENSER WATERBOX 3BS	LP34A-83
340		E-303-54 E-55 E-40	PWR	CATHODIC PROT RECT 3B2 (3E7B4) OUTLET PANEL 3C489 (PC/M 93-023) CONDENSER WATERBOX 3BS	LP34A-84

ACTUAL TAGOUT

Component to be Worked:

3P211A

COMPONENT COOLING PUMP A

202 _COMPONENT COOLING PUMP ROOM

Reason for BM or Revision:

Reason for Clearance:

OVERHAUL PUMP MOTOR
REPLACE PUMP BEARINGS

Hazards:

Electrical Hazard
Pressurized Piping
Rotating Equipment
CCW contains MOLYBDATES
POSSIBLE CONTAMINATION

Special Instructions:

Refer to TECH SPEC 3.7.2
Verify 3B AND/OR 3C CCW pump running PRIOR TO HANGING ECO
Align 3D 4kV bus over to 3A 4kV bus if desired
THIS ECO IS FULL ISOLATION/VENT AND DRAIN
PRIOR TO HANGING ECO, VERIFY EMPTY BARRELS STAGED TO RECEIVE CONTAMINATED WATER.

Clearance Section Attributes:

Attribute Description	Attribute Value
Tagout Type	
Safety Related	
Risk Significant	
Tech Spec	
Load Threatening	
Load Limiting	
Requested By	
System Number	
Containment Integrity	

Work Order(s) List:

Number / Equipment ID	Description
36011333-01 / **3** / **3P211A**	3 - 3P211A / COMPONENT COOLING PUMP 3A MOTOR (BREAKER #3AA12) / 3P211A OVERHAUL PUMP MOTOR/SWAP SPARE
40005363-01 / **1** / **3P211A**	3 - 3P211A / COMPONENT COOLING PUMP A / REPLACE PUMP BEARINGS VIB INCREASING

Clearance Section Verification:

Status	Description	Name	Verification Date
Prepared	Prepared	FUNK, DAVID	09/02/2010 14:11

Clearance Section Coversheet **Turkey Point Nuclear Plant**
Clearance: 3-10-08-002 **Focus on Safety First**
Clearance Section: 3P211A 3A CCW PUMP OVERHAUL **11/17/2011 12:50**

Status	Description	Name	Verification Date
Reviewed	Reviewed		
D 2 Review	LMD 2 Review		
LMD 3 Review	LMD 3 Review		
Engineering review	Engineering review		
Approved by SRO	Approved by SRO	MCKEE, JOE	09/02/2010 15:14
Reviewed by NPS	Reviewed by NPS	FLYNN, RANDY E.	09/02/2010 16:33
Verified Executed	Verified Executed	BLOOM, SEAN	09/02/2010 21:22
Release Review By	Release Review By	TREMBLAY, ED	09/02/2010 21:23
Release Authorized By	Release Authorized By	BLOOM, SEAN	09/02/2010 21:24
Tags Verif. Removed By	Tags Verif. Removed By	BLOOM, SEAN	09/02/2010 21:25
EOOS log Updated if required	EOOS log Updated if required		

Document Order	Document Number	Document Description	Document Filename
1	1	5613-M-3030_SHT 1.pdf	g:\pcc\Procedures\PDF\!Drawing_Masters\!PODs\PID\5613\5613-M-3030_SHT 1.pdf
2	2	TECH SPEC.pdf	g:\pcc\Procedures\PDF\Tech Spec\TECH SPEC.pdf
3	3	3-OP-030.pdf	g:\pcc\Procedures\PDF\OP\3\3OP-030\3-OP-030.pdf
4	4	77.pdf	g:\pcc\Procedures\PDF\!Drawing_Masters\!PODs\Breaker List\4160V Switchgear\77.pdf

Clearance Se[illegible]on Tag List

This form is only for Clearan[illegible]VALKDOWN verification

Clearance: 3-10-08-002

Clearance Section: 3P211A 3A CCW PUMP OVERHAUL

11/17/2011 12:50

Tag Type ------ Serial No.	Equipment ---------- * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration ---------- * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Ver Req	Rest Seq	Rest. Config. *As Left (If Diff.) ---------- * Notes	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
No Tag ------ 260	3P211A ---------- * COMPONENT COOLING PUMP A * 202 _COMPONENT COOLING PUMP ROOM	SC	1	PERFORM ---------- * ALIGN 3D 4KV BUS TO 3A 4KV BUS	PLACE, ALAN L 09/02/2010 16:38	N/A - PLACE, ALAN L 09/02/2010 16:38	SC	26	---------- * IF DESIRED, ALIGN 3D 4KV BUS BACK TO NORMAL 3B 4KV BUS	Not Verified - BLOOM, SEAN 09/02/2010 21:30 not required at this time	N/A - BLOOM, SEAN 09/02/2010 21:30
Info tag ------ 224	3P211A-CONTROL SWITCH ---------- * 3A CCW PP CONTROL SWITCH VPB 3C05 * CONTROL ROOM VERTICAL PANEL	SC	2	HANG TAG ----------	RICARDO, DANNY 09/01/2010 20:10		SC	25	----------	WOODWARD, GABRIEL 09/05/2010 21:57	
Danger ------ 225	3AA12 ---------- * 3A COMPONENT COOLING WATER PUMP (3P211A) * 368 _4160 V SWITCHGEAR ROOM	IV	3	RACKED OUT PLUS ----------	RICARDO, DANNY 09/01/2010 20:10	LUBERT, JONATHAN 09/01/2010 20:50	IV	24	----------	LUBERT, JONATHAN 09/05/2010 10:39	GANOVSKY, PETER 09/05/2010 10:52
Danger ------ 226	LP34A-47 ---------- * MTR HTR-COMPONENT COOLING WATER PUMP 3A (3P211A) * 368 _4160 V SWITCHGEAR ROOM	IV	4	OFF PLUS ----------	RICARDO, DANNY 09/01/2010 20:10	LUBERT, JONATHAN 09/01/2010 20:51	IV	23	----------	LUBERT, JONATHAN 09/05/2010 10:39	FRITCH, JOHN B 09/05/2010 10:42
Danger ------ 227	3-703A ---------- * STOP VLV FOR CCW PUMP A DISCH * 202 _COMPONENT COOLING PUMP ROOM	IV	5	CLOSE PLUS ----------	RICARDO, DANNY 09/01/2010 20:10	LUBERT, JONATHAN 09/01/2010 20:51	IV	22	----------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:47
Danger ------ 261	3-701A ---------- * ISO VLV TO CCW PUMP A INLET * 202 _COMPONENT COOLING PUMP ROOM	IV	6	CLOSE PLUS ----------	MACHADO, CHRIS 09/02/2010 17:37	TRIPPLETT, RON 09/02/2010 17:52	IV	21	----------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:47
No Tag ------ 262	3-703F-HOSE ---------- * VENT VLV ON CCW PUMP A CASING HOSE * 202 _COMPONENT COOLING PUMP ROOM	IV	7	REMOVE CAP AND INSTALL HOSE ---------- * INITIALLY ROUTE HOSE TO BARREL FOR COLLECTION OF CONTAMINATED, MOLYBDATED WATER UNTIL PUMP IS VENTED.	MACHADO, CHRIS 09/02/2010 17:37	TRIPPLETT, RON 09/02/2010 17:52	IV	20	---------- * INFORM NWE TO DISPOSE OF FULL BARRELS.	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:47

This form is only for Clearan[illegible] VALKDOWN verification

Clearance: 3-[illegible]0-08-002

Clearance Section: 3P211A 3A CCW PUMP OVERHAUL

11/17/2011 12:50

Tag Type ------ Serial No.	Equipment -------------------- * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration ------------- * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Ver Req	Rest Seq	Rest. Config. *As Left (If Diff.) ------------- * Notes	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
No Tag ------ 263	3-703F-THROTTLE -------------------- * VENT VLV ON CCW PUMP A CASING HOSE * 202 _COMPONENT COOLING PUMP ROOM	SC	8	THROTTLE ------------- * DO NOT EXCEED DRAIN SYSTEM CAPACITY. USE BARRELS FOR DRAINING.	Not Hung - BLOOM, SEAN 09/02/2010 21:21 Not hung. Will be rolled to caution tags in Rev 1	Not Hung - BLOOM, SEAN 09/02/2010 21:22 rolled to caution tags in rev 1	NV	19	N/A -------------	Not Verified - BLOOM, SEAN 09/02/2010 21:24 not hung	N/A - BLOOM, SEAN 09/02/2010 21:24 not hung
Danger ------ 264	3-703F -------------------- * VENT VLV ON CCW PUMP A CASING * 202 _COMPONENT COOLING PUMP ROOM	IV	9	OPEN -------------	Not Hung - BLOOM, SEAN 09/02/2010 21:21 Not hung. Will be rolled to caution tags in Rev 1	Not Hung - BLOOM, SEAN 09/02/2010 21:22 rolled to caution tags in rev 1	IV	18	CLOSED -------------	Not Verified - BLOOM, SEAN 09/02/2010 21:24 not hung	N/A - BLOOM, SEAN 09/02/2010 21:24 not hung
No Tag ------ 265	3-702D-HOSE -------------------- * DRAIN VLV FOR CCW PUMP A DISCH * 202 _COMPONENT COOLING PUMP ROOM	SC	10	REM CAP INS HOSE ------------- * ROUTE HOSE TO BARREL FOR COLLECTION OF CONTAMINATED, MOLYBDATED WATER	MACHADO, CHRIS 09/02/2010 17:37		SC	17	-------------	WOODWARD, GABRIEL 09/05/2010 21:21	
No Tag ------ 266	3-702D-THROTTLE -------------------- * DRAIN VLV FOR CCW PUMP A DISCH * COMPONENT COOLING PUMP ROOM	SC	11	THROTTLE ------------- * DO NOT EXCEED DRAIN SYSTEM CAPACITY. USE BARRELS FOR DRAINING.	Not Hung - BLOOM, SEAN 09/02/2010 21:21 Not hung. Will be rolled to caution tags in Rev 1	Not Hung - BLOOM, SEAN 09/02/2010 21:22 rolled to caution tags in rev 1	NV	16	N/A -------------	Not Verified - BLOOM, SEAN 09/02/2010 21:24 not hung	N/A - BLOOM, SEAN 09/02/2010 21:24 not hung
Danger ------ 267	3-702D -------------------- * DRAIN VLV FOR CCW PUMP A DISCH * 202 _COMPONENT COOLING PUMP ROOM	IV	12	OPEN -------------	Not Hung - BLOOM, SEAN 09/02/2010 21:21 Not hung. Will be rolled to caution tags in Rev 1	Not Hung - BLOOM, SEAN 09/02/2010 21:22 rolled to caution tags in rev 1	IV	15	CLOSED AND CAPPED -------------	Not Verified - BLOOM, SEAN 09/02/2010 21:24 not hung	N/A - BLOOM, SEAN 09/02/2010 21:24 not hung
Restoratio Checklist ------ 229	3AA12-GROUND -------------------- * 4.16KV BKR TO CCW PUMP A (P211A) * 368 _4160 V SWITCHGEAR ROOM	NV	13	-------------			IV	14	-------------	GONZALEZ, RAYMOND 09/05/2010 09:44	SCHILLING, MICHAEL 09/05/2010 09:46
Restoratio Checklist ------ 268	3-1011 -------------------- * TEST VLV FOR IST-3-45 AND IST-4-33 COMP COOLING PMP A DISCHARGE * 202 _COMPONENT COOLING PUMP ROOM	NV	14	-------------			IV	13	-------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48

This form is only for Clearan[illegible]VALKDOWN verification

Clearance: 3-10-08-002

Clearance Section: 3P211A 3A CCW PUMP OVERHAUL

11/17/2011 12:50

Tag Type ------ Serial No.	Equipment ------------------ * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration ------------ * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Ver Req	Rest Seq	Rest. Config. *As Left (If Diff.) ------------ * Notes	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
Restoratic Checklist ------ 269	3-704F ------------------ * ROOT VLV TO IN-SERVICE TEST IND AT DISCH OF CCW PUMP A * 202 _COMPONENT COOLING PUMP ROOM	NV	15	------------			IV	12	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 270	3-704E ------------------ * ROOT VLV TO PI-640A AT DISCH OF CCW PUMP A * 202 _COMPONENT COOLING PUMP ROOM	NV	16	------------			IV	11	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 271	3-704A ------------------ * ISO VLV TO PRESS AND IST INDS AT CCW PUMP A DISCH * 202 _COMPONENT COOLING PUMP ROOM	NV	17	------------			IV	10	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 272	3-703K ------------------ * ISO VLV FOR CCW PUMP A DISCHARGE VENT LINE * 202 _COMPONENT COOLING PUMP ROOM	NV	18	------------			IV	9	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 273	3-703J ------------------ * ISO VLV FOR CCW PUMP A DISCHARGE VENT LINE * 202 _COMPONENT COOLING PUMP ROOM	NV	19	------------			IV	8	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 274	3-701M ------------------ * TEST VLV TO CCW PUMP A SUCTION * 202 _COMPONENT COOLING PUMP ROOM	NV	20	------------			IV	7	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratic Checklist ------ 275	3-701D ------------------ * ROOT VLV TO PRESS IND & IST AT CCW PUMP A SUCTION * 202 _COMPONENT COOLING PUMP ROOM	NV	21	------------			IV	6	------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48

Tag Type ------ Serial No.	Equipment ------------------- * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration ------------- * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Ver Req	Rest Seq	Rest. Config. *As Left (If Diff.) ------------- * Notes	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
Restoratio Checklist ------ 276	3-701P ------------------- * ISO VLV TO PI-1095A ON CCW PUMP A SUCTION * 202 _COMPONENT COOLING PUMP ROOM	NV	22	-------------			IV	5	-------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratio Checklist ------ 277	3-701R ------------------- * ISO VLV IN SERVICE TEST IND ON CCW PUMP A SUCTION * 202 _COMPONENT COOLING PUMP ROOM	NV	23	-------------			IV	4	-------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratio Checklist ------ 278	3-1012 ------------------- * TEST VLV FOR IST-3-40 AND IST-4-31 COMPONENT COOLING PUMP SUCTION * 202 _COMPONENT COOLING PUMP ROOM	NV	24	-------------			IV	3	-------------	WOODWARD, GABRIEL 09/05/2010 21:21	TRIPPLETT, RON 09/05/2010 21:48
Restoratio Checklist ------ 279	3-1483 ------------------- * CCW PUMP A OTBD MECH SEAL COOLANT SUPPLY ISOLATION VALVE * 202 _COMPONENT COOLING PUMP ROOM	NV	25	-------------			IV	2	-------------	WOODWARD, GABRIEL 09/05/2010 21:20	TRIPPLETT, RON 09/05/2010 21:48
Restoratio Checklist ------ 280	3-1482 ------------------- * CCW PUMP A INBD MECH SEAL COOLANT SUPPLY ISOLATION VALVE * 202 _COMPONENT COOLING PUMP ROOM	NV	26	-------------			IV	1	-------------	WOODWARD, GABRIEL 09/05/2010 21:20	TRIPPLETT, RON 09/05/2010 21:48

Facility:	Turkey Point	Task No:	01038034100
JPM Title:	JPM: Evaluate conditions for restart of Refueling Preshuffle in the spent fuel pit.	JPM No:	01038034101
K/A Reference:	2.3.12 (3.2/3.7)	Category:	
Examinee:		NRC Examiner: (N/A for Utility Exams)	
Facility Evaluator:		Date:	

Method of Testing

Simulated Performance X Actual Performance ____

Classroom X Simulator ____ Plant ____

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

Refueling Preshuffle activities were interrupted in the Unit 3 Spent Fuel Pit.

The SM desires to resume preshuffle activities.

The following plant conditions exist:

- Spent Fuel pool Level is 56 ft 11 inches.
- Spent fuel boron concentration is 2130 ppm as determined by the last sample taken 36 hrs ago.
- Control Room Temperatures are 75°F.
- ONLY one communications system is functional.
- HP coverage is available.
- FME Controls for the Spent Fuel Pit Area are not in effect.

The following plant components are inoperable:

- Spent Fuel Pit skimmer pump is OOS.
- RI-3-1419B, Unit 3 SPENT FUEL PIT EXHAUST DUCT, is inoperable. A portable monitor without an alarming device has been substituted.
- Unit 3 SFP SPING Mid Range Noble Gas Monitor is OOS.
- "C" Control room AC Air Handler is OOS.

INITIATING CONDITIONS

The SM has asked you to evaluate conditions for recommencement of Preshuffle in accordance with 3-NOP-040.3, Fuel Handling and insert Shuffle in the Spent Fuel Pit. Identify all the items, if any that will prevent the recommencement of preshuffle.

Task Standard:

Reviews the given conditions based on the criteria in Attachment 2 of 3-NOP-040.3, " Fuel Handling and Insert Shuffle in the Spent Fuel Pit."

Determines only the following as preventing preshuffle restart:

A. SFP Level less than 57"0".
B. RI-3-1419B, Unit 3 SPENT FUEL PIT EXHAUST DUCT replacement monitor does not have an alarming device.
C. FME Controls for the spent fuel pool are not in place.
D. "C" Control Room Air Handler is OOS.

Required Materials:

- 3-NOP-040.03, FUEL HANDLING AND INSERT SHUFFLE IN THE SPENT FUEL PIT

General References:

- 3-NOP-040.03, FUEL HANDLING AND INSERT SHUFFLE IN THE SPENT FUEL PIT

Initiating Cue:

Evaluate the given conditions and the equipment that is OOS and identify all the items that will prevent recommencement of the preshuffle.

Terminating Cue: Attachment 2 of 3-NOP-040.3 reviewed and problems identified that will prevent preshuffle restart.

Time Critical Task: No

Validation Time: 10 minutes

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

SIMULATOR SETUP

Reset to IC #

N/A

Load Lesson

N/A

Ensure Simulator Examinee Checklist is complete

N/.A

Denote critical steps with a check mark(√)

Start Time ________

STEP	1	:	Obtain a copy of 3-NOP-040.3. FUEL HANDLING AND INSERT SHUFFLE IN THE SPENT FUEL PIT (From the initiating cue.)	SAT UNSAT
Standard:			Obtains a copy of 3-NOP-040.3.	
Cue			Provide a copy of 3-NOP-040.3.	
Comment				

STEP 2 :	Reviews Precautions and Limitations.	SAT UNSAT
Standard:	Precautions and limitations were reviewed.	
Cue		
Comment		
NOTE:		

STEP 3 : √	Identifies Attachment 2, Restart Minimum Equipment Checklist as the appropriate Attachment.	____ SAT ____ UNSAT
Standard:	Goes to Attachment 2	
Cue		
Comment		
NOTE:		

STEP 4 :	Enters date and Time on Page 2 of 2 of Attachment 2.	SAT UNSAT
Standard:	Date and Time entered.	
Cue		
Comment		
NOTE:		

STEP 5	Evaluates Attachment 2 "Equipment and Minimum Requirements for Restart column and initials.	____ SAT ____ UNSAT
Standard:	Compares the 11 Listed items against the given conditions.	
Cue		
Comment		
NOTE:	If the operator asks about the status of equipment on Attachment 2, state "ALL equipment is available and operable as noted on the initial conditions."	

STEP	6 : √	Identifies the problems that prevent restart of preshuffle.		SAT UNSAT
Standard:		Identifies AND Records reasons for stopping fuel shuffle on Attachment 2. A. Spent Fuel Pit Level is less the 57"0". B. RI-1419B is inoperable and the portable monitor does not have an alarm. C. 3Air Handlers are not in Operation D. Continuous FME Coverage is required.		
Cue				
Comment				
NOTE:		**The only problems that would prevent restart are those identified in Rows 2, 5 10, 11.**		

Verification of Completion

JPM Number/Title:	01038034100--Evaluate conditions for restart of Refueling Preshuffle in the spent fuel pit.
Examinee's Name:	
NRC Examiner: (N/A for Utility Exams)	
Date Performed:	
Facility Evaluator:	
Number of Attempts:	
Time to Complete:	

Question Documentation:

Question:

Response:

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: ______________________ ____________

JPM BRIEFING SHEET

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS:

Refueling Preshuffle activities were interrupted in the Unit 3 Spent Fuel Pit.

The SM desires to resume preshuffle activities.

The following plant conditions exist:

- Spent Fuel pool Level is 56 ft 11 inches.
- Spent fuel boron concentration is 2130 ppm as determined by the last sample taken 36 hrs ago.
- HP coverage is available.
- ONLY one communications system is functional.
- Control Room Temperatures are 75°F.
- FME Controls for the Spent Fuel Pit Area are not in effect.

The following plant components are inoperable:

- Spent Fuel Pit skimmer pump is OOS.
- RI-3-1419B, Unit 3 SPENT FUEL PIT EXHAUST DUCT, is inoperable. A portable monitor has without an alarming device has been substituted.
- Unit 3 SFP SPING Mid Range Noble Gas Monitor is OOS.
- "C" Control room AC Air Handler is OOS.

INITIATING CONDITIONS

The SM has asked you to evaluate conditions for recommencement of Preshuffle in accordance with 3-NOP-040.3, Fuel Handling and insert Shuffle in the Spent Fuel Pit. Identify all the items, if any that will prevent the recommencement of preshuffle.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

The examiner w
When you comp

INITIAL CONDI

Refueling Presh

The SM desires

The following pl

- Spent
- Spent
- HP cc
- ONLY
- Contr
- FME

The following pl

- Spent
- RI-3-
been
- "C" C

INITIATING CO

The SM has ask
NOP-040.3, Fue
prevent the recc

Acknowledge t

HAND

KEY

ATTACHMENT 2
Restart Minimum Equipment Checklist
(Page 1 of 2)

Equipment/ Conditions	Minimum Requirement for Shuffle	Checked Initials	Applicable Tech. Spec.	REMARKS
Spent Fuel Pit Ventilation System	OPERABLE	MA	N/A	
Spent Fuel Pit Level	57' 0"	MA	3.9.11	IF level drops below minimum, THEN **INSERT** fuel assembly in a storage location.
Spent Fuel Pit Water surface and subsurface is clear enough to allow good visibility during refueling operations	CLEAR	MA	N/A	**CHECK** Daily – IF **NOT** clear, THEN **REQUEST** RP place Tri-Nuclear in service, change filters, or skim pool surface as needed.
Spent Fuel Pool Demin aligned to SFP	In service	MA	N/A	May be waived by Radiation Protection supervision if clarity and dose rates permit.
RI-3-1407B, RI-3-1419B, and RI-3-1421 Remote/Local Indications and Alarms	OPERABLE	MA	N/A	IF area monitor is **NOT** operable, THEN **INSTALL** a portable monitor with an alarm.
Spent Fuel Pit Boron Concentration	Greater than or equal to 2100 ppm	MA	3.9.14.b	IF tube gate is OPEN, THEN **CHECK** daily. IF tube gate is CLOSED, THEN **CHECK** by the most recent SFP boron sample and an additional sample is **NOT** required.
Spent Fuel Storage Pool Area High Gaseous Radioactivity Monitor	OPERABLE	MA	Table 3.3-4 Item 2a Action 28	
Communications Headsets/other reliable communication system - Control Room to SFP	CONTINUOUS	MA	N/A	**PERFORM** Attachment 4, Refueling Communication Verification Checklist. At least one communication system is functional.
RP Coverage	CONTINUOUS	MA	N/A	

ATTACHMENT 2
Restart Minimum Equipment Checklist
(Page 2 of 2)

Equipment/ Conditions	Minimum Requirement for Shuffle	Checked Initials	Applicable Tech. Spec.	REMARKS
Control Room Emergency Ventilation System	OPERABLE	MM	3.7.5	Requires 3 air handlers and 2 compressors and Control Room air temperature ≤ 120°F.
FME Monitor	CONTINUOUS	MM	N/A	

Reason for stopping fuel shuffle. SPENT Fuel Level < 57'0"
RE-3-1419B remote indication only (No alarm)
Control Room Ventilation Required
FME Monitor Must be continuous

	Name	Date	Time	Signature
Performed By (RO or SRO)	Student	current	present	Student Name.
Unit Supervisor confirms conditions are met to restart				
Shift Manager gives permission to restart				

Reviewed By: ______________________ ____________
Shift Manager or SRO Designee Date

FPL	**TURKEY POINT UNIT 3** **NORMAL OPERATING PROCEDURE** SAFETY RELATED **CONTINUOUS USE**	Procedure No. **3-NOP-040.03** Revision No. **8**

Title:

FUEL HANDLING AND INSERT SHUFFLE IN THE SPENT FUEL PIT

Responsible Department: **OPERATIONS**

Special Considerations:

> This is an Upgraded Procedure. Initial use should include increased awareness because of potential technical and/or sequential changes to the procedure. After initial use of this procedure, provide comments back to the Procedure Upgrade Project.

FOR INFORMATION ONLY
Before use, verify revision and change documentation (if applicable) with a controlled index or document.
DATE VERIFIED__________ INITIAL__________

Revision	Approved By	Approval Date
0	Sam Shafer	07/30/09
8	Randy Flynn	09/14/11

UNIT #	UNIT 3
DATE	
DOCT	PROCEDURE
DOCN	3-NOP-040.03
SYS	
STATUS	COMPLETED
REV	8
# OF PGS	

REVISION SUMMARY	
Rev. No.	**Description**
8	**AR 1674392, 09/14/11, Alex Hay** • Remove North hook restriction for DSC fuel loading. • Revise use of spacer during DSC fuel loading as optional. • Revised Attachment 4, Refueling Communication Verification Checklist, identified conference numbers.
7	**AR 1668835, 07/22/11, Alex Hay** Added restrictions for the use of the SFP Bridge Crane when a spacer is used in the SFP (Step 4.2.1.18).
6	**AR 581462, 06/21/11, Alex Hay** • Added reference to two new Unit 3 Cask Operation procedures (3-NOP-116.01 and 3-NOP-116.02). Account for DSC fuel loading and off-loading operations. • Added change to SFP level and boron concentration requirements to account for DSC fuel loading and unloading operations.
5	**PCR 09-3347, 01/19/11, Roger Sablone** Enhance procedure by changing SFP level alarms per CR 08-11825.
4	**AR 579080, 11/29/10, David Dagitz** Revise to address the installation of Metamic Inserts, clarify the unlocking and locking of fuel handling tools by the RPSS and correct several procedural references.

TABLE OF CONTENTS

1.0 PURPOSE

This procedure provides instructions to perform fuel handling operations in the Spent Fuel Pool when core offload or reload is **NOT** in progress.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions

1. FME controls shall be in place per MA-AA-101-1000, Foreign Material Exclusion Procedure.
2. Underwater tools with hollow tube sections should have flood holes or an alternate means of flooding the tube sections. This will enable water to enter the tube and provide shielding against radiation streaming.
3. Keeping the doors of the New Fuel Room and the Spent Fuel Pit closed while transporting new fuel assemblies will assist in maintaining cleanliness control of new fuel assemblies. Doors may be momentarily opened for essential egress.
4. Verbatim repeat-backs and phonetic alphabet shall be used during all communications.
5. Phone talkers should identify themselves by the station they are manning, and identify the station they are calling such as, "New Fuel Room, this is the Spent Fuel Pool." Personal names should **NOT** be used.

2.2 Limitations

1. Heavy loads greater than 2000 pounds are prohibited from travel over irradiated fuel assemblies in the Spent Fuel Pool.
2. A minimum level of 57 feet 0 inches shall be maintained in the Spent Fuel Pool at all times.
3. Fuel assembly should **NOT** move into Transfer Canal from Spent Fuel Pit until the Lifting Frame is in the full up position and verified.
4. All personnel designated to operate refueling equipment shall be trained on that equipment and approved by the Shift Manager.
5. Any item to be removed from the Spent Fuel Pit shall be approved by Radiation Protection prior to removal and surveyed by Radiation Protection upon removal.

3.0 PREREQUISITES

INITIAL

1. **ENSURE** Spent Fuel Pit boron concentration greater than 2100 ppm except for ISFSI fuel loading and off-loading operations, which will be determined by Reactor Engineering. ______

2. **ENSURE** Spent Fuel Pit water level between 57 feet 0 inches and 57 feet 5 inches. ______

3. **ENSURE** SFP level is between 57' 0" and 57' 11" for ISFSI fuel loading and off-loading operations. ______

4. IF any of the following conditions exist:

   - Spent Fuel Pit water clarity is questionable
   - Radiation Protection recommends SFP Demineralizer in operation for local dose rates

   THEN **ENSURE** SFP Demineralizer and/or TriNuke filter(s) in operation. ______

NOTE

- Fuel handling equipment testing is required if maintenance has been performed or the equipment has been idle for greater than one month.
- New fuel handling equipment testing is required if new fuel is to be moved from the New Fuel Room to the Spent Fuel Pit.

5. IF required per Operations Coordinator, THEN **ENSURE** 3-OSP-038.4, Spent Fuel Pool Bridge Crane Operability Test, complete. ______

6. IF new fuel is to be moved from New Fuel Room to Spent Fuel Pit, THEN **ENSURE** the following complete:

   A. 0-OSP-039.1, New Fuel Elevator Periodic Test ______

   B. 0-OSP-039.2, New Fuel Monorail Hoist - Periodic Test ______

   C. 3-OSP-039.3, New Fuel Bridge Crane - Periodic Test ______

7. **ENSURE** Shuffle Data Sheets or equivalent, reviewed and approved per 0-ADM-556, Fuel Assembly and Insert Shuffles, prior to commencing fuel assembly or fuel insert movement. ______

3.0 PREREQUISITES (continued)

INITIAL

8. **ENSURE** 3-OSP-034.2, Spent Fuel Pit Ventilation System Air Flow Test, performed within 18 months plus the grace period. ______

9. **ENSURE** 3-OSP-034.1, Spent Fuel Pit Inlet and Exhaust Damper Operability Test, performed within one month. ______

10. **ENSURE** the following procedures are in the SFP area, as directed by Refueling SRO or Fuel Handling Supervisor:

    A. 0-ADM-035, Limitations and Precautions for Handling Fuel Assemblies ______

    B. 0-ADM-556, Fuel Assembly and Insert Shuffles ______

    C. MA-AA-101-1000, Foreign Material Exclusion Procedure ______

    D. 0-NOP-034.02, Metamic Insert Installation / Removal and Metamic Coupon Installation ______

    E. 3-NOP-039.01, New Fuel Elevator Operating Instruction ______

    F. 3-NOP-040.03, Fuel Handling and Insert Shuffle in the Spent Fuel Pit ______

    G. 3-ONOP-033.2, Refueling Cavity Seal Failure ______

    H. 3-ONOP-033.3, Accidents Involving New and Spent Fuel ______

    I. 3-ONOP-038.1, Loss of Refueling Equipment or Support Function ______

    J. 3-OP-038.1, Preparation for Refueling Activities ______

    K. 3-OP-038.5, Spent Fuel Pit Bridge Crane Operation ______

    L. 0-OP-038.12, Spent Fuel Assembly Handling Tool Operating Instruction ______

    M. 3-OP-039.3, New Fuel Bridge Crane - Operating Instructions ______

    N. 0-OP-040.7, RCC Change Tool ______

    O. 0-OP-040.8, BPRA Handling Tools ______

    P. 0-OP-040.10, Operating and Maintenance Procedure for the Turkey Point Nozzleless Fuel Assembly Handling Tool ______

3.0 PREREQUISITES (continued)

INITIAL

10. (continued)

Q. 3-NOP-116.01, Dry Shielded Canister Fuel Loading, as applicable ______

R. 3-NOP-116.02, Dry Shielded Canister Fuel Off-Load, as applicable ______

11. **ENSURE** satisfactory channel check complete for the following Area Radiation Monitors per 3-OSP-201.1, RO Daily Logs, OR the monitor is replaced by a temporary portable monitor equipped with an alarm:

A. RI-3-1407B, Unit 3 SPENT FUEL PIT CANAL AREA ______

B. RI-3-1419B, Unit 3 SPENT FUEL PIT EXHAUST DUCT ______

C. RI-3-1421B, Unit 3 SPENT FUEL PIT NORTH WALL ______

12. **CHECK** Unit 3 Spent Fuel Pit SPING High Range Noble Gas Monitor, OPERABLE, per Chemistry performance of 0-OSP-200.5, Miscellaneous Test, Checks and Operating Evolutions. ______

13. **NOTIFY** RP that RPSS authorization will be required to acquire the key to unlock and lock the fuel and insert handling tools located on the SFP handling tool rack or the pass-over bracket. ______

4.0 INSTRUCTIONS

4.1 Startup

4.1.1 Initial Conditions

1. **ENSURE** Radiation Protection Shift Supervisor established survey controls (RPT or remote monitoring) prior to commencing fuel shuffle.

> **NOTE**
>
> Original Shuffle Data Sheets maintained in the Control Room serve as the permanent history.

2. **ENSURE** original Shuffle Data Sheets maintained in Control Room.

3. **PLACE** copies of Shuffle Data Sheets or equivalent at SFP Bridge Crane.

4. IF a vendor procedure will be used, THEN:

   A. **ENSURE** vendor procedure reviewed and approved per 0-ADM-005, Control of On-Site Services, prior to movement of individual fuel rods.

   B. **RECORD** vendor procedure number:

   Vendor procedure ____________________

5. **REFER TO** Attachment 3, SFP Lip Lighting Receptacles, AND **ENSURE** underwater lights are energized.

6. IF moving fuel in the SFP, THEN **PERFORM** Section 4.2.1, Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading.

7. IF moving only inserts in the SFP, THEN **PERFORM** Section 4.2.2, Insert Shuffle.

4.2 Operation

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading

1. **ENSURE** the following for SpectraLink Communication System:

   A. Cell phones with headsets pre-staged at each required station.

   B. Cell phones are charged.

   C. Battery charger, with spare batteries, available at each station.

   D. Extra cell phone and headset available at each station.

2. IF cleanliness of the SFP Ventilation Inlet and Exhaust Filters are questionable, THEN **REQUEST** System Engineer determine if filters are acceptable to support fuel movement.

3. IF SFP Ventilation Inlet or Exhaust Filters pressure gauges indicate greater than 1.6 inches water, THEN **REQUEST** Mechanical Maintenance replace filters.

4. **ENSURE** Transfer Canal is filled and 3-12-031, UNIT 3 FUEL TRANSFER TUBE GATE VALVE, is CLOSED during fuel assembly movement in the Spent Fuel Pit (Section 7.2 Commitment 1).

5. **OBTAIN** RPSS authorization to remove the lock from the SFP handling tool rack and pass-over bracket.

   ______________________________ ____________

   Authorizing RPSS Date

6. **DIRECT** RP to remove the lock on the SFP handling tool rack or pass-over bracket.

NOTE

The minimum equipment or support function specified by Attachment 1, Pre-Shuffle Minimum Equipment Checklist, must be continuously met prior to and during movement of fuel. If a loss of any of the equipment or support function occurs, 3-ONOP-038.1, Loss of Refueling Equipment or Support Function, shall be performed.

7. **PERFORM** Attachment 1, Pre-Shuffle Minimum Equipment Checklist, prior to moving fuel.

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading (continued)

8. **CHECK** 3-OSP-034.2, Spent Fuel Pit Ventilation System Air Flow Test, performed within 18 months plus the grace period.

   RECORD date of performance:_______________

9. **CHECK** 3-OSP-034.1, Spent Fuel Pit Inlet and Exhaust Damper Operability Test, performed within one month.

   RECORD date of performance:_______________

10. IF moving fuel in the Transfer Canal, THEN **ENSURE** SFP to Transfer Canal Gate, removed.

> **NOTE**
>
> There are three refueling communication systems to provide reliability as well as redundancy during refueling activities. Two are cell phone based systems and the other is a hard-line phone based system. If a problem exists with one of the systems, it should be corrected as soon as possible.

11. **ESTABLISH** communications using Attachment 4, Refueling Communication Verification Checklist.

> **NOTE**
>
> All lanyards must meet the requirements of MA-AA-101-1000, Foreign Material Exclusion Procedure, Attachment 1, Tools and Devices.

12. **INSPECT** all FME lanyards used in the area of the Spent Fuel Pit to ensure the following:

    A. Lanyards are in good repair and have **NO** signs of excess wear.

    B. Lanyards are fastened securely on both ends.

    C. Only designed lanyards are used (i.e., **NO** lanyards made of tape, cotton string, etc.).

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading (continued)

13. IF moving fuel assemblies into the SFP from New Fuel Room, THEN:

A. **ENSURE** the following stations, as a minimum, are in direct communications:

(1) SRO or Fuel Handling Supervisor in SFP

(2) Qualified Operator or Engineer in New Fuel Room.

(3) Control Room personnel, who at the discretion of the Operations Manager or Assistant Operations Manager, are either:

a. Two Qualified Engineering Representatives

b. One Qualified Engineering Representative and one Licensed Operator

B. **PERFORM** concurrent verification of each step by the two Control Room personnel prior to fuel assembly movement.

C. **ENSURE**, as a minimum, the following is communicated between stations for each verification:

(1) Step number from Shuffle Data Sheet (SDS)

(2) Specific location in SFP

14. IF moving fuel assemblies in the SFP with **NO** fuel movement in any other locations except the Dry Shielded Canister (DSC), THEN:

A. **ENSURE** the following, as a minimum, in direct communication:

(1) SFP Spotter or Cable Watch

(2) SRO or Fuel Handling Supervisor in SFP

(3) Control Room personnel, who at the discretion of Operations Manager or Assistant Operations Manager, are either:

a. A qualified Engineering Representative

b. A licensed Operator

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading (continued)

14. (continued)

B. **ENSURE** the three personnel in communication perform a verification of Shuffle Data Sheets and SFP Crane Index, if applicable, for each fuel movement prior to latching and unlatching the fuel assembly.

C. **ENSURE** as a minimum, the following is communicated between stations for each verification:

(1) Step number from the Shuffle Data Sheet (SDS)

(2) Specific location in the SFP

15. IF fuel shuffle is for preparation a core reload, THEN **ENSURE** RWST on purification per 3-OP-033, Spent Fuel Pit Cooling System.

16. **ENSURE** Spent Fuel Pool water clarity adequate for fuel movement.

17. IF moving irradiated assemblies or other irradiated material, THEN **REQUEST** Radiation Protection monitor exposure rates at exterior Spent Fuel Pool walls to ensure they remain less than or equal to 1 mR/h above background.

NOTE

A spacer may be used with the short spent fuel handling tool to facilitate latching or unlatching fuel assemblies in the SFP racks for loading or off-loading fuel in a DSC.

18. WHEN fuel is to be moved to a Dry Shielded Canister (DSC) in the SFP Cask Area, THEN **PLACE** a spacer of 20 inches or less in a rack storage location as specified by Reactor Engineering Supervisor.

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading (continued)

CAUTION

IF a fuel assembly is staged on the spacer, **NO** other fuel assembly or insert may be moved.

19. **COMMENCE** fuel shuffle using Shuffle Data Sheets and 0-NOP-040.01, Handling New Fuel Shipping Containers and New Fuel Assemblies, or 3-NOP-116.01, Dry Shielded Canister Fuel Loading, or 3-NOP-116.02, Dry Shielded Canister Fuel Off-Load.

    A. **PERFORM** Attachment 1, Pre-Shuffle Minimum Equipment Checklist, once per shift while work is in progress.

    B. IF necessary to make changes to Shuffle Data Sheet, THEN:

        (1) **INITIATE** changes to the Shuffle Data Sheet per 0-ADM-556, Fuel Assembly and Insert Shuffles.

        (2) **OBTAIN** Shift Manager approval for all changes in Fuel Handling Data Sheets, per 0-ADM-556, Fuel Assembly and Insert Shuffles.

20. IF fuel movement is stopped, THEN **PERFORM** Attachment 2, Restart Minimum Equipment Checklist, prior to restart.

NOTE

Reactor Engineering may waive location verifications

21. WHEN fuel shuffle or DSC fuel loading / off-loading is complete and fuel assembly and insert locations have been verified (if required), THEN:

    A. **RETURN** all SFP handling tools to the SFP handling tool rack or pass-over bracket.

    B. **DIRECT** RP to install lock on SFP handling tool rack or pass-over bracket.

    C. **DRAIN** Transfer Canal per 3-OP-201, Filling/Draining the Refueling Cavity and SFP Transfer Canal, if desired.

4.2.1 Fuel Shuffle and Dry Shielded Canister (DSC) Fuel Loading or Off-Loading (continued)

22. IF required by Reactor Engineering, THEN **REQUEST** Reactor Engineering verify fuel assemblies and inserts in correct location in the SFP or DSC fuel cells when fuel shuffle or DSC fuel loading / off-loading is complete.

4.2.2 Insert Shuffle

NOTE

- Insert shuffles in the SFP do **NOT** require continuous communication with Control Room.
- Insert shuffles in the SFP do **NOT** require the Control Room Emergency Ventilation System to be OPERABLE.
- Metamic Inserts are considered to be insert shuffles.
- The same criteria applies to the movement of Metamic Inserts as it does to all other fuel inserts (i.e., RCCAs, WABAs, BPRAs, etc).

1. **ENSURE** Spent Fuel Pool water clarity adequate for fuel movement.
2. **ENSURE** Transfer Canal is filled and 3-12-031, UNIT 3 FUEL TRANSFER TUBE GATE VALVE, is CLOSED during insert movement in the Spent Fuel Pit (Section 7.2 Commitment 1).
3. **OBTAIN** RPSS authorization to remove the lock from the SFP handling tool rack and pass-over bracket.

______________________________	____________
Authorizing RPSS	Date

4. **DIRECT** RP to remove the lock on the SFP handling tool rack or pass-over bracket.
5. **ENSURE** a management representative is available to provide oversight responsibility during all component shuffles.
6. **ENSURE** another qualified individual and the management representative are available to perform independent verification prior to insert movement.

4.2.2 Insert Shuffle (continued)

NOTE

All lanyards must meet the requirements of MA-AA-101-1000, Foreign Material Exclusion Procedure, Attachment 1, Tools and Devices.

7. **INSPECT** all FME lanyards used in the area of the Spent Fuel Pit to ensure the following:

   A. Lanyards are in good repair and have no signs of excess wear.

   B. Lanyards are fastened securely on both ends.

   C. Only designed lanyards are used (i.e., no lanyards made of tape, cotton string, etc.).

8. **NOTIFY** Radiation Protection Shift Supervisor that the Insert Shuffle is commencing.

9. **NOTIFY** RCO that the Insert Shuffle is commencing.

10. **COMMENCE** fuel shuffle using Shuffle Data Sheets.

11. IF necessary to make changes to Shuffle Data Sheet, THEN:

    A. **INITIATE** changes to the Shuffle Data Sheet per 0-ADM-556, Fuel Assembly and Insert Shuffles.

    B. **OBTAIN** Shift Manager approval for all changes in Fuel Handling Data Sheets, per 0-ADM-556.

12. WHEN insert shuffle complete, THEN:

    A. **RETURN** all SFP handling tools to the SFP handling tool rack or pass-over bracket.

    B. **DIRECT** RP to install lock on SFP handling tool rack and pass-over bracket.

    C. **DRAIN** Transfer Canal per 3-OP-201, Filling/Draining the Refueling Cavity and SFP Transfer Canal, if desired.

4.3 Shutdown

1. **REFER TO** Attachment 3, SFP Lip Lighting Receptacles, and **SECURE** lighting as required.

5.0 INFREQUENT OPERATIONS

None

6.0 RECORDS

1. The date, time, and section completed shall be entered in the Unit Narrative Log.

2. Problems encountered while performing this procedure (i.e., malfunctioning equipment, delays due to change in plant conditions, etc.) should be entered in the Unit Narrative Log.

3. Completed copies of the below listed items document compliance with Tech Specs surveillance requirements and shall be transmitted to QA Records for retention:

   A. Attachment 1, Pre-Shuffle Minimum Equipment Checklist

   B. Attachment 2, Restart Minimum Equipment Checklist

   C. Attachment 4, Refueling Communication Verification Checklist

7.0 REFERENCES AND COMMITMENTS

7.1 References

7.1.1 Implementing

1. 0-ADM-035, Limitations and Precautions for Handling Fuel Assemblies
2. 0-ADM-217, Conduct of Infrequently Performed Tests or Evolutions
3. 0-ADM-556, Fuel Assembly and Insert Shuffles
4. 0-NOP-034.02, Metamic Insert Installation / Removal and Metamic Coupon Installation
5. 3-NOP-039.01, New Fuel Elevator Operating Instructions
6. 3-NOP-116.01, Dry Shielded Canister Fuel Loading
7. 3-NOP-116.02, Dry Shielded Canister Fuel Off-Load
8. 3-ONOP-033.2, Refueling Cavity Seal Failure
9. 3-ONOP-033.3, Accidents Involving New or Spent Fuel
10. 3-ONOP-038.1, Loss of Refueling Equipment or Support Function
11. 3-OP-033, Spent Fuel Pit Cooling System
12. 3-OP-038.1, Preparation for Refueling Activities
13. 3-OP-038.5, Spent Fuel Pit Bridge Crane Operating Instructions
14. 0-OP-038.12, Spent Fuel Assembly Handling Tool Operating Instruction
15. 3-OP-039.3, New Fuel Bridge Crane Operating Instructions
16. 0-OP-040.1, Handling New Fuel Shipping Containers and New Fuel Assemblies
17. 0-OP-040.7, RCC Change Tool
18. 0-OP-040.8, BPRA Handling Tools
19. 0-OP-040.10, Operating and Maintenance Procedure for the Turkey Point Nozzleless Fuel Assembly Handling Tool

7.1.1 Implementing (continued)

20. 3-OP-201, Filling/Draining the Refueling Cavity and the SFP Transfer Canal
21. 3-OSP-034.1, Spent Fuel Pit Inlet and Exhaust Damper Operability Test
22. 3-OSP-034.2, Spent Fuel Pit Ventilation System Air Flow Test
23. 3-OSP-038.4, Spent Fuel Pit Bridge Crane Operability Test
24. 0-OSP-039.1, New Fuel Elevator Periodic Test
25. 0-OSP-039.2, New Fuel Monorail Hoist - Periodic Test
26. 3-OSP-039.3, New Fuel Bridge Crane - Periodic Test
27. 0-OSP-200.5, Miscellaneous Tests, Checks and Operating Evolutions
28. 3-OSP-201.1, RO Daily Logs
29. MA-AA-101-1000, Foreign Material Exclusion Procedure

7.1.2 Developmental

1. T.S. 3/4.9.5, Refueling Operations Communications
2. T.S. 3/4.9.7, Crane Travel - Spent Fuel Storage Areas
3. T.S. 3/4.9.11, Water Level - Storage Pool
4. T.S. 3/4.9.14, Spent Fuel Storage
5. T.S. 3/4.7.5, Control Room Emergency Ventilation System
6. T.S. Table 3.3-4, Item 2.a, Unit 3 Spent Fuel Storage Pool Gaseous Radioactivity
7. QI-2-PTN-4, Housekeeping
8. 0-ADM-005, Control of On-Site Services
9. 0-ADM-552, Work Requirements for Maintaining Cleanliness in the Spent Fuel Rooms

7.1.2 Developmental (continued)

10. 0-HPA-001, Radiation Work Permit Initiation and Termination
11. IE Inspection Report 250-87-36 and 251-87-36
12. FPL Letter No. QAO-PTN-88-784, Observation - Dirty Spent Fuel Pit Ventilation Filters, dated October 20, 1988
13. QA Audit Report QAO-PTN-90-003
14. QA Audit Report QAO-PTN-90-023
15. T.S. License Amendment 234
16. PC/M 08-201, Unit 3 In-Mast Sipping Modification, Ultrasonic Inspection and Fuel Rod Reconstitution, Rev. 0, Page 8 of 30, Step 1.8.3

7.1.3 Management Directives

None

7.2 <u>Commitments</u>

1. CTRAC 92-0152-34 in Response to NRC Info Notice 88-92 Supp 1, Potential for Spent Fuel Pool Draindown

ATTACHMENT 1
Pre-Shuffle Minimum Equipment Checklist
(Page 1 of 4)

The minimum equipment or support function specified by Attachment 1 must be continuously met during the movement of fuel. If a loss of any of the equipment or support function occurs; 3-ONOP-038.1, Loss of Refueling or Support Function, must be performed.

Equipment/ Conditions	Minimum Requirement for Shuffle	Nights Initials	Days Initials	Time Allowed Before Stopping Fuel Movement	Applicable Tech. Spec.	Remarks
Spent Fuel Pit Ventilation System	OPERABLE			IMMEDIATE	N/A	
Spent Fuel Pit Inlet and Exhaust Filters	N/A			N/A	N/A	Inspect daily for cleanliness. If cleanliness of the SFP Ventilation Inlet and Exhaust Filters is in question, **REQUEST** System Engineer determine if the cleanliness of the filters is acceptable to support fuel movement.
Spent Fuel Pool Demin aligned to SFP	In service			IMMEDIATE	N/A	May be waived by Radiation Protection supervision if clarity and dose rates permit.
Spent Fuel Pit Level	57' 0"			IMMEDIATE	3.9.11	IF level drops below minimum for any reason, THEN **INSERT** fuel assembly in a storage location.
SFP water surface and subsurface clear enough for good visibility during shuffle	CLEAR	N/A		IMMEDIATE	N/A	**CHECK** Daily – IF **NOT** clear, THEN **REQUEST** RP to place Tri-Nuclear in service, change filters, or skim the pool surface as needed.

ATTACHMENT 1

<u>Pre-Shuffle Minimum Equipment Checklist</u>

(Page 2 of 4)

Equipment/ Conditions	Minimum Requirement for Shuffle	Nights Initials	Days Initials	Time Allowed Before Stopping Fuel Movement	Applicable Tech. Spec.	Remarks
RI-3-1407B, RI-3-1419B, and RI-3-1421 Remote/Local Indications and Alarms	Remote OPERABLE			IMMEDIATE	N/A	IF area monitor is **NOT** operable, THEN **INSTALL** a portable monitor with an alarm.
	Local OPERABLE					
Spent Fuel Pit Boron Concentration	Greater than or equal to 2100 ppm		N/A	IMMEDIATE	3.9.14.b	IF Tube Gate is OPEN, THEN **CHECK** daily. IF Tube Gate is CLOSED, THEN **CHECK** most recent SFP boron sample, and an additional sample is **NOT** required.
SFP Area High Gaseous Radioactivity Monitor	OPERABLE	1	1	IMMEDIATE	Table 3.3-4 Item 2a Action 28	**CHECK** twice per shift.
		2	2			
Communications headsets/other reliable communication system Control Room to SFP	CONTINUOUS	1	1	IMMEDIATE	N/A	**CHECK** twice per shift.
		2	2			
RP Coverage	CONTINUOUS	1	1	IMMEDIATE	N/A	**CHECK** twice per shift.
		2	2			
Control Room Emergency Ventilation System	OPERABLE	1	1	IMMEDIATE	3.7.5	**CHECK** twice per shift. Requires 3 air handlers and 2 compressors <u>and</u> Control Room air temperature ≤ 120°F.
		2	2			

ATTACHMENT 1
<u>Pre-Shuffle Minimum Equipment Checklist</u>
(Page 3 of 4)

Equipment/ Conditions	Minimum Requirement for Shuffle	Nights Initials	Days Initials	Time Allowed Before Stopping Fuel Movement	Applicable Tech. Spec.	Remarks
FME Monitor	CONTINUOUS			IMMEDIATE	N/A	
Communications System	See Remarks			IMMEDIATE	N/A	**PERFORM** communications check between required stations to verify communication system functioning properly at beginning of each shift. IF communication system is **NOT** functional, THEN **PERFORM** Attachment 4, Refueling Communication Verification Checklist. At least one communication system shall be functional.
				N/A	N/A	IF using a cell phone based communication system, THEN **CHECK** daily that there is a battery charger with spare batteries and an extra cell phone and headset at each station. IF **NOT**, THEN immediately **NOTIFY** Fuel Handling Supervisor and SM. (The Fuel Shuffle can continue while equipment is being replaced.)

ATTACHMENT 1
<u>Pre-Shuffle Minimum Equipment Checklist</u>
(Page 4 of 4)

	Night Shift				Day Shift			
	Name	Date	Time	Signature	Name	Date	Time	Signature
Performed By (RCO or SRO)								
Unit Supervisor confirms conditions met to start								
Shift Manager gives permission to start								

Reviewed By: ______________________________ ______________

Shift Manager or SRO Designee Date

ATTACHMENT 2
Restart Minimum Equipment Checklist
(Page 1 of 2)

Equipment/ Conditions	Minimum Requirement for Shuffle	Checked Initials	Applicable Tech. Spec.	REMARKS
Spent Fuel Pit Ventilation System	OPERABLE		N/A	
Spent Fuel Pit Level	57' 0"		3.9.11	IF level drops below minimum, THEN **INSERT** fuel assembly in a storage location.
Spent Fuel Pit Water surface and subsurface is clear enough to allow good visibility during refueling operations	CLEAR		N/A	**CHECK** Daily – IF **NOT** clear, THEN **REQUEST** RP place Tri-Nuclear in service, change filters, or skim pool surface as needed.
Spent Fuel Pool Demin aligned to SFP	In service		N/A	May be waived by Radiation Protection supervision if clarity and dose rates permit.
RI-3-1407B, RI-3-1419B, and RI-3-1421 Remote/Local Indications and Alarms	OPERABLE		N/A	IF area monitor is **NOT** operable, THEN **INSTALL** a portable monitor with an alarm.
Spent Fuel Pit Boron Concentration	Greater than or equal to 2100 ppm		3.9.14.b	IF tube gate is OPEN, THEN **CHECK** daily. IF tube gate is CLOSED, THEN **CHECK** by the most recent SFP boron sample and an additional sample is **NOT** required.
Spent Fuel Storage Pool Area High Gaseous Radioactivity Monitor	OPERABLE		Table 3.3-4 Item 2a Action 28	
Communications Headsets/other reliable communication system - Control Room to SFP	CONTINUOUS		N/A	**PERFORM** Attachment 4, Refueling Communication Verification Checklist. At least one communication system is functional.
RP Coverage	CONTINUOUS		N/A	

ATTACHMENT 2

Restart Minimum Equipment Checklist

(Page 2 of 2)

Equipment/ Conditions	Minimum Requirement for Shuffle	Checked Initials	Applicable Tech. Spec.	REMARKS
Control Room Emergency Ventilation System	OPERABLE		3.7.5	Requires 3 air handlers and 2 compressors and Control Room air temperature ≤ 120°F.
FME Monitor	CONTINUOUS		N/A	

Reason for stopping fuel shuffle. ______________________

____

____

____

	Name	Date	Time	Signature
Performed By (RO or SRO)				
Unit Supervisor confirms conditions are met to restart				
Shift Manager gives permission to restart				

Reviewed By: ______________________ ______________

Shift Manager or SRO Designee Date

ATTACHMENT 3
SFP Lip Lighting Receptacles
(Page 1 of 1)

1. IF operation of underwater lights are required, THEN **PLACE** any of the following breakers to ON as required.

Breaker	Description	Normal Position
	LP39 (SPENT FUEL PIT UNIT 3 AREA)	
NOTE 1:	Breakers are normally OFF unless SFP operations require underwater lights.	
LP39-8	RCPT SPENT FUEL PIT SE WALL EL 58'	OFF (NOTE 1)
LP39-10	RCPT EL 58' SPENT FUEL PIT E WALL	OFF (NOTE 1)
LP39-11	RCPT EL 58' SPENT FUEL RM E WALL	OFF (NOTE 1)
LP39-12	RCPT EL 58' SPENT FUEL PIT N WALL	OFF (NOTE 1)
LP39-13	RCPT EL 58' FUEL TRANSFER CANAL SE WALL	OFF (NOTE 1)
LP39-14	RCPT EL 58' SPENT FUEL PIT NW WALL	OFF (NOTE 1)
LP39-15	RCPT EL 58' FUEL TRANSFER CANAL S WALL	OFF (NOTE 1)
LP39-17	RCPT EL 58' SPENT FUEL PIT W WALL	OFF (NOTE 1)
LP39-18	RCPT CASK WASH AREA EL 18' & PLATFORM EL 31'	OFF (NOTE 1)

2. WHEN operation of the underwater lights are **NO** longer required, THEN **ENSURE** the above breakers are OFF.

ATTACHMENT 4
Refueling Communication Verification Checklist
(Page 2 of 3)

INITIAL

2. B. (continued)

(3) **PERFORM** communications check between all stations. _______

❑ Control Room ❑ SFP ❑ NFR

C. IF using SpectraLink Nortel Communication System, THEN:

(1) **ESTABLISH** conference bridge by dialing 5095 or other dedicated conference bridge number. _______

❑ Control Room ❑ SFP ❑ NFR

(2) **PERFORM** communications check between all stations. _______

❑ Control Room ❑ SFP ❑ NFR

D. IF using Hard-Line Phone Communication System, THEN:

(1) **CONNECT** phones to local phone jack OR **UTILIZE** an installed wall or desk phone. _______

❑ Control Room ❑ SFP ❑ NFR

(2) **ESTABLISH** conference bridge by dialing 5095 or other dedicated conference bridge number. _______

❑ Control Room ❑ SFP ❑ NFR

(3) **PERFORM** communications check between all stations. _______

❑ Control Room ❑ SFP ❑ NFR

3. **NOTIFY** Unit 3 RCO of the results of the communications check.

ATTACHMENT 4
Refueling Communication Verification Checklist
(Page 3 of 3)

3. (continued)

Performed By: ______________________________ ____________ ____________
Print/Sign Initials Date

Performed By: ______________________________ ____________ ____________
Print/Sign Initials Date

Performed By: ______________________________ ____________ ____________
Print/Sign Initials Date

Reviewed By: ______________________________________ ____________
Unit Supervisor (Print/Sign) Date

Facility:	Turkey Point	Task No:	02201052300
Task Title:	Classify Event and Complete SNF	JPM No:	02201052320
K/A Reference:	G2.4.41 (RO 2.9; SRO 4.6)		
Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
Method of Testing:	Classroom		
Simulated Performance		Actual Performance	X

Classroom X Simulator ____ Plant ____

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 is in MODE 5 at 185°F, Unit 4 is in MODE 1 at 100% power.
- At 0800, a Loss of Off-site Power occurred on Unit 3 due to a loss of the Unit 3 Startup Transformer.
- The operating crew implemented 3-ONOP-004, Loss of Offsite Power.
- At 0810, the 3A EDG and the 3B EDG tripped and repair teams are investigating.
- At 0820, Unit 3 heated up above 200°F
- At 0845, NO power is available from any source.
- The operators notes the following parameters:
  - RCS temperature is 205°F and increasing slowly.
  - Wind speed is 10 mph.
  - Wind direction is from 180°.

Initiating Cue:

- You are the Emergency Coordinator in the Control Room. Based upon current plant conditions, classify the event using 0-EPIP-20101, *Duties of Emergency Coordinator,* including Protective Action Recommendations, if any.
- Raise your hand as soon as you have classified the event. At that time the examiner will provide you with a copy of the Florida Nuclear Plant Emergency Notification Form, F-439. You will then complete the Florida Nuclear Plant Emergency Notification Form, F-439; using 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations.*
- When you have completed the Florida Nuclear Plant Emergency Notification Form, F-439, raise your hand to inform the Examiner you are done.
- There are elements of this task that are Time Critical

Task Standard:

- Classification of Alert, EAL CA3, is declared within 15 minutes of starting the task.
- Applicant determines that NO Protective Action Recommendations (PARs) are warranted.
- The Florida Nuclear Plant Emergency Notification Form is completed in accordance 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations*, with NO errors on required items identified with a *, and within 15 minutes of event declaration.

Required Materials:

- 0-EPIP-20101, *Duties Of Emergency Coordinator*
- 0-EPIP- 20134, *Offsite Notifications and Protective Action Recommendations*
- Florida Nuclear Plant Emergency Notification Form, F-439.

General References:

- 0-EPIP-20101, *Duties Of Emergency Coordinator*
- 0-EPIP- 20134, *Offsite Notifications and Protective Action Recommendations*

Time Critical Task: Yes

Validation Time: 20 minutes

SIMULATOR SETUP

NOT Applicable

Denote critical steps with a check mark (√)

Start Time ______

STEP 1	Obtain the required materials.	SAT UNSAT
STANDARD	Applicant obtains 0-EPIP-20101, *Duties of Emergency Coordinator*, and a copy of the EAL Tables.	
CUE	**EVALUATOR CUE:** Provide Applicant with a copy of 0-EPIP-20101, *Duties of Emergency Coordinator*, and a copy of the EAL Tables. **EVALUATOR CUE:** Annotate Start Time once Applicant begins review of 0-EPIP-20101, *Duties of Emergency Coordinator.* Start Time: ____________	
COMMENT		

STEP 2	Review 0-EPIP-20101, *Duties of Emergency Coordinator*. to determine if the EAL Tables must be used to classify the event (0-EPIP-20101, Step 5.1.2).	SAT UNSAT
STANDARD	Applicant reviews 0-EPIP-20101, *Duties of Emergency Coordinator,* for the event depicted in the Initial Conditions, and determines that Attachment 2 must be used to declare the event.	
CUE		
COMMENT		
NOTE	**PROCEDURE EXCERPT:** 5.1.2 Classifying the Event 1. The Initiating Conditions (ICs) and Emergency Action Levels (EALs) and their technical bases have been organized as follows: Attachment 2, Emergency Classification Cold Conditions Table – Contains all the EALs and bases, that apply when the RCS temperature is less than or equal to 200°F.	

STEP 3 √	• Classify Off-Normal Event using present conditions **AND** declare most conservative emergency class using Attachment 2, (0-EPIP-20101, Step 5.3.4.3)	SAT UNSAT
STANDARD	Applicant classifies the event as an **Alert (CA3)** by interpreting the information given in the Initial Conditions, comparing the information to the criteria in Attachment 2, Cold Conditions Table; and declaring the EAL within 15 minutes of starting the JPM. **CA3** – Loss of All Off-site and All On-site AC Power to Emergency Busses for 15 minutes or Longer.	
CUE	**EVALUATOR CUE:** Annotate Stop Time for the classification when Applicant declares the event by raising his/her hand. Stop Time: ____________ Total Time to Declare Event: ____________ **EVALUATOR CUE:** Provide the Applicant with a copy of the Florida Nuclear Plant Emergency Notification Form, F-439 (SNF). Annotate Start Time when Applicant receives the form. Start Time: ____________.	
COMMENT		

STEP 4 √	Review 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations* (PARs) and determines if any PARs are warranted. (0-EPIP-20134, Attachment 3, form F-444; and Step 1.7)	SAT UNSAT
STANDARD	Applicant reviews 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations*, Section 1.7 and Attachment 3, and determines that PARs are NOT warranted.	
CUE		
COMMENT		

STEP 5	Complete Florida Nuclear Plant Emergency Notification Form. (0-EPIP- 20134, Attachments 1A & 1B) (Turkey Point Nuclear Form, F-439)	SAT UNSAT
STANDARD	The Applicant completes a Florida Nuclear Plant Emergency Notification Form, with NO errors noted on required items (annotated by a *), within 15 minutes. Item 2b (asterisk) is not critical The date and time of classification on the SNF, Item 5, is a critical step.	
CUE	**EVALUATOR CUE:** Provide the Applicant with a copy of the Florida Nuclear Plant Emergency Notification Form, F-439 (SNF). Annotate Stop Time when Applicant completes the form. Stop Time: ____________ Total Time to Complete F-439: ____________ **TERMINATING CUE:** **The task is complete when the Applicant returns the JPM Briefing Sheet to the Evaluator.**	
COMMENT		
NOTE	**EVALUATOR NOTES:** Step by step instructions for completing the Florida Nuclear Plant Emergency Notification Form are contained within 0-EPIP- 20134, *Offsite Notifications and Protective Action Recommendations*, and Attachment 1B. The time critical element is complete when the Florida Nuclear Plant Emergency Notification Form is complete. See the exam key for a copy of the completed Florida Nuclear Plant Emergency Notification Form. In Step 11, the only critical item is that the Applicant checks "A – No recommended actions at this time." Applicant could enter data such as "N/A" or "none."	

Stop Time ________

Verification of Completion:

Job Performance Measure No. 02201052320

Examinee's Name: ______________________

Examiner's Name: ______________________

Date Performed: ______________________

Facility Evaluator: ______________________

Number of Attempts: ______________________

Time to Complete: ______________________

Question Documentation:

Question:

____

____

____

____

____

Response:

____

____

____

____

____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: ______________________ ____________

Verification of Completion:

Job Performance Measure No. 02201052320

Examinee's Name: ____________________

Examiner's Name: ____________________

Date Performed: ____________________

Facility Evaluator: ____________________

Number of Attempts: ____________________

Time to Complete: ____________________

Question Documentation:

Question:

Response:

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: ____________________ ____________

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 is in MODE 5 at 185°F, Unit 4 is in MODE 1 at 100% power.
- At 0800, a Loss of Off-site Power occurred on Unit 3 due to a loss of the Unit 3 Startup Transformer.
- The operating crew implemented 3-ONOP-004, Loss of Offsite Power.
- At 0810, the 3A EDG and the 3B EDG tripped and repair teams are investigating.
- At 0820, Unit 3 heated up above 200°F
- At 0845, NO power is available from any source.
- The operators notes the following parameters:
    - RCS temperature is 205°F and increasing slowly.
    - Wind speed is 10 mph.
    - Wind direction is from 180°.

Initiating Cue:

- You are the Emergency Coordinator in the Control Room. Based upon current plant conditions, classify the event using 0-EPIP-20101, *Duties of Emergency Coordinator,* including Protective Action Recommendations, if any.
- Raise your hand as soon as you have classified the event. At that time the examiner will provide you with a copy of the Florida Nuclear Plant Emergency Notification Form, F-439. You will then complete the Florida Nuclear Plant Emergency Notification Form, F-439; using 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations*.
- When you have completed the Florida Nuclear Plant Emergency Notification Form, F-439, raise your hand to inform the Examiner you are done.
- There are elements of this task that are Time Critical

Acknowledge to the examiner when you are ready to begin.

HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.

JPM BRIEFING SHEET

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 is in MODE 5 at 185°F, Unit 4 is in MODE 1 at 100% power.
- At 0800, a Loss of Off-site Power occurred on Unit 3 due to a loss of the Unit 3 Startup Transformer.
- The operating crew implemented 3-ONOP-004, Loss of Offsite Power.
- At 0810, the 3A EDG <u>and</u> the 3B EDG tripped and repair teams are investigating.
- At 0820, Unit 3 heated up above 200°F
- At 0845, NO power is available from any source.
- The operators notes the following parameters:
  - RCS temperature is 205°F and increasing slowly.
  - Wind speed is 10 mph.
  - Wind direction is from 180°.

Initiating Cue:

- You are the Emergency Coordinator in the Control Room. Based upon current plant conditions, classify the event using 0-EPIP-20101, *Duties of Emergency Coordinator,* including Protective Action Recommendations, if any.
- Raise your hand as soon as you have classified the event. At that time the examiner will provide you with a copy of the Florida Nuclear Plant Emergency Notification Form, F-439. You will then complete the Florida Nuclear Plant Emergency Notification Form, F-439; using 0-EPIP-20134, *Offsite Notifications and Protective Action Recommendations*.
- When you have completed the Florida Nuclear Plant Emergency Notification Form, F-439, raise your hand to inform the Examiner you are done.
- There are elements of this task that are Time Critical

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

Online Verification: ☐ STATE ☐ MIAMI-DADE COUNTY ☐ MONROE COUNTY

*1. ~~A.~~ ☒ ~~This Is A Drill~~ B. ☐ ~~This Is An Actual Event~~

2. A. Date xx/xx/xx *B. Contact Time:________ C. Reported by: Name__________

D. Message Number:1 E. Reported From: ☒ Control Room ☐ TSC ☐ EOF

F. ☒ Initial/New Classification OR ☐ Update Notification

*3. SITE A. ☐ ~~Crystal River UNIT 3~~ B. ☐ ~~St. Lucie UNIT 1~~ C. ☐ ~~St. Lucie UNIT 2~~

D. ☒ Turkey Point UNIT 3 E. ☐ Turkey Point UNIT 4

*4. EMERGENCY CLASSIFICATION: A. ☐ Notification Of Unusual Event B. ☒ Alert
C. ☐ Site Area Emergency D. ☐ General Emergency

*5. A. ☒ EMERGENCY DECLARATION: B. ☐ EMERGENCY TERMINATION Date: XX /XX /XX Time: XX:XX

*6. REASON FOR EMERGENCY DECLARATION:** A. ☒ EAL Number:CA3 OR B. ☐ Description__________

7. ADDITIONAL INFORMATION OR UPDATE: A. ☒ None OR B. ☐ Description__________

*8. WEATHER DATA: A. Wind direction from 180 degrees. B. Downwind Sectors Affected R,A,B

*9. RELEASE STATUS: A. ☒ None (Go to Item 11) B. ☐ In Progress C. ☐ Has occurred, but stopped (go to Item 11)

10. RELEASE SIGNIFICANCE CATEGORY (at the Site Boundary)

A. ☐ Under evaluation B. ☐ Release within Normal Operating Limits (Tech Specs)

C. ☐ Non-Significant (Fraction of PAG Range) D. ☐ PAG Range (Protective Actions required)

E. ☐ Liquid release (no actions required)

*11. UTILITY RECOMMENDED PROTECTIVE ACTIONS FOR THE PUBLIC:

A. ☒ No recommended actions at this time. B. ☐ The utility recommends the following protective actions:

EVACUATE ZONES:__________ OR

SHELTER ZONES:__________

Miles	Evacuate Sectors	Shelter Sectors	No Action Sectors
0 - 2			
2 - 5			
5 - 10			

AND consider issuance of potassium iodide (KI)

If form is completed in the Control Room, go to item 15. If completed in the TSC or EOF, continue with item 12.

12. PLANT CONDITIONS:

A. Reactor Shutdown? ☐ YES ☐ NO B. Core Adequately Cooled? ☐ YES ☐ NO

C. Containment Intact? ☐ YES ☐ NO D. Core Condition: ☐ Stable ☐ Degrading

13. WEATHER DATA: A. Wind Speed______mph B. Stability Class______

14. ADDITIONAL RELEASE INFORMATION: A. ☐ Not applicable (Go to Item 15)

Distance	Projected Thyroid Dose (CDE) for 1 Hour	Projected Total Dose (TEDE) for 1 Hour
1 Mile (Site Boundary)	B.______mrem	C.______mrem
2 Miles	D.______mrem	E.______mrem
5 Miles	F.______mrem	G.______mrem
10 Miles	H.______mrem	I.______mrem

15. (Do not read to State) EC or RM Approval SignatureShift Manager DateXX/XX/XX TimeXXXX

MESSAGE RECEIVED BY: Name__________ Date / / Time______

** IF EMERGENCY CLASS ESCALATION IS KNOWN TO BE NECESSARY AND A NEW NOTIFICATION FORM WILL BE TRANSMITTED WITHIN 15 MINUTES, THEN YOU MAY GO TO EC/RM APPROVAL SIGNATURE LINE.

* ITEMS ARE EVALUATED FOR NRC PERFORMANCE INDICATORS (PIs)

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

METEOROLOGICAL WORKSHEET

SECTOR REFERENCE:

The chart below can be used to determine sectors affected by a radiological release, through comparison with wind direction from the meteorological recorders in the Control Room.

If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M, N and P.

SECTOR INFORMATION:

WIND SECTOR	WIND FROM	DEGREES	WIND TOWARD	SECTORS AFFECTED
[A]	N	348-11	S	HJK
[B]	NNE	11-33	SSW	JKL
[C]	NE	33-56	SW	KLM
[D]	ENE	56-78	WSW	LMN
[E]	E	78-101	W	MNP
[F]	ESE	101-123	WNW	NPQ
[G]	SE	123-146	NW	PQR
[H]	SSE	146-168	NNW	QRA
[J]	S	168-191	N	RAB
[K]	SSW	191-213	NNE	ABC
[L]	SW	213-236	NE	BCD
[M]	WSW	236-258	ENE	CDE
[N]	W	258-281	E	DEF
[P]	WNW	281-303	ESE	EFG
[Q]	NW	303-326	SE	FGH
[R]	NNW	326-348	SSE	GHJ

STABILITY CLASSIFICATION REFERENCE:

Either ERDADS or the below chart can be used to determine atmospheric stability classification for notification to the State of Florida. Primary method is from ΔT via the South Dade (60 meter) tower. Backup method is from Sigma Theta via the Ten Meter Tower. If neither meteorological tower is available, Stability Classification shall be determined using data from National Weather Service (See 0-EPIP-20126, Off-site Dose Calculations).

CLASSIFICATION OF ATMOSPHERIC STABILITY:

Stability Classification	Pasquill Categories	Primary Delta T (°F)	Backup Sigma Theta Range (Degrees)
Extremely unstable	A	$\Delta T \leq -1.7$	$ST \geq 22.5$
Moderately unstable	B	$-1.7 < \Delta T \leq -1.5$	$22.5 > ST \geq 17.5$
Slightly unstable	C	$-1.5 < \Delta T \leq -1.4$	$17.5 > ST \geq 12.5$
Neutral	D	$-1.4 < \Delta T \leq -0.5$	$12.5 > ST \geq 7.5$
Slightly stable	E	$-0.5 < \Delta T \leq +1.4$	$7.5 > ST \geq 3.8$
Moderately stable	F	$+1.4 < \Delta T \leq +3.6$	$3.8 > ST \geq 2.1$
Extremely stable	G	$+3.6 < \Delta T$	$2.1 > ST$

Meteorological information needed to fill out the Florida Nuclear Plant Emergency Notification Form is available from the Dose Calculation Worksheet (0-EPIP-20126). The Worksheet shall be filled out by Chemistry and given to the Emergency Coordinator.

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

Online Verification: ☐ STATE ☐ MIAMI-DADE COUNTY ☐ MONROE COUNTY

*1. A. ☐ This Is A Drill B. ☐ This Is An Actual Event

2. A. Date ___/___/______ *B. Contact Time:________ C. Reported by: Name____________________________

D. Message Number:____________________ E. Reported From: ☐ Control Room ☐ TSC ☐ EOF

F. ☐ Initial/New Classification OR ☐ Update Notification

*3. SITE A. ☐ ~~Crystal River UNIT 3~~ B. ☐ ~~St. Lucie UNIT 1~~ C. ☐ ~~St. Lucie UNIT 2~~

D. ☐ Turkey Point UNIT 3 E. ☐ Turkey Point UNIT 4

*4. EMERGENCY CLASSIFICATION: A. ☐ Notification Of Unusual Event B. ☐ Alert

C. ☐ Site Area Emergency D. ☐ General Emergency

*5. A. ☐ EMERGENCY DECLARATION: B. ☐ EMERGENCY TERMINATION Date: ____/____/____Time:________

*6. REASON FOR EMERGENCY DECLARATION:** A. ☐ EAL Number:__________OR B. ☐ Description______________

____

7. ADDITIONAL INFORMATION OR UPDATE: A. ☐ None OR B. ☐ Description________________________

____

*8. WEATHER DATA: A. Wind direction from ________degrees. B. Downwind Sectors Affected ______________

*9. RELEASE STATUS: A. ☐ None (Go to Item 11) B. ☐ In Progress C. ☐ Has occurred, but stopped (go to Item 11)

10. RELEASE SIGNIFICANCE CATEGORY (at the Site Boundary)

A. ☐ Under evaluation B. ☐ Release within Normal Operating Limits (Tech Specs)

C. ☐ Non-Significant (Fraction of PAG Range) D. ☐ PAG Range (Protective Actions required)

E. ☐ Liquid release (no actions required)

*11. UTILITY RECOMMENDED PROTECTIVE ACTIONS FOR THE PUBLIC:

A. ☐ No recommended actions at this time. B. ☐ The utility recommends the following protective actions:

EVACUATE ZONES:_______________ OR

SHELTER ZONES:_______________

Miles	Evacuate Sectors	Shelter Sectors	No Action Sectors
0 - 2			
2 - 5			
5 - 10			

AND consider issuance of potassium iodide (KI)

If form is completed in the Control Room, go to item 15. If completed in the TSC or EOF, continue with item 12.

12. PLANT CONDITIONS:

A. Reactor Shutdown? ☐ YES ☐ NO B. Core Adequately Cooled? ☐ YES ☐ NO

C. Containment Intact? ☐ YES ☐ NO D. Core Condition: ☐ Stable ☐ Degrading

13. WEATHER DATA: A. Wind Speed________mph B. Stability Class_______

14. ADDITIONAL RELEASE INFORMATION: A. ☐ Not applicable (Go to Item 15)

Distance	Projected Thyroid Dose (CDE) for 1 Hour	Projected Total Dose (TEDE) for 1 Hour
1 Mile (Site Boundary)	B.______________mrem	C.______________mrem
2 Miles	D.______________mrem	E.______________mrem
5 Miles	F.______________mrem	G.______________mrem
10 Miles	H.______________mrem	I.______________mrem

15. (Do not read to State) EC or RM Approval Signature______________________Date___/___/___ Time______

MESSAGE RECEIVED BY: Name______________________________Date___/___/___ Time______

** IF EMERGENCY CLASS ESCALATION IS KNOWN TO BE NECESSARY AND A NEW NOTIFICATION FORM WILL BE TRANSMITTED WITHIN 15 MINUTES, THEN YOU MAY GO TO EC/RM APPROVAL SIGNATURE LINE.

* ITEMS ARE EVALUATED FOR NRC PERFORMANCE INDICATORS (PIs)

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

METEOROLOGICAL WORKSHEET

SECTOR REFERENCE:

The chart below can be used to determine sectors affected by a radiological release, through comparison with wind direction from the meteorological recorders in the Control Room.

If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M, N and P.

SECTOR INFORMATION:

WIND SECTOR	WIND FROM	DEGREES	WIND TOWARD	SECTORS AFFECTED
[A]	N	348-11	S	HJK
[B]	NNE	11-33	SSW	JKL
[C]	NE	33-56	SW	KLM
[D]	ENE	56-78	WSW	LMN
[E]	E	78-101	W	MNP
[F]	ESE	101-123	WNW	NPQ
[G]	SE	123-146	NW	PQR
[H]	SSE	146-168	NNW	QRA
[J]	S	168-191	N	RAB
[K]	SSW	191-213	NNE	ABC
[L]	SW	213-236	NE	BCD
[M]	WSW	236-258	ENE	CDE
[N]	W	258-281	E	DEF
[P]	WNW	281-303	ESE	EFG
[Q]	NW	303-326	SE	FGH
[R]	NNW	326-348	SSE	GHJ

STABILITY CLASSIFICATION REFERENCE:

Either ERDADS or the below chart can be used to determine atmospheric stability classification for notification to the State of Florida. Primary method is from ΔT via the South Dade (60 meter) tower. Backup method is from Sigma Theta via the Ten Meter Tower. If neither meteorological tower is available, Stability Classification shall be determined using data from National Weather Service (See 0-EPIP-20126, Off-site Dose Calculations).

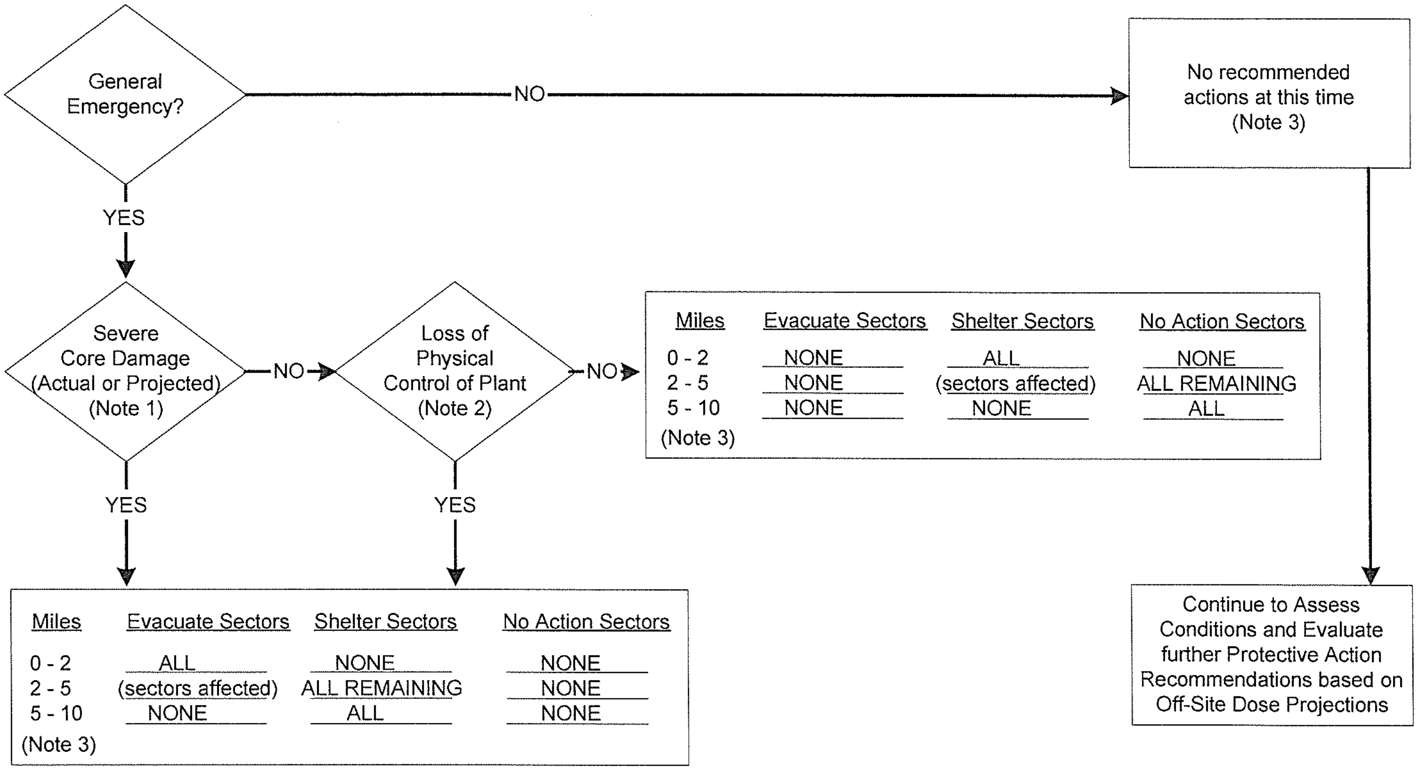
CLASSIFICATION OF ATMOSPHERIC STABILITY:

Stability Classification	Pasquill Categories	Primary Delta T (°F)	Backup Sigma Theta Range (Degrees)
Extremely unstable	A	$\Delta T \leq -1.7$	$ST \geq 22.5$
Moderately unstable	B	$-1.7 < \Delta T \leq -1.5$	$22.5 > ST \geq 17.5$
Slightly unstable	C	$-1.5 < \Delta T \leq -1.4$	$17.5 > ST \geq 12.5$
Neutral	D	$-1.4 < \Delta T \leq -0.5$	$12.5 > ST \geq 7.5$
Slightly stable	E	$-0.5 < \Delta T \leq +1.4$	$7.5 > ST \geq 3.8$
Moderately stable	F	$+1.4 < \Delta T \leq +3.6$	$3.8 > ST \geq 2.1$
Extremely stable	G	$+3.6 < \Delta T$	$2.1 > ST$

Meteorological information needed to fill out the Florida Nuclear Plant Emergency Notification Form is available from the Dose Calculation Worksheet (0-EPIP-20126). The Worksheet shall be filled out by Chemistry and given to the Emergency Coordinator.

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARS)

BASED ON PLANT CONDITIONS



Miles	Evacuate Sectors	Shelter Sectors	No Action Sectors
0 - 2	NONE	ALL	NONE
2 - 5	NONE	(sectors affected)	ALL REMAINING
5 - 10	NONE	NONE	ALL

(Note 3)

Miles	Evacuate Sectors	Shelter Sectors	No Action Sectors
0 - 2	ALL	NONE	NONE
2 - 5	(sectors affected)	ALL REMAINING	NONE
5 - 10	NONE	ALL	NONE

(Note 3)

NOTES:

(1) Severe core damage is indicated by any of the following:
- Loss of critical functions required for core protection (e.g. loss of injection with LOCA)
- High Core temperatures (Valid CET > 700°F)
- CHRRM Reading of greater than or equal to 1.3E4 R/hr

(2) Loss of physical control of Control Room or reactor operating areas required for continued safe plant operation to intruders.

(3) See additional Guidance for Determining PARs in Emergency Plan Implementing Procedures.

BASED ON MANUAL DOSE CALCULATIONS

RELEASE DURATION LESS THAN 2 HOURS (PUFF RELEASE)

Total Dose TEDE Dose (mRem) **OR**	Thyroid Dose CDE (mRem)	0-2 Miles Use 1 Mi. value	2-5 Miles Use 2 Mi. Value	Beyond 10 miles use this column and the 10 mile dose value. 5-10 Miles Use 5 Mi. Value
< 500 mRem	<1000 mRem	None	None	None
≥ 500 mRem but <1000 mRem	≥ 1000 mRem but <5000 mRem	S(ALL)	S(DW)	S(DW)
≥1000 mRem but <5000 mRem	≥ 5000 mRem but < 25000 mRem	S(ALL)	S(ALL)	S(ALL)
≥ 5000 mRem	≥ 25000 mRem	E(ALL)	E(DW)+S(AR)	E(DW)+S(AR)

RELEASE DURATION GREATER THAN OR EQUAL TO 2 HOURS

Total Dose TEDE Dose (mRem) **OR**	Thyroid Dose CDE (mRem)	0-2 Miles Use 1 Mi. value	2-5 Miles Use 2 Mi. Value	Beyond 10 miles use this column and the 10 mile dose value. 5-10 Miles Use 5 Mi. Value
< 500 mRem	<1000 mRem	None	None	None
≥ 500 mRem but <1000 mRem	≥ 1000 mRem but <5000 mRem	S(ALL)	S(DW)	S(DW)
≥1000 mRem but <5000 mRem	≥ 5000 mRem but < 25000 mRem	E(ALL)	E(DW)+S(AR)	E(DW)+S(AR)
≥ 5000 mRem	≥ 25000 mRem	E(ALL)	E(ALL)	E(DW)+S(AR)

SUMMARY	0 - 2 MI.	2 – 5 MI.	5 – 10 MI.
PARs based on – Plant Conditions			
PARs based on – Total Dose (TEDE)			
PARs based on – Thyroid Dose (CDE)			
Most Conservative PARs based on Plant Conditions and Dose Projections			

LEGEND OF ABBREVIATIONS

S – Sheltering recommended
E – Evacuation recommended
DW – Downwind plus 2 adjoining sectors
AR – All Remaining sectors
ALL – All Sectors

CAUTION

Previously issued PARs, unless found to be less conservative, are to remain in effect until the source of the threat is clearly under control.

FPL is required to provide county and state governmental authorities with recommendations for protective action to be taken by the public during radiological emergencies at the Turkey Point Nuclear Plant. The responsible authorities are the State Division of Emergency Management (DEM), Miami-Dade County Office of Emergency Management and Monroe County Office of Emergency Management.

Protective Action Recommendations (PARs) should be made utilizing all of the available data. This includes plant status, off-site dose projections, and/or field monitoring data. The more conservative recommendations should be made.

Beginning at the top left side, answer the **General Emergency** question. If yes, continue on, following the arrows, and answering the other question blocks. Record the PARs based on Plant Condition (A) in the Summary Block at the bottom of the page. From the PAR based on Plant Condition's block continue following arrow to next box, and determine PARs based on Off-site Dose Projections (B) Total Dose (TEDE) and Thyroid Dose (CDE). In determining PARs, both plant conditions AND off-site doses must be considered for all PARs. If a release has not occurred, then proceed with issuance of PARs from the plant condition determination.

To determine PARS from off-site doses, find the blocks that correspond with the Total Dose (TEDE) and Thyroid Dose (CDE) at 1, 2 and 5 miles from the Dose Calculation Worksheet (0-EPIP-20126). Follow across to the column that indicates the distance where that dose was found i.e., first block for 1 mile, second block for 2 miles, or third block for 5 miles. (B) Record the PARs based on Off-site Doses in the Summary Block. Once PARs are determined for all mile sectors for both Total Dose (TEDE) and Thyroid Dose (CDE) (B), then a comparison with the Plant Condition PARs (A) is performed, and the most conservative PARs for each mile sector is selected for issuance to off-site agencies.

The following example is provided:

EXAMPLE

A release has occurred at the Turkey Point Plant. The wind direction is from the SSE and the projected off-site accumulated Thyroid Dose (CDE) is 5,000 mRem at 1 mile, 1,000 mRem at 2 miles, and less than 1,000 mRem at 5 miles. The plant is in a General Emergency with CHRRM at 100 R/hr, no core damage indicators, and no loss of physical control of the plant.

Using the PAR Worksheet, the following recommendations should be made:

Based on our current assessment of all the information now available to use, Florida Power & Light Company ecommends that you consider taking the following protective actions.

A. EVACUATE all people between 0 and 2 miles from the plant.

B. SHELTER all people between a 2 and 5 mile radius form the plant who are in Sectors Q, R, and A (refer to Attachment 1).

C. No protective actions is recommended between a 5 and 10 mile radius from the plant.

Due to the large political and legal ramifications of these recommendations and the potential impact on FPL, the following guidelines, format, and content should be used.

(1) If the emergency has not been classified as a GENERAL EMERGENCY and the off-site doses are LESS THAN 500 mRem Total Dose (TEDE) or 1,000 mRem Thyroid Dose (CDE) at 1 mile over the projected duration of the release, no protective action is recommended. When reporting to DEM and other off-site agencies who inquire, this should be reported in a manner similar to the following:

Based on our urgent assessment of all the information now available to us, Florida Power & Light Company recommends that you consider taking the following protective actions - NONE. This recommendation may change in the future, but we cannot now say when it may change or what the change may be.

(2) When available, both plume calculation and off-site monitoring results should be evaluated when making protective action recommendations. If significant discrepancies exist between field monitoring results and plume dispersion calculations, then the discrepancy should be reviewed, and the appropriate value should be selected in the determination of protective action recommendations.

(3) Thyroid Dose (CDE) Limits for PARs are based on adult thyroid. These limits are consistent with EPA Guidelines based on the following criteria:

a. Uncertainty and potential errors associated with age specific parameters, and

b. Level of conservatism in the adult values.

(4) Loss of physical control of the plant to intruders shall be determined by the Emergency Coordinator based on the current operating mode requirements of the unit / plant, and the availability of equipment required for continued safe operation.

GUIDANCE FOR THE USE OF PO

1. The EOF RP Manager in consı dispense Potassium Iodide (KI) b (CDE) of greater than or equal to on the FDA recommended thresh‹

2. The TSC RP Supervisor and the for use has been determined.

3. The TSC RP Supervisor is respc Room and the TSC and Field Mo

4. The OSC RP Supervisor is respor

5. KI should be administered and i CDE is greater than or equal to 5

6. When KI is issued, thyroid intake

7. Administering KI after an uptake

8. Caution emergency response per iodide. Emergency response pers of directing them to ingest KI.

9. All KI tablets are stored in the Monitoring Team Kits.

Florida Power & Light Company

Turkey Point Nuclear Plant

0-EPIP-20134

Title:

Offsite Notifications and Protective Action Recommendations

(Information Use)

Safety Related Procedure	
Responsible Department:	Emergency Preparedness
Revision Number:	1
Issue Date:	7/20/11
Revision Approval Date:	7/19/11

ARs *1667362*
PCRs *08-4233, 08-3496, 08-4878, 08-4879, 09-0698, 09-2836, 10-0765, 10-0069, 10-1926*

W2003:ME/mr/cls/cls

LIST OF EFFECTIVE PAGES
(Rev. 1)

Page	Revision Date	Page	Revision Date
1	07/19/11	21	07/19/11
2	07/19/11	22	07/19/11
3	05/27/10	23	06/08/10
4	11/10/08	24	06/08/10
5	11/10/08	25	11/09/09
6	04/17/08	26	11/09/09
7	04/17/08	27	05/27/10
8	11/09/09	28	05/27/10
9	11/10/08	29	05/27/10
10	11/09/09	30	05/27/10
11	09/23/08	31	05/27/10
12	04/17/08	32	05/27/10
13	04/17/08	33	05/27/10
14	11/10/08	34	07/19/11
15	04/17/08	35	07/19/11
16	11/10/08	36	07/19/11
17	11/10/08	37	07/19/11
18	11/09/09	38	07/19/11
19	11/09/09		
20	07/19/11		

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure provides information and instructions for performing notification to the State of Florida and the Nuclear Regulatory Commission (NRC) and for determination of protective action recommendations (PARs).

1.2 This procedure is for use in the Control Room, Technical Support Center (TSC) and Emergency Operations Facility (EOF).

1.3 Upon declaration of an emergency classification the Shift Manager (SM) assumes the duties of the Emergency Coordinator (EC). The EC has initial responsibility for off-site notifications and PARs

1.4 Once the EOF is operational and proper turnover has been conducted, the Recovery Manager (RM) assumes responsibility for off-site notifications and PARs from the EC

1.5 At an Alert or higher level emergency, communications with the NRC transition to an open phone line from the TSC and the EOF (at a Site Area Emergency or higher level emergency).

NOTE

The State of Florida Department of Health (Bureau of Radiation Control) may not have their office staffed on a 24-hour basis. In the event that they do not answer the Hot Ring Down (HRD) telephone, the state assumes responsibility for notifying their duty officer. However, the EC/RM shall verify that the Bureau of Radiation Control has been notified.

1.6 Who Shall Be Notified

- State of Florida Division of Emergency Management
- State of Florida Department of Health (Bureau of Radiation Control)
- Miami-Dade County Emergency Operations Center
- Monroe County Emergency Operations Center
- NRC

1.6.1 State and County Notification

1. State and local agencies are notified by using the Hot Ring Down (HRD) telephone. The HRD rings the State. The state puts the other agencies on line and reduces the need for individual calls.

1.6.2 NRC Notification

1. The NRC is notified using the Emergency Notification System (ENS) telephone.
2. NRC notifications occur through an open line of communication in the TSC and, when operational, the EOF.

1.6.3 Emergency Follow-up Information Requests from State and Local Agencies.

1. Incoming calls should come via the state over the HRD phone. If the HRD is inoperable, the state may use commercial telephone or ESATCOM (emergency satellite phone). If an off-site authority contacts the plant without going through the State, request that they contact the state. The state shall verify that the agency calling is a risk county or the Department of Health (DOH) and shall notify other county and state agencies of the updated information, thus reducing the number of calls that may be directed to the plant.

2. Long, detailed explanations of plant systems or reactor theory should be avoided. If prompted for this kind of information by the State Duty Officer, he / she should be referred to the Nuclear Division Duty Officer (NDDO).

3. If the State or one of the Counties provides either the TSC or EOF with new or pertinent information, Then bring that information to the attention of the EC or EC Assistant / Logkeeper in the TSC or the RM or the RM OPS Advisor / Logkeeper in the EOF.

1.7 Protective Action Recommendations

1.7.1 Protective actions for the general public are ordinarily NOT required prior to declaration of a General Emergency. It is possible however, that due to unusually stable and constant meteorological conditions, protective actions could be recommended at a Site Area Emergency based on projected doses. This is the exception rather than the rule.

Protective actions for the general public are required to be recommended if a General Emergency is declared. Initial Protective Action Recommendations (PARs) are normally based on plant conditions. This would NOT be true if the General Emergency was declared based on off-site dose (either measured or projected) or a Security Emergency (per the Security Plan). The predetermined minimum PARs (based on plant conditions) are as given below.

1.7.2 General Emergency - Minimum Pars

1. In any case where a GENERAL EMERGENCY has been declared, the minimum PAR shall be:

2. Shelter all people within a 2-mile radius and out to 5 miles in the sectors affected. The sectors affected are at least three, the downwind sector plus the two adjacent sectors.

1.7.3 If a GENERAL EMERGENCY has been declared due to actual or projected severe core damage, the minimum PAR shall be:

1. Evacuate all people within a 2-mile radius from the plant and out to 5 miles in the sectors affected. Shelter all people in the remaining sectors from 2 to 5 miles and from 5 to 10 miles from the plant.

1.7.4 If a GENERAL EMERGENCY has been declared due to loss of physical control of the plant to intruders, including the Control Room or any other area(s) vital to the operation of the reactor system (as defined in the Security Plan), the minimum PAR shall be:

1. Evacuate all people within a 2-mile radius from the plant and out to 5 miles in the sectors affected. Shelter all people in the remaining sectors from 2 to 5 miles and from 5 to 10 miles from the plant.

1.7.5 Once a release of radioactive material occurs, dose assessment should be utilized when evaluating PARs. The final determination of the PAR should consider all available information including off-site dose projections, plant conditions and field monitoring data. The most conservative recommendation shall be made.

1.7.6 If it is anticipated that a PAR threshold will be exceeded, DO NOT wait until the threshold is exceeded to make that PAR.

1.7.8 Conditions (plant information, dose projections and field monitoring results) are to be continually assessed and PARs expanded, as necessary, to ensure that adequate (most conservative) PARs are issued.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Plant Procedures

1. 0-EPIP-20101, Duties of the Emergency Coordinator
2. 0-EPIP-1212, Emergency Operations Facility (EOF) Activation and Operation
3. 0-EPIP-20104, Emergency Response Organization Notifications/Staff Augmentation
4. 0-EPIP-20132, Technical Support Center (TSC) Activation and Operation

2.1.2 Regulatory Guidelines

1. Turkey Point Radiological Emergency Plan.
2. 10 CFR 50.47, Emergency Plans

2.1.3 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. PC/M 04-112, Emergency Response Data Acquisition and Display System (ERDADS) Replacement
2. Letter to Emergency Preparedness from State of Florida Division of Emergency dated October 12, 2007

2.2 Records Required

2.2.1 Completed originals of the below listed items constitute Quality Assurance records and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. Subsections of this procedure required to be completed during the performance of this procedure:
   a. Forms similar to Attachment 1
   b. Forms similar to Attachment 2

3.0 RESPONSIBILITIES

3.1 Emergency Coordinator

3.1.1 Emergency Coordinator (EC) – Responsible for classifications, notifications and PARs.

3.1.2 Recovery Manager - Responsible for notifications and PARs. When EOF is operational

3.1.3 TSC Supervisor – Responsible for ensuring communication links are functional. Also responsible for ensuring initial and follow-up notifications to the State of Florida, Miami-Dade County, and Monroe County are provided.

3.1.4 The Technical Assist to the Emergency Coordinator - Assists the EC in developing Protective Action Recommendations based on plant conditions and Off-site Dose Projections.

3.1.5 TSC Operations Manager - Provides Protective Action Recommendations to the EC based on plant conditions.

3.1.6 TSC ENS Communicator – Assists at the TSC with notification form preparations and makes the calls to complete notifications to the NRC.

3.1.7 EOF ENS Communicator – Assists at the EOF with notification form preparations and makes the calls to complete notifications to the NRC.

3.1.8 EOF Radiation Protection Manager - Assists the Recovery Manager with Radiological Dose Assessment Data and PARs.

3.1.9 EOF State and County Communicator - Assists at the EOF with notification form preparations and makes the calls to complete notifications to the state.

3.1.10 TSC State and County Communicator - Assists at the TSC with notification form preparations and makes the calls to complete notification to the state.

4.0 DEFINITIONS

4.1 Emergency - any off-normal event or condition which is classified into one of the four event categories in Enclosure 1 of this procedure.

4.2 Emergency Notification System (ENS) - the circuit tying the NRC and Turkey point.

4.3 Emergency Response Directory (ERD) - the directory containing names and phone numbers of Emergency Response Organization personnel.

4.4 ESATCOM - Satellite based backup communications system for notifications to the state.

4.5 Florida Nuclear Plant Emergency Notification Form - the form used to initiate, update, and terminate emergency notifications to State and Local Counties.

4.6 Hot Ring Down Telephone (HRD) - the dedicated link between State/Counties and Turkey Point.

4.7 Local Government Radio (LGR) - the communications network used as a backup to the HRD.

4.8 Off-site Power - power supplied from the grid through the Startup or Auxiliary Transformers (backfeed), or power supplied by the Auxiliary Transformer during normal operation.

4.9 On site - within the Protected Area.

4.10 Owner Controlled Area - that portion of the FPL property surrounding and including the Turkey Point Plant, which is subject to limited access and control as deemed appropriate by FPL.

4.11 Power Block - structures comprising all permanent nuclear, power generation, and cooling structures, systems, and components within the Protected Area and permanent safety related or quality related utilities (e.g., air, water and electric) both inside and outside the Protected Area. The Power Block does not include the switchyard (Reference CR-96-881).

4.12 Protective Action Recommendations (PARs) - Recommendations, for action instructions to protect the public, made by the Emergency Coordinator or Recovery Manager to State and County officials. FPL may recommend No Action, Sheltering or Evacuation.

4.13 Recovery Manager (RM) - A designated company officer or senior manager, who will have responsibility for the direction and control of the EOF. He / she has the authority to establish policy and to expend funds necessary to cope with emergency situations that trigger the implementation of the Emergency Plan.

4.0 **DEFINITIONS** (Cont'd)

4.14 Release –

4.14.1 **IF** as a result of **accident conditions** ANY of the following is true:

- A rise of (approximately) 10 times or one decade above pre-transient values is seen on one of the following accident assessment monitors:
  - Plant Vent (RAD 6304 or R-14)
  - Spent Fuel Pool Vent (RAD 6418)
  - Steam Jet Air Ejector (RAD 6417 or R-15)
  - Dam-1 Main Steam (RAD 6426)
- Radiation Protection detects unplanned elevated airborne radiation levels outside of plant buildings due to accident conditions.
- A Steam Generator, with primary to secondary leakage due to a tube leak or rupture is vented to atmosphere and/or feeding the (operating) steam driven AFW pump.

THEN a RELEASE is in progress.

4.15 Shift Communicator – A specific shiftly designated individual trained and qualified to assist the Shift Manager/Emergency Coordinator in the control room in making emergency off-site notifications, and performing other activities as directed.

4.16 State Notification Form (SNF) – Less formal, more concise expression used in lieu of Florida Nuclear plant Emergency Notification Form

5.0 **PROCEDURE**

5.1 General

5.1.1 The Emergency Coordinator (EC) can delegate responsibilities to subordinates with the exception of classification, the decision to notify Federal, State, and Local authorities, and the issuing of Protective Action Recommendations (PARs). The actual notification can be done by the EC designee. Notification of off-site agencies and PARs become the responsibility of the Recovery Manager (RM) when the EOF is manned and operational. The EC documents the decision to notify State and Local authorities and documents EC concurrence with PARs by signing a form similar to Attachment 1.

5.1.2 Procedural notification steps may be performed out of sequence in order to meet State of Florida and/or NRC notification time requirements.

5.1.3 During exercises, drills or tests, ALL MESSAGES shall begin and end with **THIS IS A DRILL.**

5.1.4 In any case where a **General Emergency** has been declared, the minimum protective action recommendation shall be: **Shelter all people within a 2 mile radius from the plant and 5 miles in the down wind sectors.**

5.1.5 The Emergency Coordinator responsibilities shall reside with the EC in the Control Room until they have been formally transferred to the EC in the TSC.

5.1.6 Emergency notification to State and Local Counties is required within 15 minutes of declaring an emergency.

5.1.7 Emergency notification to the NRC is required immediately following notification of State and Counties, but not later than 1 hour from the declaration of an emergency.

5.1.8 If, during the notification process, it becomes necessary to upgrade the emergency classification:

1. Update the notification to reflect the higher emergency classification and complete the update notifications within 15 minutes of the lesser emergency declaration.
2. If the notification cannot be updated and completed within 15 minutes of the lesser emergency declaration, the ERO should make the declaration of the lesser emergency within 15 minutes of its declaration. The notification can contain the caveat that a change in classification was forthcoming.
3. At no time will there be a restart of the notification clock.

5.1.9 Plant conditions, plume dose projection calculations, (from 0-EPIP-20126, Off-site Dose Calculations), and off-site monitoring results should be evaluated when making Protective Action Recommendations. If significant discrepancies exist between field monitoring results and plume dose projection calculations, an evaluation should be made, and the most conservative approach used in the determination of Protective Action Recommendations.

1. De-escalation of the event does not mean that protective actions for the General Public would be reduced or terminated.
2. Previously issued PARs, unless found to be less conservative, are to remain in effect until the source of the threat is clearly under control.
3. Only State and County officials can implement, change and/or terminate protective actions.

5.1.10 If a condition, which meets the Unusual Event or Alert criteria of Enclosure 1 is identified and subsequently rapidly resolved, the emergency classification shall be declared and immediately terminated. All required notifications shall be completed. Activation of the On-site Emergency Response Facilities is not required.

5.1.11 If a condition which meets the Site Area Emergency or General Emergency criteria of Enclosure 1 EPIP 20101 (Emergency Classification Table) is identified and subsequently rapidly resolved, the emergency shall be declared and all notifications completed. De-escalation from the Site Area Emergency and General Emergency classifications may only be authorized by the Recovery Manager.

5.1.12 Protective Action Recommendations based upon off-site dose calculations shall be determined by comparing projected off-site doses to the action levels in Attachment 3. If the period of exposure is expected to be less than 2 hours the doses should be projected for the expected duration of the exposure. For longer duration exposures, the off-site doses should be projected for 2 hours and PARs should be based upon the 2 hour projections.

5.1.14 Alternate commercial telephone numbers for State of Florida and NRC notification are listed in the Emergency Response Directory (ERD).

5.1.15 Collection of Release Rate Data shall not delay State of Florida and NRC notifications. If the data is not available, notification shall be made and followed up as soon as the information is available.

5.1.16 One of the primary reasons for the declaration and notification process is to prompt Local, State, and Federal Government Agencies to initiate actions to assure the health and safety of the public. The Government Agency response is based on an event affecting either unit at a multiple unit site, such as PTN. Therefore, the Government Agency actions will address the most severe classification issued by the site, and having multiple classifications would only confuse the response. Examples regarding this issue are provided below.

1. If Unit 3 is in a classified event (an Alert, for example), and another event of the same of lesser classification (e.g., an Unusual Event or Alert) occurs on Unit 3 or Unit 4, then a new event classification should not be made, and the event notification should be issued as an update, at the earliest practical time.

2. If Unit 3 is in a classified event (an Alert, for example), and another event of higher classification (Site Area or General Emergency) occurs on either Unit 3 or Unit 4, then the new classification should be promptly issued to the State and NRC within the regulatory time requirements.

3. The Florida Nuclear Plant Emergency Notification Form (a form similar to Attachment 1) should indicate the unit for which the event is declared. If the event is common to both units, such as the approach of a hurricane, both PTN boxes should be checked.

5.2 Off-Site Notifications during Security Related Events

_____ TIME

5.2.1. Make an accelerated notification to the NRC

Accelerated notification to the NRC Operations Center, ENS phone number 301-816-5100, shall be made within 15 minutes of authentication of the threat.

_____ TIME

5.2.2. Airborne Threat — abbreviated State Notification — prepare a State Notification Form by filling out lines 1 through 6 and 11.

5.3 Off-Site Notifications from Control Room, TSC or EOF

CAUTIONS

- ***Notification to the State of Florida is required within 15 minutes of Emergency Classification.***
- ***Notification to the NRCOC is required to immediately follow the State Notification and no later than one hour.***
- ***Collection of Release Rate Data shall not delay State of Florida or NRC Notification.***
- ***If a transitory event has occurred, notifications are still required using this procedure.***

NOTE

If during the notification process it becomes necessary to upgrade the emergency classification:

- *Update the notification to reflect the higher emergency classification and complete the update notifications within 15 minutes of the lesser emergency declaration.*
- *If the notification cannot be updated and completed within 15 minutes of the lesser emergency declaration, the ERO should make the notification for the lesser emergency within 15 minutes of its declaration. The notification can contain the caveat that a change in classification was forthcoming.*
- *At no time will there be a restart of the notification clock.*

5.3.1 State and County Notification

1. Time Limits

   a. Notification shall be initiated within 15 minutes of any of the following:

      (1) Recognition of entry into the Emergency Plan

      (2) Escalation in Emergency Class.

      (3) De-escalation of the Emergency Class.

      (4) Protective Action Recommendation.

      (5) Change in Protective Action Recommendation

5.3.1 (Cont'd)

NOTE

Update notifications should occur about every 60 minutes unless the clock has started for a regulatory-based 15 minute notification which takes precedence

2. Notification should be initiated within 60 minutes of any of the following:

   a. At an Alert or higher Emergency Class, the time of the last update (unless a different frequency has been agreed to by the off-site agencies as during a hurricane).

   b. A radiological release has been initiated.

   c. A radiological release has been terminated.

   d. A significant change in plant conditions has occurred (e.g., loss or restoration of off-site power or major plant equipment).

   e. Termination of the emergency.

5.3.2 Florida Nuclear Plant Emergency Notification Form

CAUTION

- ***Notifications require the use of a form similar to Attachment 1, Florida Nuclear Plant Emergency Notification Form.***

1. Notifications with 15 minute or 60 minute time limit shall be made using a form similar to Attachment 1, Florida Nuclear Plant Emergency Notification Form.

   a. In the Control Room, lines 1 through 11 of the Florida Nuclear Plant Emergency Notification Form shall be completed and the form shall be approved by the Emergency Coordinator prior to transmittal.

   b. In the Technical Support Center, lines 1 through 15 of the Florida Nuclear Plant Emergency Notification Form shall be completed and the form shall be approved by the Emergency Coordinator prior to transmittal.

   c. In the Emergency Operations Facility, lines 1 through 15 of the Florida Nuclear Plant Emergency Notification Form shall be completed and the form shall be approved by the Recovery Manager prior to transmittal

5.3.3. **IF** Off-site (State and County) notifications responsibilities are with the Emergency Coordinator on site, **THEN** complete the following steps:

_____ TIME 1. Complete a form similar to Attachment 1.

_____ TIME 2. Obtain the initials of the Emergency Coordinator or Recovery Manager on the notification form prior to transmitting the information.

5.3.3 (Cont'd)

NOTES

- *The state may request verification call back. If requested, the state will call in on the black bell phone (ringmaster) or cellular phone in the Control Room.*
- *If either of the counties (Miami-Dade County, Monroe County) are not on line during the notification with the state, follow up with the state to ensure contact is made or directly contact the counties to convey the message form information. (10 CFR 50 Appendix E, requires licensees to notify the State and Local Government)*

____ TIME

3. Notify the state in Tallahassee **AND** relay information from a form similar to Attachment 1 within 15 minutes of classifying the event via one of the following:

   (a) Hot Ring Down Telephone

   (b) Commercial Telephone (refer to ERD)

   (c) Cellular Phone (refer to ERD)

   (d) ESATCOM

   (e) Local Government Radio

____ TIME

4. Complete a form similar to Attachment 2.

____ TIME

5. Contact the NRCOC and relay the information from a form similar to Attachment 2 immediately after the notification of the Event to State and Counties via one of the following:

   (a) ENS

   (b) Commercial Telephone (refer to ERD)

   (c) Cellular Telephone (refer to ERD)

5.3.3 (Cont'd)

6. **IF** notification responsibilities are with the Emergency Coordinator On-site, **THEN** provide notifications to the State and Counties every hour, unless less frequent updates are agreed to, upon termination, or as conditions change.

   a. Complete a form similar to Attachment 1.

   ______ TIME

   b. Obtain the initials of the Emergency Coordinator on the notification form prior to transmitting the information.

   ______ TIME

   c. Notify the following of the new information:

      (1) State of Florida

      ______ TIME

      (2) Duty Call Supervisor

      ______ TIME

   d. Complete a form similar to Attachment 2.

   ______ TIME

   e. Notify the NRCOC of the new information via one of the following:

   ______ TIME

      (1) ENS

      (2) Commercial telephone (refer to ERD)

      (3) Cellular telephone

END OF TEXT

ATTACHMENT 1
(Page 1 of 1)

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

Online Verification: ☐ STATE ☐ MIAMI-DADE COUNTY ☐ MONROE COUNTY

*1. A. ☐ This Is A Drill B. ☐ This Is An Actual Event

2. A. Date___/___/___ *B. Contact Time:________ C. Reported by: Name________________

D. Message Number:________________ E. Reported From: ☐ Control Room ☐ TSC ☐ EOF

F. ☐ Initial/New Classification OR ☐ Update Notification

*3. SITE A. ☐ ~~Crystal River UNIT 3~~ B. ☐ ~~St. Lucie UNIT 1~~ C. ☐ ~~St. Lucie UNIT 2~~

D. ☐ Turkey Point UNIT 3 E. ☐ Turkey Point UNIT 4

*4. EMERGENCY CLASSIFICATION: A. ☐ Notification Of Unusual Event B. ☐ Alert
C. ☐ Site Area Emergency D. ☐ General Emergency

*5. A. ☐ EMERGENCY DECLARATION: B. ☐ EMERGENCY TERMINATION Date:___/___/___ Time:________

*6. REASON FOR EMERGENCY DECLARATION:** A. ☐ EAL Number:________ OR B. ☐ Description________________

7. ADDITIONAL INFORMATION OR UPDATE: A. ☐ None OR B. ☐ Description________________

*8. WEATHER DATA: A. Wind direction from ______ degrees B. Downwind Sectors Affected ____________

*9. RELEASE STATUS: A. ☐ None (Go to Item 11) B. ☐ In Progress C. ☐ Has occurred, but stopped (go to Item 11)

10. RELEASE SIGNIFICANCE CATEGORY (at the Site Boundary)

A. ☐ Under evaluation B. ☐ Release within Normal Operating Limits (Tech Specs)

C. ☐ Non-Significant (Fraction of PAG Range) D. ☐ PAG Range (Protective Actions required)

E. ☐ Liquid release (no actions required)

*11. UTILITY RECOMMENDED PROTECTIVE ACTIONS FOR THE PUBLIC:

A. ☐ No recommended actions at this time. B. ☐ The utility recommends the following protective actions:

EVACUATE ZONES: NOT APPLICABLE OR

SHELTER ZONES: NOT APPLICABLE

Miles	Evacuate Sectors	Shelter Sectors	No Action Sectors
0 - 2			
2 - 5			
5 - 10			

AND consider issuance of potassium iodide (KI)

If form is completed in the Control Room, go to item 15. If completed in the TSC or EOF, continue with item 12.

12. PLANT CONDITIONS:

A. Reactor Shutdown? ☐ YES ☐ NO B. Core Adequately Cooled? ☐ YES ☐ NO

C. Containment Intact? ☐ YES ☐ NO D. Core Condition: ☐ Stable ☐ Degrading

13. WEATHER DATA: A. Wind Speed________ mph B. Stability Class________

14. ADDITIONAL RELEASE INFORMATION: A. ☐ Not applicable (Go to Item 15)

Distance	Projected Thyroid Dose (CDE) for 1 Hour	Projected Total Dose (TEDE) for 1 Hour
1 Mile (Site Boundary)	B.____________ mrem	C.____________ mrem
2 Miles	D.____________ mrem	E.____________ mrem
5 Miles	F.____________ mrem	G.____________ mrem
10 Miles	H.____________ mrem	I.____________ mrem

15. (Do not read to State) EC or RM Approval Signature________________ Date___/___/___ Time________

MESSAGE RECEIVED BY: Name________________ Date___/___/___ Time________

** IF EMERGENCY CLASS ESCALATION IS KNOWN TO BE NECESSARY AND A NEW NOTIFICATION FORM WILL BE TRANSMITTED WITHIN 15 MINUTES, THEN YOU MAY GO TO EC/RM APPROVAL SIGNATURE LINE.

* ITEMS ARE EVALUATED FOR NRC PERFORMANCE INDICATORS (PIs)

F-439/1:2 Rev 9 (11/09/09)

ATTACHMENT 1A
(Page 1 of 1)

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM METEOROLOGICAL WORKSHEET

FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

METEOROLOGICAL WORKSHEET

SECTOR REFERENCE:

The chart below can be used to determine sectors affected by a radiological release, through comparison with wind direction from the meteorological recorders in the Control Room.

If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M, N and P.

SECTOR INFORMATION:

WIND SECTOR	WIND FROM	DEGREES	WIND TOWARD	SECTORS AFFECTED
[A]	N	348-11	S	HJK
[B]	NNE	11-33	SSW	JKL
[C]	NE	33-56	SW	KLM
[D]	ENE	56-78	WSW	LMN
[E]	E	78-101	W	MNP
[F]	ESE	101-123	WNW	NPQ
[G]	SE	123-146	NW	PQR
[H]	SSE	146-168	NNW	QRA
[J]	S	168-191	N	RAB
[K]	SSW	191-213	NNE	ABC
[L]	SW	213-236	NE	BCD
[M]	WSW	236-258	ENE	CDE
[N]	W	258-281	E	DEF
[P]	WNW	281-303	ESE	EFG
[Q]	NW	303-326	SE	FGH
[R]	NNW	326-348	SSE	GHJ

STABILITY CLASSIFICATION REFERENCE:

Either ERDADS or the below chart can be used to determine atmospheric stability classification for notification to the State of Florida. Primary method is from ΔT via the South Dade (60 meter) tower. Backup method is from Sigma Theta via the Ten Meter Tower. If neither meteorological tower is available, Stability Classification shall be determined using data from National Weather Service (See 0-EPIP-20126, Off-site Dose Calculations).

CLASSIFICATION OF ATMOSPHERIC STABILITY:

Stability Classification	Pasquill Categories	Primary Delta T (°F)	Backup Sigma Theta Range (Degrees)
Extremely unstable	A	$\Delta T \leq -1.7$	$ST \geq 22.5$
Moderately unstable	B	$-1.7 < \Delta T \leq -1.5$	$22.5 > ST \geq 17.5$
Slightly unstable	C	$-1.5 < \Delta T \leq -1.4$	$17.5 > ST \geq 12.5$
Neutral	D	$-1.4 < \Delta T \leq -0.5$	$12.5 > ST \geq 7.5$
Slightly stable	E	$-0.5 < \Delta T \leq +1.4$	$7.5 > ST \geq 3.8$
Moderately stable	F	$+1.4 < \Delta T \leq +3.6$	$3.8 > ST \geq 2.1$
Extremely stable	G	$+3.6 < \Delta T$	$2.1 > ST$

Meteorological information needed to fill out the Florida Nuclear Plant Emergency Notification Form is available from the Dose Calculation Worksheet (0-EPIP-20126). The Worksheet shall be filled out by Chemistry and given to the Emergency Coordinator.

ATTACHMENT 1B
(Page 1 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

ITEM ENTRY

NOTE

Online verification occurs when notification of the State Watch Office is initiated.

On-line Verification of Agencies on telephone call - Check the appropriate boxes as the state (Florida Division of Emergency Management) requests that Miami-Dade County and Monroe County get on the line, prior to initiating the notification. All three agencies must be notified through the SWP or alternate means.

If either/both of the counties (Miami-Dade County or Monroe County are not on the line, do not delay the notification: ensure the state will follow-up with contact to the counties or contact the counties directly after completing notification of the state.

Prior to transmitting the completed notification form to the state, ensure that the RM has signed the approval section at the bottom of form.

1. Check appropriate box for drill or actual event as the case may be. During exercises, drills, or tests, each message shall be checked **THIS IS A DRILL.**

2A. Enter today's date.

2B. Enter the time (using the official time, normally synchronized with ERDADS) when contact is made with the State Warning Point or the start time of the RM PAR Briefing. For initial notification of classification, this shall be within 15 minutes of the **Emergency Declaration** time in item 5.

2C. Enter the name of the person making the notification call.

2D. Enter the message number beginning with #1 and following sequentially in all facilities (e.g., if the Control Room transmitted two messages the TSC would start with #3).

2E. Check the box for the facility from which the notification is being made.

2F. Check whether the notification is an initial/new classification or whether it is an hourly update notification.
Criteria for 15 minute notification:
- emergency declaration is the initial notification
- classification in # 4 has changed
- significant change-e.g., change in PARs

3. <u>Site</u>
Check the box for the appropriate plant site for the emergency declaration (both PTN boxes might need to be checked for dual unit events such as approach of a hurricane).

ATTACHMENT 1B
(Page 2 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

NOTE

FIRST LETTER of all EALs is **Recognition Category**	**SECOND LETTER** of all EALs is **EVENT Classification**
• **R** - Abnormal Rad Levels/Radiological Effluent • **C** - Cold Shutdown/Refueling System Malfunction • **F** - Fission Product Barrier • **H** - Hazards and Other Conditions Affecting Plant Safety • **S** - System Malfunction	• **U** - Unusual Event (UE) • **A** - Alert • **S** - Site Area Emergency (SAE) • **G** - General Emergency (GE)
THIRD and **FINAL NUMBER** is the specific EAL in that group	
For example: **RG1** - Abnormal **R**ad Levels/Radiological Effluent and a **G**eneral Emergency **SA4** - **S**ystem Malfunction and an **A**lert **HS3** - **H**azards and a **S**ite Area Emergency	

4. Emergency Classification
   Check the box corresponding to current accident classification declared.

5. Emergency Declaration or Emergency Termination
   Enter the **date** and **time** when the current emergency classification was declared (A) or (B) when the emergency was terminated. This will be the actual time of declaration by the Emergency Coordinator, which may be slightly different from the time the (EOF) was notified. The time may be obtained from the official log.

6. Reason for Emergency Declaration
   Enter the Emergency Action Level (EAL) number (A) or (B) enter wording like that found in the EAL information in 0-EPIP-20101, Duties of the Emergency Coordinator. Wording should be brief yet descriptive enough for the off-site agencies to gain an understanding of the event. It should be clear from the incident description which EAL has necessitated the emergency declaration. Wording should be as non-technical as possible with no acronyms or abbreviations. This information should remain the same throughout update messages, unless there is a classification change.

   ** asterisk and instruction provided at the bottom of form - If Emergency Class escalation is necessary due to rapidly degrading conditions, then provide the State and County authorities with the initial notification information by transmitting lines 1-6, at a minimum, on the State Notification Form (SNF) and terminate the call by stating that a new notification form will be provided within 15 minutes.

ATTACHMENT 1B
(Page 3 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

7. Additional Information or Update
Check **None** (A) or (B) Description and enter additional information, if necessary, or reason for update here. For example:

- Protective Action Recommendations (PARs) change
- An occurrence that would otherwise result in a lower emergency classification, on other unit
- Weather changes affecting public safety
- Radiation level changes
- Loss of off-site power, etc.
- Provide current status on any previous events that may have changed i.e., release status

NOTE

If the Class A Model (dose projection model) is being used, a ***State Notification Form Summary Sheet*** *is available which provides information for Items 8-11, 13 and 14. The information is in a format similar to that found on the Florida Nuclear Plant Emergency Notification Form.(Tis is normally refered to as the "pink sheet"*

8. Weather Data

NOTE

If available, ***Primary*** *data should be used.*

Desired Data	Source of the Met Data	
	Primary	Backup
Wind Speed	10m Tower	60m Tower
Wind (from) Direction	10m Tower	60m Tower
Primary Stability Class Indicator (Delta-T)	60m Tower	////////////////////
Alternate Stability Class Indicator (Sigma-Theta)	////////////////////	10m Tower
Ambient Air Temperature	60m Tower	10m Tower/ Airport

A. Wind direction can be obtained from ERDADS.
B. If the wind direction is greater than 360° the wind direction is determined by subtracting 360° from the indicated number. Wind direction should be rounded to the nearest whole number.
C. Wind direction is always given as **wind from** (an easterly wind, or wind direction 90°, means that the wind is blowing from East to West).
D. When determining the sectors affected, the adjacent sectors on both sides of the actual downwind sector are included. Three sectors will typically be listed.
E. If the wind is located on the edge of a sector (i.e., 11°, 33°, etc.) an additional (fourth) sector should be added.
F. Enter the wind direction (wind from) in degrees in item **A**.
G. Enter the downwind sectors in item **B**.

ATTACHMENT 1B
(Page 4 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

Wind From	Sectors Affected	Wind From	Sectors Affected	Wind From	Sectors Affected
348-11	HJK	123-146	PQR	236-258	CDE
11-33	JKL	146-168	QRA	258-281	DEF
33-56	KLM	168-191	RAB	281-303	EFG
56-78	LMN	191-213	ABC	303-326	FGH
78-101	MNP	213-236	BCD	326-348	GHJ
101-123	NPQ	There is no **O** sector		There is no **I** sector	

9. Release Status

A. **IF** as a result of **accident conditions** ANY of the following is true:

- A rise of (approximately) 10 times or one decade above pre-transient values is seen on one of the following accident assessment monitors:
  - Plant Vent (RAD 6304 or R-14)
  - Spent Fuel Pool Vent (RAD 6418)
  - Steam Jet Air Ejector (RAD 6417 or R-15)
  - Dam-1 Main Steam (RAD 6426)
- Radiation Protection detects unplanned elevated airborne radiation levels outside of plant buildings due to accident conditions.
- A Steam Generator, with primary to secondary leakage due to a tube leak or rupture is vented to atmosphere and/or feeding the (operating) steam driven AFW pump.

THEN a RELEASE is in progress, check Box **B**.

IF this determination is made in the Control Room, **THEN** the Release Significance category on the State Notification Form is "Under evaluation" until Dose Assessment is performed.

ATTACHMENT 1B
(Page 5 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

9. (Cont'd)

CAUTION

The proper characterization of release status is critical for offsite decision makers.

B. If a release has occurred as defined in 9A, but stopped, check Box **C** and go to Item 11.

Dose Assessment personnel in the TSC or EOF will have this information. The TSC Chemistry Supervisor, TSC RP Supervisor, or EOF RP Manager should be contacted for the data.

C. If there is no indication of a release of radioactive material, check Box **A** and go to Item 11.

10. Release Significance Category
Do Not Check Any Box in Item 10 if you Checked Box 9 A No Release or if you checked Box 9C has occurred but stopped.

A. If a release is in progress, and dose information is not available at the time of notification, check Box **A** and follow up as soon as information becomes available.

B. Check Box **B** if both noble gas and iodine release rates are within normal operating limits.

C. Check Box **C** if either noble gas or iodine release rates exceed the normal operating limits but forecasted 1 mile doses are less than 500 mrem TEDE and 1000 mrem Thyroid CDE. These doses are less than the State's Protective Action Guide (PAG) levels.

D. Check Box **D** if forecasted 1-mile doses are greater than or equal to either 500 mrem TEDE or 1000 mrem Thyroid CDE. These PAG levels require State and County action.

E. Check Box E if liquid release exceeds ODCM limits.

11. Utility Recommended Protective Actions

A. If there are no Protective Action Recommendations (PARs), check Box **A**.

B. If PARs are necessary, check Box **B**. Two formats are provided to record PARs. Use the **sector** format and determine appropriate PARs using the guidance in Attachment 3 to this procedure. Copy the PARs into Item 11 **B**. Indicate PARs by using only the words NONE, ALL, or ALL REMAINING, or by listing the letters of the sectors affected. Protective Action Recommendations shall be approved by the Emergency Coordinator (EC) or the Recovery Manager (RM). The **zone** format is for Crystal River Unit 3 use only.

ATTACHMENT 1B
(Page 6 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

12. Plant Conditions

Answer the three questions **Yes** or **No** by checking the appropriate box. The RM Ops advisor may be consulted for assistance.

NOTE

Critical Safety function status is available from the Control Room.

A. Is the reactor shut down?
- If the subcriticality safety function is being met, **THEN** check the yes box.

B. Is the core adequately cooled?
- If the core cooling critical safety functions are being met, **THEN** check the yes box.

C. Is the containment intact?
- If the containment critical safety function is being met, **THEN** check the yes box.

D. Is the condition of the core stable or degrading?
- If "B" above is yes, **THEN** check the stable box,

OR
- If "B" above is NO, **THEN** check the degrading box.

13. Weather Data

A. Temperature, wind speed, wind direction and stability class can be obtained from ERDADS.

B. Enter wind speed in Miles Per Hour (MPH) in item **A.**

C. Stability Class - Enter the stability class as determined by ERDADS or by using the figure below. The figure shows the relationship between the Delta T and Sigma-Theta displayed by ERDADS and the stability class.

If using Delta-T, ΔT	If using Sigma-Theta, $\sigma\theta$	Stability Class
$\Delta T \leq -1.7$	$\sigma\theta \geq 22.5$	A
$-1.7 < \Delta T \leq -1.5$	$22.5 > \sigma\theta \geq 17.5$	B
$-1.5 < \Delta T \leq -1.4$	$17.5 > \sigma\theta \geq 12.5$	C
$-1.4 < \Delta T \leq -0.5$	$12.5 > \sigma\theta \geq 7.5$	D
$-0.5 < \Delta T \leq +1.4$	$7.5 > \sigma\theta \geq 3.8$	E
$+1.4 < \Delta T \leq +3.6$	$3.8 > \sigma\theta \geq 2.1$	F
$+3.6 < \Delta T$	$2.1 > \sigma\theta$	G

ATTACHMENT 1B
(Page 7 of 7)

DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

14. Additional Release Information

This section requires that a release be in progress and completed results of dose assessment be available. Check **A** Not Applicable box if no release is occurring and/or if dose information is not available. Otherwise, provide all information that applies.

Projected Dose Information - Enter the projected Thyroid Dose (CDE) in mrem for 1 hour (EPIP-20126, Off-Site Dose Calculation, Line 5) and the projected Total Dose (TEDE) in mrem for 1 hour (EPIP-20126, Off-Site Dose Calculation, Line 16) for the site boundary 2, 5, and 10 miles **B** through **I**.

NOTE

The upper line of Step 15 is:

- *For the approval signature, date and time.*
- *Completed prior to contacting the State Watch Office.*
- *Not read over the phone.*

15. A. Obtain approval of the notification form and document on the upper line.

B. Message Received By

Upon completion of reading the form, enter:

- The name of the State Watch Office Duty Officer or the individual that receives the notification
- Date of the phone call
- Time at the State Watch Office (request it from the Duty Officer)

ATTACHMENT 1C
(Page 1 of 3)

EAL DESCRIPTIONS FOR FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

		General Emergency	Site Area Emergency	Alert	Unusual Event
R – ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT	RADIOLOGICAL EFFLUENT	**RG1** Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.	**RS1** Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.	**RA1** Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 200 Times the ODCM for 15 Minutes or Longer.	**RU1** Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the ODCM for 60 Minutes or Longer.
	ABNORMAL RAD LEVELS			**RA2** Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.	**RU2** UNPLANNED Rise in Plant Radiation Levels.
				RA3 Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Plant Safety Functions.	
C – COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTIONS	RCS LEAKAGE / INVENTORY	**CG1** Loss of RCS Inventory Affecting Fuel Clad Integrity with Containment Challenged.	**CS1** Loss of RCS Inventory Affecting Core Decay Heat Removal Capability.	**CA1** Loss of RCS Inventory.	**CU1** RCS Leakage.
					CU2 UNPLANNED Loss of RCS Inventory.
	AC POWER			**CA3** Loss of All Off-site and All On-site AC Power to Emergency Busses For 15 minutes Or Longer.	**CU3** AC Power Capability To Emergency Busses Reduced to a Single Power Source for 15 Minutes or longer such that Any Additional Single Failure Would Result in Unit Blackout.
	DECAY HEAT			**CA4** Inability to Maintain Plant in Cold Shutdown.	**CU4** UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel
	DC POWER				**CU7** Loss of Required DC Power for 15 Minutes Or Longer.
	CRITICALIT Y				**CU8** Inadvertent Criticality.
	COMM.				**CU6** Loss of All On-site or Off-site Communications Capabilities.

ATTACHMENT 1C
(Page 2 of 3)

EAL DESCRIPTIONS FOR FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

E – EVENTS RELATED TO ISFSI					**E-HU1** Damage to a loaded cask confinement BOUNDARY.
F – FISSION PRODUCT BARRIER		**FG1** Loss of ANY Two Barriers AND Loss or Potential Loss of the third barrier.	**FS1** Loss or Potential Loss of ANY two barriers.	**FA1** ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS.	**FU1** ANY Loss or ANY Potential Loss of Containment.
H – HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY	SECURITY	**HG1** HOSTILE ACTION Resulting in Loss of Physical Control of the Facility.	**HS4** HOSTILE ACTION within the PROTECTED AREA	**HA4** HOSTILE ACTION within the OWNER CONTROLLED AREA or Airborne Attack Threat	**HU4** Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.
	CR EVACUATION		**HS2** Control Room Evacuation Has Been Initiated and Plant Control Cannot be Established.	**HA5** Control Room Evacuation has been Initiated.	
	NATURAL OR MAN-MADE EVENTS			**HA1** Natural or Destructive Phenomena Affecting VITAL AREAS.	**HU1** Natural or Destructive Phenomena Affecting the PROTECTED AREA.
	FIRE / EXPLOSION			**HA2** FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.	**HU2** FIRE Within the PROTECTED AREA Not Extinguished Within 15 Minutes of Detection OR EXPLOSION within the PROTECTED AREA.
	TOXIC / FLAMMABLE GAS			**HA3** Access to a VITAL AREA Is Prohibited Due To Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardize Operation of Systems Required to Maintain Safe Operations or Safely Shutdown the Reactor.	**HU3** Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS.
	DISCRETIONARY	**HG2** Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of General Emergency.	**HS3** Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of Site Area Emergency.	**HA6** Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of an Alert.	**HU5** Other Conditions Existing Which in the Judgment of the Emergency Coordinator Warrant Declaration of a Notification of Unusual Event (NOUE).

ATTACHMENT 1C
(Page 3 of 3)

EAL DESCRIPTIONS FOR FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM

S – SYSTEM MALFUNCTIONS	AC POWER	**SG1** Prolonged Loss of All Off-site and All On-Site AC Power to Emergency Busses.	**SS1** Loss of All Off-site and All On-site AC Power to Emergency Busses for 15 minutes or longer.	**SA5** AC Power Capability To Emergency Busses Reduced To A Single Power Source For 15 Minutes or Longer Such That Any Additional Single Failure Would Result In Unit Blackout.	**SU1** Loss of All Off-site AC Power to Emergency Busses for 15 Minutes or Longer.
	FAILURE OF RX PROTECTION / CRITICALITY	**SG2** Automatic Trip and All Manual Actions Fail to Shutdown the Reactor AND Indication of an Extreme Challenge to the Ability to Cool the Core Exists.	**SS2** Automatic Trip Fails to Shutdown the Reactor AND Manual Actions Taken in the Control Room are NOT Successful in Shutting Down the Reactor.	**SA2** Automatic Trip Fails to Shutdown the Reactor AND the Manual Actions Taken in the Control Room are Successful in Shutting Down the Reactor.	**SU8** Inadvertent Criticality.
	DC POWER		**SS3** Loss of All Vital DC Power for 15 Minutes or Longer.		
	ANNUNCIATORS		**SS6** Inability to Monitor a Significant Transient in Progress.	**SA4** UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room With Either (1) a Significant Transient in Progress, or (2) Compensatory Indicators Unavailable.	**SU3** UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room for 15 Minutes or Longer.
	RCS LEAKAGE				**SU5** RCS Leakage.
	FUEL CLAD				**SU4** Fuel Clad Degradation.
	TECH SPECS				**SU2** Inability to Reach Required Shutdown Within Technical Specification Limits.
	COMM.				**SU6** Loss of All On-site or Off-site Communications Capabilities.

TABLE OF ACRYROMS

TEDE	TOTAL EFFECTIVE DOSE EQUIVALENT
CDE	COMMITTED DOSE EQUIVALENT
RCS	REACTOR COOLANT SYSTEM
AC	ALTERNATING CURRENT
DC	DIRECT CURRENT
ODCM	OFFSITE DOSE CALCULATION MANUAL

ATTACHMENT 2
(Page 1 of 2)

EVENT NOTIFICATION WORKSHEET
NRC FORM 361

SAMPLE

NRC FORM 361 (12-2000) | US NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER

REACTOR PLANT EVENT NOTIFICATION WORKSHEET EN#

NRC OPERATION TELEPHONE NUMBER: PRIMARY - 301-816-5100 OR 800-532-3469*, BACKUPS - [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 AND [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER	CALL BACK #

EVENT TIME & ZONE	EVENT DATE	POWER/MODE BEFORE	POWER/MODE AFTER

	EVENT CLASSIFICATIONS			1-Hr. Non-Emergency 10 CFR 50.72(b)(1)				(v)(A)	Safe S/D Capability	AINA
	GENERAL EMERGENCY	GEN/AAEC		TS Deviation		ADEV		(v)(B)	RHR Capability	AINB
	SITE AREA EMERGENCY	SIT/AAEC		4-Hr. Non-Emergency 10 CFR 50.72(b)(2)				(v)(C)	Control of Rad Release	AINC
	ALERT	ALE/AAEC		(i)	TS Required S/D	ASHU		(v)(D)	Accident Mitigation	AIND
	UNUSUAL EVENT	UNU/AAEC		(iv)(A)	ECCS Discharge to RCS	ACCS		(xii)	Off-site Medical	AMED
	50.72 NON-EMERGENCY	(see next columns)		(iv)(B)	RPS Actuation (scram)	ARPS		(xiii)	Loss Comm/Asmt/Resp	ACOM
	PHYSICAL SECURITY (73.71)	DDDD		(xi)	Off-site Notification	APRE	60-Day Optional 10 CFR 50.73(a)(1)			
	MATERIAL/EXPOSURE	B???		8-Hr. Non-Emergency 10 CFR 50.72(b)(3)				Invalid Specified System Actuation		AINV
	FITNESS FOR DUTY	HFIT		(ii)(A)	Degraded Condition	ADEG	Other Unspecified Requirement (Identity)			
	OTHER UNSPECIFIED REQMT.	(see last column)		(ii)(B)	Unanalyzed Condition	AUNA				NONR
	INFORMATION ONLY	NNF		(iv)(A)	Specified System Actuation	AESF				NONR

DESCRIPTION

Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions or planned, etc. *(Continue on back)*

NOTIFICATIONS	YES	NO	WILL BE			
NRC RESIDENT	☐	☐	☐	ANYTHING UNUSUAL OR NOT UNDERSTOOD?	☐ YES (Explain above)	☐ NO
STATE(s)	☐	☐	☐	DID ALL SYSTEMS FUNCTION AS REQUIRED?	☐ YES	☐ NO (Explain above)
LOCAL	☐	☐	☐			
OTHER GOV AGENCIES	☐	☐	☐	MODE OF OPERATION UNTIL CORRECTED::	ESTIMATED RESTART DATE::	ADDITIONAL INFO ON BACK ☐ YES ☐ NO
MEDIA/PRESS RELEASE	☐	☐	☐			

NRC FORM 361 (12-200)

ATTACHMENT 2
(Page 2 of 2)

EVENT NOTIFICATION WORKSHEET
NRC FORM 361

ADDITIONAL INFORMATION — PAGE 2 OF 2

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS *(specific details/explanations should be covered in event description)*

☐	LIQUID RELEASE	☐	GASEOUS RELEASE	☐	UNPLANNED RELEASE	☐	PLANNED RELEASE	☐	ONGOING	☐	TERMINATED
☐	MONITORED	☐	UNMONITORED	☐	OFF-SITE RELEASE	☐	T.S. EXCEEDED	☐	RM ALARMS	☐	AREAS EVACUATED
☐	PERSONNEL EXPOSED OR CONTAMINATED			☐	OFF-SITE PROTECTIVE ACTIONS RECOMMENDED				*State release path in description		

	Release Rate (Ci/sec)	% T.S. LIMIT	HOO GUIDE	Total Activity (Ci)	% T.S. LIMIT	HOO GUIDE
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 uCi/sec			0.01 Ci
Particulate			1 uCi/sec			1 mCi
Liquid *(excluding tritium and dissolved noble gears)*			10 uCi/min			0.1Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						

	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER
RAD MONITOR READINGS:					
ALARM SETPOINTS:					
% T.S. LIMIT *(If applicable)*					

RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS: *(specific details/explanations should be covered in event description)*

LOCATION OF THE LEAK *(e.g., SG #, valve, pipe, etc)*			
LEAK RATE:	UNITS: gpm/gpd	T.S. LIMITS:	SUDDEN OR LONG TERM DEVELOPMENT:
LEAK START DATE:	TIME:	COOLANT ACTIVITY AND UNITS:	☐ PRIMARY ☐ SECONDARY
LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL:			

EVENT DESCRIPTION *(Continued from front)*

F-443/2:2 – Rev. 0 (1/10/03)

ATTACHMENT 2A
(Page 1 of 2)

DIRECTIONS FOR COMPLETING THE NRC REACTOR PLANT EVENT NOTIFICATION WORKSHEET

A. Contact information - to be completed following contact.

1. Name of the person contacting the NRC or other designated FPL contact.

2. NRC Contacts Name - will be provided upon contact. Also obtain the event number and notification time as received from the HOO (Headquarters Operation Officer) should be recorded on the top of the worksheet.

B. Reactor Plant Event Notification Worksheet, Page 1

NOTE

The "EN #" is provided by the NRC.

1. Notification Time - enter the time contact is made.

2. Facility Organization - enter Turkey Point Nuclear station.

3. Unit - enter the appropriate unit number: Enter "00" for a classification common to both units.

4. Callers Name - enter the name of the person making the call.

5. Call back # - enter the number of the ENS phone that you are calling from and the commercial phone number as which you can be reached.

6. Event time and Zone - enter the military time, the zone will be "EST" for Eastern Standard Time or "EDT" for Eastern Daylight-savings Time.

7. Event Date - enter the date the event is occurring.

8. Power/Mode Before & Power/Mode After - enter the power in percent and the mode number (1-6) before and after the event.

NOTE

Abbreviations/acronyms (e.g., UNU/AAEC, SIT/AAEC, etc.) are for NRC use only.

9. Event Classifications - check one of the four blocks for General Emergency, Site Area Emergency, Alert, or Notification of Unusual Event.

ATTACHMENT 2A
(Page 2 of 2)

DIRECTIONS FOR COMPLETING THE NRC REACTOR PLANT EVENT NOTIFICATION WORKSHEET

B. (Cont'd)

NOTE

No other blocks in the upper half of the form are required.

10. Description - provide a written description of the event.

NOTE

Check the blocks in the lower portion of the form based on current conditions.

11. Mode of operation until corrected - provide if known.

12. Estimate for restart date - enter "unknown".

13. Additional info on Page 2 - enter yes or no.

C. Reactor Plant Event Notification Worksheet, Page 2

1. Fill in as much of the information on the form as is immediately available - do not create undue delay in making the notification. This information can be gained once the open line of communication is established.

D. Approval

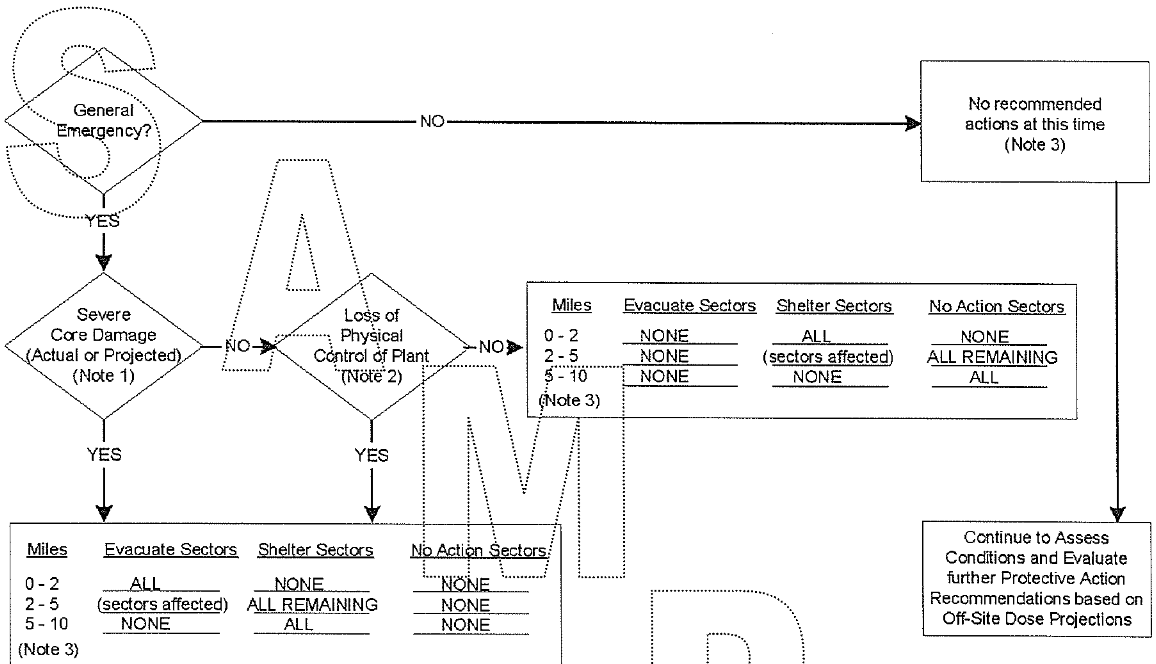
1. Information entered on the worksheet shall be reviewed and approved by the EC or RM (if used in the EOF), prior to transmission.

2. The EC/RM may initial on the worksheet to indicate approval. There is no formal sign-off location on the worksheet.

ATTACHMENT 3
(Page 1 of 5)

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)

BASED ON PLANT CONDITIONS



NOTES:

(1) Severe core damage is indicated by any of the following:
- Loss of critical functions required for core protection (e.g. loss of injection with LOCA)
- High Core temperatures (Valid CET > 700°F)
- CHRRM Reading of greater than or equal to 1.3E4 R/hr

(2) Loss of physical control of Control Room or reactor operating areas required for continued safe plant operation to intruders.

(3) See additional Guidance for Determining PARs in Emergency Plan Implementing Procedures.

ATTACHMENT 3
(Page 2 of 5)

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)

BASED ON MANUAL DOSE CALCULATIONS

<u>RELEASE DURATION LESS THAN 2 HOURS (PUFF RELEASE)</u>

Total Dose TEDE Dose (mRem)	OR	Thyroid Dose CDE (mRem)	0-2 Miles Use 1 Mi. value	2-5 Miles Use 2 Mi. Value	5-10 Miles Use 5 Mi. Value (Beyond 10 miles use this column and the 10 mile dose value.)
< 500 mRem		<1000 mRem	None	None	None
≥ 500 mRem but <1000 mRem		≥ 1000 mRem but <5000 mRem	S(ALL)	S(DW)	S(DW)
≥1000 mRem but <5000 mRem		≥ 5000 mRem but < 25000 mRem	S(ALL)	S(ALL)	S(ALL)
≥ 5000 mRem		≥ 25000 mRem	E(ALL)	E(DW)+S(AR)	E(DW)+S(AR)

<u>RELEASE DURATION GREATER THAN OR EQUAL TO 2 HOURS</u>

Total Dose TEDE Dose (mRem)	OR	Thyroid Dose CDE (mRem)	0-2 Miles Use 1 Mi. value	2-5 Miles Use 2 Mi. Value	5-10 Miles Use 5 Mi. Value (Beyond 10 miles use this column and the 10 mile dose value.)
< 500 mRem		<1000 mRem	None	None	None
≥ 500 mRem but <1000 mRem		≥ 1000 mRem but <5000 mRem	S(ALL)	S(DW)	S(DW)
≥1000 mRem but <5000 mRem		≥ 5000 mRem but < 25000 mRem	E(ALL)	E(DW)+S(AR)	E(DW)+S(AR)
≥ 5000 mRem		≥ 25000 mRem	E(ALL)	E(ALL)	E(DW)+S(AR)

SUMMARY	0 - 2 MI.	2 – 5 MI.	5 – 10 MI.
PARs based on – Plant Conditions			
PARs based on – Total Dose (TEDE)			
PARs based on – Thyroid Dose (CDE)			
Most Conservative PARs based on Plant Conditions and Dose Projections			

<u>LEGEND OF ABBREVIATIONS</u>

S – Sheltering recommended
E – Evacuation recommended
DW – Downwind plus 2 adjoining sectors
AR – All Remaining sectors
ALL – All Sectors

ATTACHMENT 3
(Page 3 of 5)

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)

CAUTION

Previously issued PARs, unless found to be less conservative, are to remain in effect until the source of the threat is clearly under control.

FPL is required to provide county and state governmental authorities with recommendations for protective action to be taken by the public during radiological emergencies at the Turkey Point Nuclear Plant. The responsible authorities are the State Division of Emergency Management (DEM), Miami-Dade County Office of Emergency Management and Monroe County Office of Emergency Management.

Protective Action Recommendations (PARs) should be made utilizing all of the available data. This includes plant status, off-site dose projections, and/or field monitoring data. The more conservative recommendations should be made.

Beginning at the top left side, answer the **General Emergency** question. If yes, continue on, following the arrows, and answering the other question blocks. Record the PARs based on Plant Condition (A) in the Summary Block at the bottom of the page. From the PAR based on Plant Condition's block continue following arrow to next box, and determine PARs based on Off-site Dose Projections (B) Total Dose (TEDE) and Thyroid Dose (CDE). In determining PARs, both plant conditions AND off-site doses must be considered for all PARs. If a release has not occurred, then proceed with issuance of PARs from the plant condition determination.

To determine PARS from off-site doses, find the blocks that correspond with the Total Dose (TEDE) and Thyroid Dose (CDE) at 1, 2 and 5 miles from the Dose Calculation Worksheet (0-EPIP-20126). Follow across to the column that indicates the distance where that dose was found i.e., first block for 1 mile, second block for 2 miles, or third block for 5 miles. (B) Record the PARs based on Off-site Doses in the Summary Block. Once PARs are determined for all mile sectors for both Total Dose (TEDE) and Thyroid Dose (CDE) (B), then a comparison with the Plant Condition PARs (A) is performed, and the most conservative PARs for each mile sector is selected for issuance to off-site agencies.

The following example is provided:

EXAMPLE

A release has occurred at the Turkey Point Plant. The wind direction is from the SSE and the projected off-site accumulated Thyroid Dose (CDE) is 5,000 mRem at 1 mile, 1,000 mRem at 2 miles, and less than 1,000 mRem at 5 miles. The plant is in a General Emergency with CHRRM at 100 R/hr, no core damage indicators, and no loss of physical control of the plant.

ATTACHMENT 3
(Page 4 of 5)

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)

Using the PAR Worksheet, the following recommendations should be made:

Based on our current assessment of all the information now available to use, Florida Power & Light Company recommends that you consider taking the following protective actions.

A. EVACUATE all people between 0 and 2 miles from the plant.

B. SHELTER all people between a 2 and 5 mile radius form the plant who are in Sectors Q, R, and A (refer to Attachment 1).

C. No protective actions is recommended between a 5 and 10 mile radius from the plant.

Due to the large political and legal ramifications of these recommendations and the potential impact on FPL, the following guidelines, format, and content should be used.

(1) If the emergency has not been classified as a GENERAL EMERGENCY and the off-site doses are LESS THAN 500 mRem Total Dose (TEDE) or 1,000 mRem Thyroid Dose (CDE) at 1 mile over the projected duration of the release, no protective action is recommended. When reporting to DEM and other off-site agencies who inquire, this should be reported in a manner similar to the following:

Based on our urgent assessment of all the information now available to us, Florida Power & Light Company recommends that you consider taking the following protective actions - NONE. This recommendation may change in the future, but we cannot now say when it may change or what the change may be.

(2) When available, both plume calculation and off-site monitoring results should be evaluated when making protective action recommendations. If significant discrepancies exist between field monitoring results and plume dispersion calculations, then the discrepancy should be reviewed, and the appropriate value should be selected in the determination of protective action recommendations.

(3) Thyroid Dose (CDE) Limits for PARs are based on adult thyroid. These limits are consistent with EPA Guidelines based on the following criteria:

a. Uncertainty and potential errors associated with age specific parameters, and

b. Level of conservatism in the adult values.

(4) Loss of physical control of the plant to intruders shall be determined by the Emergency Coordinator based on the current operating mode requirements of the unit / plant, and the availability of equipment required for continued safe operation.

ATTACHMENT 3
(Page 5 of 5)

GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)

GUIDANCE FOR THE USE OF POTASSIUM IODIDE (KI) – A THYROID BLOCKING AGENT

1. The EOF RP Manager in consultation with the TSC RP Supervisor will determine the need to dispense Potassium Iodide (KI) based upon a projected or actual thyroid Committed Dose Equivalent (CDE) of greater than or equal to 5 rem. (The thyroid CDE of greater than or equal to 5 rem is based on the FDA recommended threshold for ingestion of KI by pregnant and lactating women).
2. The TSC RP Supervisor and the OSC RP Supervisor will coordinate KI distribution once a decision for use has been determined.
3. The TSC RP Supervisor is responsible for KI distribution to personnel in the Unit 3 and 4 Control Room and the TSC and Field Monitoring Teams and to Security personnel not assigned to the OSC.
4. The OSC RP Supervisor is responsible for distribution in the OSC.
5. KI should be administered and ingested within 2 hours after the determination is made that thyroid CDE is greater than or equal to 5 rem.
6. When KI is issued, thyroid intakes will be estimated by whole body counts.
7. Administering KI after an uptake may limit thyroid CDE depending on time after exposure.
8. Caution emergency response personnel of potential KI side effects if they are allergic to shellfish or iodide. Emergency response personnel who know they have such allergies should be replaced in lieu of directing them to ingest KI.
9. All KI tablets are stored in the RP kits in the Unit 3 and 4 Control Room, TSC, OSC, and Field Monitoring Team Kits.

Facility:	Turkey Point	Task No:	02023013300
Task Title:	Determine Contingency Actions	JPM No:	02023013301
K/A Reference:	2.1.2 SRO 4.4		
Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
Method of testing:			

Simulated Performance	X	Actual Performance	

Classroom	X	Simulator		Plant	

Read to the examinee:

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 was shutdown 12 days ago.
- RCS is depressurized with Temperature is at 105 °F.
- The RCS level on LIS-3-6421 and LIS-3-6423 indicate 50%.
- Unit 3 is in normal electrical alignment. Maintenance is scheduled for the 3H LC.
- 3A Charging Pump is OOS for Maintenance.
- Both Unit 3 HHSI pumps are available and Unit 3 RWST level is 40,000 gallons.

Initiating Cue:

The 3B Charging Pump has just tripped.

You have been directed by the Shift Manager to identify any contingency actions that are required by 0-ADM-051, Outage Risk Assessment and Control.

HAND JPM BRIEFING SHEET TO EXAMINEE AT THIS TIME!

Task Standard:

Examinee correctly identifies that"

- Initiate action to repair the unavailable charging pumps.
- Verify the availability of two HHSI pumps with at least 20,000 gallons in the RWST.
- Take action to maximize RCS inventory.
- Maintain RCS temperature as low as possible.
- Suspend the repair activities on the 3H LC.

Time Critical Task: NO

Validation Time: 20 minutes

Required Materials:

- 0-ADM-051, Outage Risk Assessment and Control (hardcopy)
- Unit 3 Plant Curve Book Section 5 Figure 9 and Figure 12 A (hardcopy)

General References:

- 0-ADM-051, Outage Risk Assessment and Control
- Unit 3 Plant Curve Book

SIMULATOR SETUP

Reset to IC #

N/A

Load Lesson

N/A

Ensure Simulator Operator Checklist is complete

N/A

Denote critical steps with an explanation point (√)

Start Time ________

STEP 1 :	Obtain 0-ADM-051, Outage Risk Assessment and Control. (From the initiating cue.)	SAT UNSAT
Standard:	0-ADM-051, Outage Risk Assessment and Control is obtained.	
Cue	**Give applicant a copy of procedure or require the candidate to obtain the procedure.**	
Comment		
NOTE:		

STEP 2 : √	Identify the correct enclosure of ADM-051 to implement based on plant conditions.		SAT UNSAT
Standard:	Examinee identifies Enclosure 5 as the correct enclosure to implement based on the following: • Phase II is applicable due to the time following unit shutdown given in the initiating cue. • RCS temperature <200°F given • RCS Loops not available.		
Cue			
Comment			
NOTE:	4.12 Phase II 4.12.1 The later stages of an outage in which the decay heat load is reduced and relaxations of Functional equipment requirements are allowed. It is defined as greater than 240 hours following unit shutdown, or start of fuel reload to the reactor vessel as part of a full core offload, whichever occurs first.		
NOTE:	4.13 Reduced Inventory 4.13.1 A condition with fuel in the reactor vessel and the Reactor Coolant System drained down lower than three feet below the vessel flange.		

STEP 3 :	√	Review Enclosure 5 requirements.		SAT UNSAT
Standard:		Examinee reviews Enclosure 5 determines the contingency action required when the 3B Charging Pump trips. • Initiate action to repair the unavailable charging pumps. • Verify the availability of two HHSI pumps with at least 20,000 gallons in the RWST. • Take action to maximize RCS inventory. • Maintain RCS temperature as low as possible. • Suspend the repair activities on the 3H LC.		
Cue				
Comment				
NOTE:				
Terminating Cue:		**The task is complete when the Examinee returns the cue sheet to the examiner.**		**STOP**

Stop Time ________

Verification of Completion

Job Performance Measure No.	02023013301- Determine Contingency Actions
Examinee's Name:	
Examiner's Name:	
Date Performed:	
Facility Evaluator:	
Number of Attempts:	
Time to Complete:	

Question Documentation:

Question:

Response:

Result: Satisfactory/Unsatisfactory

Examiner's signature and date:

JPM BRIEFING SHEET

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 was shutdown 12 days ago.
- RCS is depressurized with Temperature is at 105 °F.
- The RCS level on LIS-3-6421 and LIS-3-6423 indicate 50%.
- Unit 3 is in normal electrical alignment. Maintenance is scheduled for the 3H LC.
- 3A Charging Pump is OOS for Maintenance.
- Both Unit 3 HHSI pumps are available and Unit 3 RWST level is 40,000 gallons.

Initiating Cue:

The 3B Charging Pump has just tripped.

You have been directed by the Shift Manager to identify contingency actions that are required by 0-ADM-051, Outage Risk Assessment and Control.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK AND YOUR CIRCLED ACTIONS, IF ANY, FROM 0-ADM-051 TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

JPM BRIEFING SHEET

The examiner will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

- Unit 3 was shutdown 12 days ago.
- RCS is depressurized with Temperature is at 105 F.
- The RCS level on LIS-3-6421 and LIS-3-6423 indicate 50%.
- Unit 3 is in normal electrical alignment. Maintenance is scheduled for the Hotel Bus.
- 3A Charging Pump is OOS for Maintenance.
- Both Unit 3 HHSI pumps are available and Unit 3 RWST level is 40,000 gallons.

Initiating Cue:

The 3B Charging Pump has just tripped.

You have been directed by the Shift manager to identify contingency actions that are required by 0-ADM-051, Outage Risk Assessment and Control.

Acknowledge to the examiner when you are ready to begin.

<u>HAND THIS PAPER BACK AND YOUR CIRCLED ACTIONS, IF ANY, FROM 0-ADM-051 TO YOUR EVALUATOR WHEN YOU HAVE SATISFACTORILY COMPLETED THE ASSIGNED TASK.</u>

Florida Power & Light Company

Turkey Point Nuclear Plant

This procedure may be affected by a T.C. (Temporary Change) Verify information prior to use.
Date verified_________ Initials_____

0-ADM-051

Title:

Outage Risk Assessment and Control

(Information Use)

Responsible Department:	Operations
Revision Number:	4
Issue Date:	7/25/11
Revision Approval Date:	7/22/11

AR *565731, 589071, 591906,1668955*
PCRs *09-0220, 09-0231, 08-3909, 09-0660, 09-0664, 09-2314, 09-3139, 09-3321, 09-3334, 09-3412, 10-0718, 10-1220*
PC/Ms *94-059, 95-060*

W97:DJT/cls/mr/emc

LIST OF EFFECTIVE PAGES

(Rev. 4)

Page	Revision Date	Page	Revision Date	Page	Revision Date
1	07/22/11	36	07/22/11	71	07/22/11
2	07/22/11	37	07/22/11	72	07/22/11
3	07/22/11	38	07/22/11	73	07/22/11
4	07/22/11	39	07/22/11	74	07/22/11
5	07/22/11	40	07/22/11	75	07/22/11
6	07/22/11	41	07/22/11	76	07/22/11
7	07/22/11	42	07/22/11	77	07/22/11
8	07/22/11	43	07/22/11	78	07/22/11
9	07/22/11	44	07/22/11	79	07/22/11
10	07/22/11	45	07/22/11	80	07/22/11
11	07/22/11	46	07/22/11	81	07/22/11
12	07/22/11	47	07/22/11	82	07/22/11
13	07/22/11	48	07/22/11	83	07/22/11
14	07/22/11	49	07/22/11	84	07/22/11
15	07/22/11	50	07/22/11	85	07/22/11
16	07/22/11	51	07/22/11	86	07/22/11
17	07/22/11	52	07/22/11	87	07/22/11
18	07/22/11	53	07/22/11	88	07/22/11
19	07/22/11	54	07/22/11	89	07/22/11
20	07/22/11	55	07/22/11	90	07/22/11
21	07/22/11	56	07/22/11	91	07/22/11
22	07/22/11	57	07/22/11	92	07/22/11
23	07/22/11	58	07/22/11	93	07/22/11
24	07/22/11	59	07/22/11	94	07/22/11
25	07/22/11	60	07/22/11	95	07/22/11
26	07/22/11	61	07/22/11	96	07/22/11
27	07/22/11	62	07/22/11	97	07/22/11
28	07/22/11	63	07/22/11	98	07/22/11
29	07/22/11	64	07/22/11	99	07/22/11
30	07/22/11	65	07/22/11	100	07/22/11
31	07/22/11	66	07/22/11	101	07/22/11
32	07/22/11	67	07/22/11	102	07/22/11
33	07/22/11	68	07/22/11	103	07/22/11
34	07/22/11	69	07/22/11	104	07/22/11
35	07/22/11	70	07/22/11	105	07/22/11

LIST OF EFFECTIVE PAGES
(Rev. 4)

Page	Revision Date	Page	Revision Date	Page	Revision Date
106	07/22/11	141	07/22/11	176	07/22/11
107	07/22/11	142	07/22/11	177	07/22/11
108	07/22/11	143	07/22/11	178	07/22/11
109	07/22/11	144	07/22/11	179	07/22/11
110	07/22/11	145	07/22/11	180	07/22/11
111	07/22/11	146	07/22/11	181	07/22/11
112	07/22/11	147	07/22/11	182	07/22/11
113	07/22/11	148	07/22/11	183	07/22/11
114	07/22/11	149	07/22/11	184	07/22/11
115	07/22/11	150	07/22/11	185	07/22/11
116	07/22/11	151	07/22/11	186	07/22/11
117	07/22/11	152	07/22/11	187	07/22/11
118	07/22/11	153	07/22/11	188	07/22/11
119	07/22/11	154	07/22/11	189	07/22/11
120	07/22/11	155	07/22/11	190	07/22/11
121	07/22/11	156	07/22/11	191	07/22/11
122	07/22/11	157	07/22/11	192	07/22/11
123	07/22/11	158	07/22/11	193	07/22/11
124	07/22/11	159	07/22/11	194	07/22/11
125	07/22/11	160	07/22/11	195	07/22/11
126	07/22/11	161	07/22/11	196	07/22/11
127	07/22/11	162	07/22/11	197	07/22/11
128	07/22/11	163	07/22/11	198	07/22/11
129	07/22/11	164	07/22/11	199	07/22/11
130	07/22/11	165	07/22/11	200	07/22/11
131	07/22/11	166	07/22/11	201	07/22/11
132	07/22/11	167	07/22/11	202	07/22/11
133	07/22/11	168	07/22/11	203	07/22/11
134	07/22/11	169	07/22/11	204	07/22/11
135	07/22/11	170	07/22/11	205	07/22/11
136	07/22/11	171	07/22/11	206	07/22/11
137	07/22/11	172	07/22/11	207	07/22/11
138	07/22/11	173	07/22/11	208	07/22/11
139	07/22/11	174	07/22/11		
140	07/22/11	175	07/22/11		

W97:DJT/cls/mr/emc

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

1.0 **PURPOSE**

1.1 This procedure provides the recommended equipment to be maintained when in Modes 5, 6 and defueled. The objective is to maintain the following Key Safe Shutdown Functions: Decay Heat Removal, Inventory Control, Power Availability, Reactivity Control, Containment Integrity Control, and Instrumentation.

1.2 This procedure provides a Defense-In-Depth approach for those planned situations and equipment outages that are identified as high risk to maintaining the Key Safe Shutdown Functions. Emergency response by the Operations staff on shift does not require the use of this procedure.

1.3 This procedure provides the method of and direction for notification to the Operations staff on changes to the plant configuration that would affect the Key Safe Shutdown Functions.

1.4 This procedure provides the shutdown risk assessments which shall be performed when planning and conducting shutdown activities. The goal of these reviews and planning is to minimize undue risk and to maintain Key Safe Shutdown Functions thereby enhancing shutdown safety.

1.5 This procedure provides for qualitative assessments to balance unavailability of equipment against reliability of the key Safe Shutdown Functions to meet Maintenance Rule requirements.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References:

2.1.1 FSAR

1. Section 9.3, Appendix 14D, High Density Spent Fuel Storage Racks

2.1.2 Plant Procedures

1. 0-ADM-003, Outage Management
2. 0-ADM-068, Work Week Management
3. 0-ADM-217, Conduct of Infrequently Performed Tests or Evolutions
4. 0-ADM-225, On Line Risk Assessment and Management
5. 0-GMM-051.2, Containment Equipment Hatch
6. 3/4-GOP-305, Hot Standby to Cold Shutdown
7. 3/4-GOP-503, Cold Shutdown to Hot Standby
8. 3/4-ONOP-004, Loss of Off-site Power
9. 3/4-ONOP-004.2, Loss of A 4KV Bus
10. 3/4-ONOP-004.3, Loss of B 4KV Bus
11. 3/4-ONOP-004.4, Loss of C 4KV Bus

2.1.2 (Cont'd)

12. 3/4-ONOP-004.5, Loss of D 4KV Bus
13. 3/4-ONOP-004.10, Loss Of Offsite Power While On Backfeed
14. 3/4-ONOP-004.11, System Restoration Following Loss Of Offsite Power While On Backfeed
15. 3/4-ONOP-004.12, Loss Of *A 4KV Bus While On Backfeed
16. 3/4-ONOP-004.13, Loss Of *B 4KV Bus While On Backfeed
17. 3/4-ONOP-019, Intake Cooling Water Malfunction
18. 3/4-ONOP-030, Component Cooling Water Malfunction
19. 3/4-ONOP-033.1, Spent Fuel Pit Cooling System Malfunction
20. 3/4-ONOP-092.3, Startup Transformer Malfunction
21. 3/4-ONOP-092.4, C Bus Transformer Malfunction
22. 0-ONOP-105, Control Room Evacuation
23. 3/4-OP-038.9, Refueling Activities Checkoff List
24. 3/4-OP-041.8, Filling and Venting the Reactor Coolant System
25. 3/4-OP-041.9, Reduced Inventory Operations
26. 3/4-OP-050, Residual Heat Removal System
27. 3/4-OP-092.1, Main/Auxiliary Transformer Backfeed
28. 3/4-OSP-201.1, RO Daily Logs
29. NP-909, Shutdown Risk
30. AD-AA-101-1004, Work Hour Controls
31. NAP-415, Maintenance Rule Program Administration
32. WM-AA-200, Work Management Process Overview

2.1.3 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management
2. NUREG-1410, Loss of Vital AC Power and RHR During Mid-Loop Operation at Vogtle Unit 1
3. NRC Information Notice 93-72, Observations From Recent Shutdown Risk and Outage Management Pilot Team Inspections
4. JPN-PTN-SEMS-94-049
5. PC/M 94-059, Diesel Engine Driver for Standby Steam Gen Feedwater Pp P82B
6. PC/M 95-060, Blackstart Diesel Generator Elimination
7. JPN-NR 96-009, Dated February 9, 1996
8. PTN-BFSM-97-018, Spent Fuel Pool and Reactor Coolant System Heatup Following Loss of Cooling
9. INPO SER 1-98, Recurring Inadvertent Reductions of RCS Inventory
10. CR 98-127, OEF 98-005 for INPO SER 1-98
11. CR 98-1373, Containment Closure Requirements of 0-ADM-051
12. CR 98-1657, Less than Adequate Compliance with Requirements and Responsibilities Contained in 0-ADM-051.
13. Calculation PTN-BFJF-99-041, Time to Reach Boiling Conditions after a Loss of RHR
14. CR 02-0608, Curves included in this procedure not accurate
15. Evaluation PTN-ENG-SEMS-03-003, Rev. 0
16. L-2003-021, Dated 2/1/03
17. CR 04-1947, Incorrect Volume used in SFP Time to Boil Calculation
18. CR 2006-7472, Loss of Shutdown Cooling During Restoration of 3C 480V Load Center
19. Evaluation PTN-ENG-SEFJ-07-003, Rev 0, Time to Core Uncovery from Mid Loop RCS after EOC with Loss of RHR
20. CR 2006-10277, CA #9, Add a Curve to 0-ADM-051 for Time to Core Uncovery
21. PTN-ENG-SEMS-03-003 Rev. 3, Implementation of Core Offload to 72 hours.
22. PTN-ENG-SENS-07-032, Rev 0, RHR System Operation with the reactor cavity filled and the vessel upper internals in place.

2.1.3 (Cont'd)

23. Engineering Calculation PTN-3FJF-11-153, Rev 0, Turkey Point Unit 3 Spent Fuel Pool Heat Up and Time to 200°F on Loss of Cooling During and After Cycle 25.

24. Engineering Calculation PTN-4FJF-11-154, Rev 0, Turkey Point Unit 4 Spent Fuel Pool Heat Up and Time to 200°F on Loss of Cooling During and After Cycle 26.

25. INPO Event Report, Level 1, 11-2, Fukushima Daiichi Nuclear Station Spent Fuel Pool Loss of Cooling and Makeup, April 25, 2011.

2.2 Records Required

2.2.1 Advanced notification shall be provided to the Shift Manager for Temporary Changes to the system alignments of Key Safe Shutdown Systems/Components when the minimum required equipment of Enclosures 1 through 7 will not be met. This includes scheduled equipment outages of equipment for maintenance or modification.

2.2.2 A log of all active Temporary Change Notices shall be maintained on Forms 368, similar to Attachment 5.

2.2.3 A mark up of plant operating drawings shall be provided to the Shift Manager whenever Temporary Changes are made on Key Safe Shutdown Systems.

2.2.4 Copies of forms similar to Attachments 1 through 21 shall be maintained in an Outage Risk Assessment Notebook. Two copies of this notebook should be provided, one in the Unit 3 and 4 Control Room; and one in the Work Control Center (WCC) or designated Electronic Risk Assessment Notebook folder.

2.2.5 Completed copies of the below listed items constitute Quality Assurance records, they shall be transmitted to QA Records for retention in accordance with the Quality Assurance Records Program requirements:

1. None

2.3 Commitment Documents

2.3.1 NRC Generic Letter 88-017, Loss of Decay Heat Removal, Dated October 17, 1988

2.3.2 L-2001-201, FPL & NRC, Proposed License Amendments; Response to Request for Additional Selective Implementation of Alternate Source Term; Containment Equipment Door Open During Core Alterations, August 30, 2001

3.0 RESPONSIBILITIES

3.1 Work Controls Manager Organization

3.1.1 The Work Controls Manager is responsible for the following:

1. Overall management of the outage organization.
2. Development of Outage Activities such that the interaction with all involved departments and the planning, scheduling, and execution of the outage schedule provides for Defense In Depth throughout the outage.
3. Obtaining Risk Assessment Team review and Plant Manager approval for all schedule changes that may occur before and during the outage when these changes may impact the Key Safe Shutdown Functions as follows:
   a. During the outage, when daily schedule changes affect risk ties (R Logic), obtaining prior approvals as required using a form similar to Attachment 7.
   b. Before the outage, after freeze of the schedule from a risk perspective, when schedule changes affect risk ties (R Logic), obtaining prior approvals as required using a form similar to Attachment 7.
4. Communication of current plant status and Safety System availability to plant personnel during the course of the outage. Higher Risk Evolutions and any Contingency Plans should also be conveyed to all appropriate plant personnel.
   a. This information should be disseminated via a form similar to Enclosure 9 at least once each OCC shift.
5. Ensuring that the schedule is sufficiently detailed to convey the impact on Key Safe Shutdown Equipment availability.
6. Ensuring that activities scheduled during Higher Risk Evolutions are limited and strictly controlled.
7. Establishing an outage overtime policy, in accordance with AD-AA-101-1004, Work Hour Controls, that ensures personnel involved in Higher Risk Evolutions are alert.
8. Scheduling to maximize Key Safe Shutdown System availability.
9. Assigning and tracking corrective action items from the post outage critique.
10. Assigning personnel to be responsible for closure of the equipment and personnel hatches.

3.1.1 (Cont'd)

11. Obtaining a list of outage clearance boundaries which affect equipment related to the operating unit and assessing the risk associated with that effect using PSA Development, or other means as appropriate.

12. Providing a page in the Plan of the Day that identifies upcoming TCNs for both the shutdown unit and the operating unit. This page should also include TSAs and LCOs for both units. (N/A if OCC is utilized)

13. Provide in writing the names if any, of individuals who have been delegated signature authority for the approval of TCNs and Protected Train Work, Attachment 6.

3.1.2 Risk Assessment Team

1. The Risk Assessment Team Leader is responsible for the following:

NOTE

Enclosure 11 should be used as an aid in determining higher risk activities.

a. Reviewing the outage schedule to ensure that Key Safe Shutdown Functions are optimized and that Key Safe Shutdown Equipment availability is being maintained as follows:

(1) Prior to the outage, reviewing the outage schedule for higher risk activities, and ensuring those activities are clearly identified in the schedule (R Logic).

(2) Prior to the outage, ensuring the higher risk activities are properly tied to maximize Defense In Depth.

(3) Prior to the outage, ensuring the outage schedule and higher risk activities are to be developed so as to minimize or eliminate work on protected/operating shutdown cooling equipment.

(4) During the outage, reviewing schedule updates when R Logic risk ties are changed or broken for impact on risk using a form similar to Attachment 7.

b. Reviewing proposed switchyard work to assure that the reliability of the off-site power source is maintained. Go to 0-ADM-216 for Shared Systems and Switchyard Access Controls.

c. Reviewing of all Contingency Plans for Higher Risk Evolutions and for those periods when Defense In Depth as defined in this procedure is not met. Request a discretionary TCN when minimum equipment for defense-in-depth is met; however, heightened awareness and contingencies are needed to permit a higher risk activity.

d. Assigning and tracking Action Items that are required to implement approved Contingency Plans.

3.1.2 (Cont'd)

e. Reviewing the non-outage unit activities and combination of activities that may affect Key Safe Shutdown Functions on the shutdown unit.

f. Conducting a weekly audit of the Outage Risk Assessment Notebook in the Control Room and the Work Control Center.

g. Within 72 hours of the start of a planned outage, review emergent issues of equipment unavailability and ensure TCNs written if required out-of-service equipment will not be returned to service by the planned outage start date.

h. When unavoidable, prior to, and during, the outage, reviewing, approving, and making recommendations to the senior management team for work on protected/operating train using a form similar to Attachment 6.

i. Schedule meetings and assemble risk assessment team members to review the shutdown risk plan prior to the review and approval by senior management. The team members are those delegated by department managers, knowledgeable of the requirements of this procedure and independent from those who developed the risk logic and shutdown risk plan.

2. The Risk Assessment Team is responsible for the following:

a. Reviewing the outage schedule to ensure that Key Safe Shutdown Functions are optimized and that Key Safe Shutdown Equipment availability is being maintained as follows:

1. Prior to the outage, ensuring the higher risk activities are properly tied to maximize Defense In Depth.

2. Prior to the outage, ensuring the outage schedule is developed so as to minimize or eliminate work on protected/operating shutdown cooling equipment.

3. Review proposed switchyard work to assure that the reliability of the off-site power source is maintained.

4. Reviewing of all Contingency Plans for Higher Risk Evolutions and for those periods when Defense In Depth as defined in this procedure is not met.

5. Review the shutdown risk plan to ensure the periods the plant has reduced defenses is kept as short as possible and contingency plans are clearly established.

b. During the outage, attend team meetings to review the outage schedule to ensure the risk profile is maintained in order to maximize availability of key safe shutdown functions. Review revisions to the shutdown safety plan that result from risk significant schedule changes or emergent work when needed.

3.2 Operations Management Organization

3.2.1 The Operations Manager is responsible for the following:

1. Providing the Work Controls organization input and oversight in the development of Outage Activities such that the execution of the outage schedule provides for Defense In Depth throughout the outage.

2. Conducting a post outage critique that assesses the outage from a safety perspective.

3. Ensuring the Risk Assessment Team Chairperson submits an annual report to the Chief Nuclear Officer in accordance with NP-909, Shutdown Risk.

4. Approving the performance of all Higher Risk Evolutions.

5. Assuring that all Operations personnel are cognizant of the configuration of Key Safe Shutdown Systems.

6. Assuring that Operations personnel are knowledgeable of the requirement to operate in a conservative manner when conducting shutdown and infrequent evolutions. Tailboard Meetings should normally be utilized for these evolutions.

7. Supervising activities of the Risk Assessment Team.

8. Requesting Contingency Plans from the System Engineers when the minimum equipment recommendations will not be met.

9. Provide in writing the names if any, of individuals who have been delegated signature authority for the approval of TCNs and Protected Train Work, Attachment 6.

3.2.2 Shift Manager

1. The Shift Manager is responsible for the following:

   a. Maintaining the Minimum Required Equipment configuration as identified in Enclosures 1 through 7.

   b. Assuring that all shift operating personnel are cognizant of the current plant configuration, Key Safe Shutdown Equipment availability, Contingency Plans in affect, and times to core boiling.

   c. Maintaining control of plant switchyard access.

   d. Assuring compliance with plant Technical Specifications.

   e. Ensuring that the Control Room copy of the Outage Risk Assessment Notebook is being properly maintained.

   f. Ensuring that Key Safe Shutdown System availability is maximized and that equipment outages are kept to minimum duration. Ensure all required conditions are met to consider a shutdown safety system available when a system work window is closed.

3.2.1 (Cont'd)

g. Controlling activities on Containment penetrations to be able to close all open penetrations in the event of a loss of RHR cooling in accordance with Enclosure 13. [Commitment Step 2.3.1]

h. Shut down cooling and plant control. Control Room evacuation may be necessary at any time. Procedure 0-ONOP-105, Control Room Evacuation, is written for the plant initially in Mode 1, 2, 3. When one or both units are in Mode 4, 5, or 6 only those steps to restore shutdown cooling and stabilize the plant systems after evacuation are necessary.

NOTE

Enclosure 12 may be used as an aid in determining component availability.

i. When the availability of a component is in question, assessing component availability.

j. Ensure protected equipment signs are installed and removed, as required, when entering/exiting Enclosures 1 through 7, in accordance with Attachments 8 through 21 as applicable.

k. **IF** the outage unit experiences an unplanned entry into orange or red risk, **THEN** refer to 0-ADM-216 and re-evaluate the need to suspend work in the Switchyard.

3.2.3 Shift Technical Advisor (STA)

1. Each on-shift STA is responsible for the following:

a. Review plant status and provide Attachment 4 to Work Controls for update of Risk Status of the POD.

b. Review plant status to identify the color code of safe shutdown functions and update the Risk Assessment Notebooks.

c. Look ahead on the schedule for planned changes in risk and planned changes in the applicable enclosure. Update and distribute Attachment 4 at the time of the planned change.

3.3 Engineering Manager Organization

3.3.1 Engineering Manager

1. The Engineering Manager is responsible for the following:

a. Assuring that appropriate department personnel are well informed of Higher Risk Evolutions and reduced safe shutdown equipment availability.

b. Reviewing all Contingency Plans for Higher Risk Evolutions.

3.3.1 (Cont'd)

c. Conducting a weekly audit of the Outage Risk Assessment Notebook in the Control Room and the WCC.

d. Provide in writing the names if any, of individuals who have been delegated signature authority for the approval of TCNs and Protected Train Work, Attachment 6.

3.3.2 System Engineer

1. Each plant System Engineer whose system is associated with the minimum Required Equipment is responsible for the following:

   a. Notifying the Shift Manager in writing of all Temporary Changes in configuration to Key Safe Shutdown Equipment.

   b. Providing evaluations as required by the Risk Assessment Team.

   c. Taking the lead in resolution of problems and conflicts pertaining to maintaining an acceptable configuration of their system.

   d. Performing a periodic (minimum of weekly) walkdowns to verify system configuration and condition prior to Higher Risk Evolutions and prior to update of the Outage Risk Assessment Notebook.

   e. Developing Contingency Plans as requested by the Work Controls Manager or the Shift Manager. These plans shall be documented on a form similar to Attachment 2 and filed in the Outage Risk Assessment Notebooks.

   f. Ensuring that personnel involved with Contingency Plans have been identified and are familiar with the plan.

   g. Ensuring the inclusion of contingency plan actions are incorporated into PWOs as necessary and presenting these plans to the Risk Assessment Team.

   h. Ensuring that work plans for their system minimize equipment unavailability to the maximum extent practical.

   i. Ensuring that the Defense In Depth concept is maintained for their system.

   j. Checking EOOS Book and equipment clearances for the systems they are responsible for.

   k. Removal of Temporary Change Notices from the Outage Risk Assessment Notebook in the Control Room and the WCC when they no longer are applicable. Temporary Change Notices shall be retained for the post outage critique.

   l. Performing a qualitative assessment of total equipment out of service when preparing a Temporary Change Notice. The assessment compares unavailability of equipment versus reliability of maintaining the Key Safe Shutdown Functions.

3.4 Training Manager Organization

3.4.1 Training Manager

1. The Training Manager is responsible for the following:

   a. Providing training briefs, special training, etc., as required to support Operations and Maintenance in Higher Risk Evolutions. This training should emphasize maintenance of the Key Safe Shutdown Functions and Equipment.

   b. Ensuring that operator training provides knowledge of the Key Safe Shutdown Functions.

3.5 Maintenance Manager

3.5.1 The Maintenance Manager is responsible for the following:

1. Ensuring that resources are allocated in such a fashion as to minimize the duration of unavailability of Key Safe Shutdown Equipment.

2. Controlling and pre-approving all overtime for personnel involved in work that could affect Key Safe Shutdown Functions.

3. Ensuring that material, documentation, and tooling for work being performed during Higher Risk Evolutions is pre-staged in order to minimize the duration of the evolution.

4. Ensuring that equipment is promptly returned to Operations on the completion of maintenance activities.

5. Ensuring that applicable maintenance personnel and any temporary contractors are adequately trained and knowledgeable of activities that could affect Key Safe Shutdown Functions and that controls are adequate to ensure that work activities do not affect in-service equipment.

6. Ensuring that emergent outage work added to the schedule per 0-ADM-003, OUTAGE MANAGEMENT, is reviewed for impact on the Key Safe Shutdown Functions.

7. Provide and maintain personnel at the equipment hatch and airlocks of the containment building to be able to close the equipment hatch with a minimum of 4 bolts, and the personnel hatch as follows: (Ref. Plant procedure 0-GMM-051.2, Containment Equipment Hatch.)

   a. In accordance with Enclosure 13.

   b. Provide for the potential unavailability of AC power and the environmental conditions expected.

8. Assigning personnel to monitor the number of lines and hoses that block closure of the containment hatch and airlocks and assuring quick disconnect devices are utilized.

4.0 DEFINITIONS

4.1 Available

NOTE

Enclosure 12 may be used as an aid in determining component availability.

4.1.1 The status of a system, required support systems, structure or component that is in service or can be placed in service in a Functional or Operable state by immediate manual, local-manual, or automatic action.

4.2 Containment Closure

4.2.1 The action to secure containment and its associated structures, systems, and components as a Functional barrier to fission product release.

4.3 Contingency Plan

4.3.1 An approved plan of compensatory actions or measures:

1. To maintain Defense In Depth by alternate means when pre-outage planning reveals that specified systems, structures, or components will not be available, or have significant potential to be lost.
2. To restore Defense In Depth when planned system, structure, or component availability drops below the planned level.
3. To minimize the likelihood of loss of Key Safe Shutdown Functions during Higher Risk Evolutions.

4.4 Decay Heat Removal Capability

4.4.1 The ability to maintain Reactor Coolant System temperature and pressure, and Spent Fuel Pool (SFP) temperature below the specified limits following plant shutdown.

4.5 Defense In Depth

4.5.1 For the purpose of managing risk during unit shutdown, Defense In Depth is the concept of:

1. Providing systems, structures and components to ensure backup of Key Safe Shutdown Functions using redundant, alternate or diverse methods;

2. Planning and scheduling outage activities in a manner that optimizes safety system availability;

3. Providing administrative controls and Contingency Plans that support and/or supplement the above elements.

4.6 Functional

4.6.1 A system, and required support systems, or component is capable of performing the function for which it is intended to be used for to maintain the Key Safe Shutdown Function. The component or system may not have all of its associated support equipment available and temporary supporting systems may be used.

4.7 Higher Risk Evolutions

4.7.1 Outage activities, plant configurations or conditions during shutdown where the plant is more susceptible to an event causing the loss of a Key Safe Shutdown Function. These are defined as activities that can affect the minimum required equipment of Enclosures 1 through 7.

4.8 Key Safe Shutdown Function

4.8.1 Decay heat removal, inventory control, on-site and off-site power availability, reactivity control, Containment Closure, and shutdown monitoring instrumentation.

4.9 Key Safe Shutdown Systems

4.9.1 Those systems, and required support systems, necessary to maintain the plant in a safe condition while in cold or refueling shutdown conditions. This includes systems necessary to maintain spent fuel cooling, Decay Heat Removal Capability, inventory control, off-site and on-site power capability, reactivity control, and containment integrity instrumentation.

4.10 Partial Draindown

4.10.1 The Reactor Coolant System level is lower than 10 percent in the Pressurizer.

4.11 Phase I

4.11.1 The initial portion of an outage in which the decay heat load is high and additional equipment is maintained Functional. This provides for a better Defense In Depth. It is defined as the first 240 hours following unit shutdown or completion of fuel offload to the Spent Fuel Pit, whichever occurs first.

4.12 Phase II

4.12.1 The later stages of an outage in which the decay heat load is reduced and relaxations of Functional equipment requirements are allowed. It is defined as greater than 240 hours following unit shutdown, or start of fuel reload to the reactor vessel as part of a full core offload, whichever occurs first.

4.13 Reduced Inventory

4.13.1 A condition with fuel in the reactor vessel and the Reactor Coolant System drained down lower than three feet below the vessel flange.

4.14 Probabilistic Safety Assessment (PSA):

4.14.1 An organized methodology for determining and establishing the likelihood of what combination of system and component failures will lead to a catastrophic event resulting in undue risk to the public. Probabilistic Safety Assessments are performed in the Risk and Reliability Assessment Group (RRAG).

4.15 Risk Assessment Team

4.15.1 A team whose charter is to review the outage plan, revisions to the outage plan and Higher Risk Activities to ensure that Key Safe Shutdown Functions are being maintained at the highest practical levels. The Team is composed of managers or senior designees from the following departments:

- Work Controls
- Operations Department
- Maintenance Department
- Engineering Department
- Site Licensing
- On-Line Scheduling Supervisor
- RRAG (Juno Beach via Telcon)

4.15.2 The chairperson is appointed by the Operations Manager. The chairman determines the minimum quorum required to hold a meeting. This determination considers the subject matter to be reviewed and may include additional experts brought in to review specific items.

4.15.3 The Chairperson is responsible for submitting an annual report to the Chief Nuclear Officer in accordance with NP-909, Shutdown Risk.

4.16 Risk Significant Support Equipment

4.16.1 The term applied to equipment necessary to support Key Safe Shutdown Equipment Functions.

4.16.2 This equipment may affect the opposite unit if it is operating.

4.17 Tailboard Meeting

4.17.1 The common term applied to a pre-job briefing held with the personnel involved in an evolution.

4.18 Temporary Change

4.18.1 A change to the system, and required support systems, alignments of the Key Safe Shutdown Systems when this change results in the following condition:

1. The minimum equipment requirements of Enclosures 1 through 7 not being met. This includes equipment outages for maintenance, testing, or modifications.

4.19 Safe Shutdown Function Color Code

4.19.1 Each Safe Shutdown Function is assigned a color code based on the decrease of our defense in depth as noted on Enclosures 1 through 7. A reduction in equipment availability is graded on a critical function that is supported by that equipment, a color code is assigned.

4.19.2 Each key safe shutdown function shall be assigned with a color code based on the equipment available to support that function. Although it may be acceptable to issue a TCN to cover a condition where reduced equipment is available, color coding of key safe shutdown functions is completed on an absolute basis.

4.19.3 Color coding is completed on a daily basis for the following key safe shutdown functions, systems, and support equipment:

1. Decay Heat Removal
2. Inventory Control
3. Power Availability
4. Containment Integrity
5. Instrumentation
6. Risk Significant Equipment
7. SFP Cooling

4.19.4 As part of the daily outage meeting discussion of Outage Risk Assessment, identification of plant conditions and defense in depth plans will be related to a color code based on effect on safe shutdown function equipment status.

4.20 Color Code Definitions

GREEN: Acceptable levels of performance of key safe shutdown functions are being maintained. There is no adverse affect on outage risk.

WHITE: Acceptable levels of performance of key safe shutdown functions are being maintained. Shutdown monitoring instrumentation is less than listed in the required equipment column; however, our defense-in-depth strategy is not compromised.

YELLOW: A degradation of a key safe shutdown function has occurred. The level of degradation may affect our defense in depth strategy. Heightened awareness is desired for this condition. Additional degrees of defense remain and operation at this condition is acceptable considering the risk and scheduler considerations.

ORANGE: A significant degradation of a key safe shutdown function has occurred. Our defense in depth strategy has been compromised. Heightened management awareness is required for the duration of the configuration.

RED: All barriers of our defense in depth strategy have been broken. Equipment is in an unacceptable condition. All efforts are to be focused on the restoration.

5.0 PROCEDURE

NOTE

In the event of Control Room evacuation during refueling activities, 0-ONOP-105, Control Room Evacuation, shall be followed in accordance with notations addressing unit mode (see note prior to Section 4.0 in 0-ONOP-105, Control Room Evacuation, for example).

5.1 General Precautions and Instructions

5.1.1 The following items are general precautions and limitations that should be observed when operating either unit in a shutdown condition:

1. The figures and notes provided by this procedure in the Outage Risk Assessment Notebook are not to be used by Operations or any other plant personnel in lieu of controlled plant procedures, design documents and Technical Specifications. The purpose of this information is to provide adequate information to assist Operations in recognizing and responding to abnormal configurations that may impact the Key Safe Shutdown Functions and Equipment. They may be used also as a guideline for outage planning.

CAUTION

The RCS loops can not be considered a valid coolant loop once RCS pressure has been decreased below 100 psig until Substep 5.1.1.2 has been completed.

2. The RCS loops shall not be considered filled per Tech Spec 3.4.1.4.1 unless the following conditions are met:

   a. The RCS has been filled and vented with no intervening evolutions that could introduce air into the steam generators (e.g., RCS level has remained above the reactor vessel nozzles)

   AND

   b. The RCS is pressurized (either water solid or with a pressurizer steam bubble) and above 100 psig.

   AND

   c. At least two steam generators are filled to greater than 10 percent Narrow Range Level.

3. Entering a Reduced Inventory condition shall be prior approved by the Operations Manager and Plant Manager.

5.1.1 (Cont'd)

4. The activities described herein need only be performed for those systems required to maintain the Key Safe Shutdown Functions. Activities described that impact Spent Fuel Pool cooling need only be performed for the first 100 days after unit shutdown for refueling.

5. To support Spent Fuel Pool Cooling heat removal system the following systems shall be monitored and supported by their individual System Engineers:

   a. Spent Fuel Pool Cooling (SFP Cooling)

   b. Spent Fuel Storage System (SFP Storage)

   c. Component Cooling Water System (CCW)

   d. Intake Cooling Water System (ICW)

   e. Emergency Diesel Generators (EDG)

   f. Spent Fuel Building Ventilation (SFP HVAC)

   g. On-site and Off-site Power Availability Functions (ref. Substep 5.1.1.8).

      (1) When the Reactor is defueled, System Engineers shall monitor the requirements of Enclosure 7 for On-site **AND** Off-site Power.

6. To support the Decay Heat Removal Capability function the following systems shall be monitored and supported by their individual System Engineers.

   a. Residual Heat Removal (RHR)

   b. Steam Generator (SG)

   c. Reactor Coolant System (RCS)

   d. Component Cooling Water (CCW)

   e. Intake Cooling Water (ICW)

   f. Chemical and Volume Control System (CVCS)

   g. Safety Injection and RWST (SI)

   h. Spent Fuel Pool Cooling (SFP Cooling) - See Substep 5.1.1.4.

   i. On-site and Off-site Power Availability Functions (ref. Substep 5.1.1.8).

      (1) When the Reactor is defueled, System Engineers shall monitor the requirements of Enclosure 7 for On-site **AND** Off-site Power and Decay Heat Removal.

5.1.1 (Cont'd)

7. To support the Inventory control capability function the following systems shall be monitored and supported by their individual System Engineers:

   a. Chemical and Volume Control System (CVCS)

   b. Primary Water System (PW)

   c. CVCS Boric Acid Storage System (BAST)

   d. Safety Injection and RWST (SI)

   e. Reactor Coolant System (RCS)

   f. Residual Heat Removal (RHR)

8. To support the On-site and Off-site Power Availability Function the following systems shall be monitored and supported by their individual System Engineers:

   a. Switchyard (SWYD)

   b. Startup Transformer (SU)

   c. Main and Aux Transformer (MAIN & AUX XFMR)

   d. C Bus Transformer (C BUS XFMR)

   e. 4160 Volt Busses, including Station Blackout Tie (4KV Dist)

   f. Emergency Diesel Generators (EDG)

   g. 480 Volt Distribution (480V Dist)

   h. 125 Volt DC System (125VDC Dist)

   i. 120 Volt Vital AC System (120VAC Dist)

9. To support the Reactivity Control Function the following systems shall be monitored and supported by their individual System Engineers:

   a. Rod Control System (CRDM)

   b. Chemical and Volume Control System (CVCS)

   c. CVCS Boric Acid Storage System (BAST)

5.1.1.9 (Cont'd)

d. Primary Water System (PW)

e. Safety Injection and RWST (SI)

f. Reactor Coolant System (RCS)

g. Residual Heat Removal (RHR)

h. Steam Generator System (SG)

10. To support the Shutdown Monitoring Instrumentation Function the following systems and components shall be monitored and supported by their individual System/Component Engineers:

a. Nuclear Instrumentation (NIS)

b. Area Radiation Monitoring System (ARMS)

c. Process Radiation Monitoring System (PRMS)

d. Core Exit Thermocouples (CET)

e. Reactor Vessel Level System (QSPDS HJTC)

f. RCS Draindown Level System (RCSDDLIS)

g. Containment Water Level System (Wide Range)

h. Containment Sump level Systems (Narrow Range and Pneumatic)

i. Pressurizer Level System (PZR LVL)

j. RCS Pressure Instrumentation (RCS PRES)

k. RCS Wide Range Temperature Instrument (RCS TEMP)

l. OMS Actuation circuits (OMS)

m. RCS Pressure Control Instruments (RCS PRES CONT)

n. Fire Detection Instrumentation (FIRE DET)

o. Containment Pressure System

5.1.1 (Cont'd)

11. To support Fire Protection Systems the following systems shall be monitored by their individual System Engineers:

    a. Raw Water Storage Tanks (RWT)

    b. Fire Water pumps and Water Distribution Systems (FIRE DIST)

    c. Automatic and Manual Deluge Systems (FIRE SUPPRESSION)

    d. Halon Systems (HALON SYS)

    e. Fire Extinguishers (FIRE EXT)

    f. Fire Detection Systems (FIRE DET)

    g. Fire Barriers and Doors (FIRE BARRIERS)

12. To support Risk Significant Support Equipment, the following systems and components shall be monitored and supported by their individual System Engineers/Component Engineers:

    a. Auxiliary Building HVAC

    b. Instrument Air

    c. DC Equipment Room HVAC

    d. Service Water

    e. Load Center/Switchgear Room HVAC

13. Refueling outages are performed with some consistency of activities. Enclosure 8 contains a typical refueling outage overview. Also shown is the relationship of the outage chronology to the specific enclosures of this procedure.

14. When the unit is depressurized in Enclosure 2 of the outage, work should not be permitted on the Units 3 and 4 side of the switchyard or in the Cable Spreading Room Generator Lockout Panels until the water level in the refueling cavity is 23 feet or greater than the Reactor Vessel Flange. If work is required during this time, Attachment 6 must be completed.

15. In Enclosure 5, work should not be permitted on the Unit 3 and 4 side of the switchyard or in the Cable Spreading Room Generator Lockout Panels until water level is ≥10% in the pressurizer following reactor head installation. If work is required during this time, Attachment 6 must be completed.

5.1.1 (Cont'd)

16. When restoring power to the Startup Transformer from a backfeed alignment, work (restoration) should not be permitted until the refueling cavity is greater than or equal to 23 ft above the reactor vessel flange, and the core is reloaded to avoid challenging SFP cooling with the core offloaded unless an alternate means of SFP cooling is available.

17. During Enclosures 2 and 5, the secondary side of at least two steam generator levels should be maintained above 10% NR to support reflux cooling in the event of a loss of RHR.

18. The alternate RHR flow path through MOV-*-872 should be maintained available during Enclosures 1, 2, 5, and 6 to provide additional defense in depth and support the contingencies used in off normal operating procedures.

19. When entering a Partial Draindown condition the following shall apply:

    a. During Phase 1 of an outage, both Emergency Diesel Generators on the affected unit shall remain available until the water level in the refueling cavity is 23 feet or greater than the Reactor Vessel Flange.

    b. Two RHR, two CCW, and two ICW pumps shall remain available until the water level in the refueling cavity is 23 feet or greater than the Reactor Vessel Flange.

    c. The RCS vent path shall be at least the area equivalent to the removal of a pressurizer safety.

    d. At least 2 CETs shall be available. CETs may be rendered unavailable when reactor vessel head detensioning has commenced.

20. It is permissible for only one train of RHR to be operable and in operation in Mode 6 with the refueling cavity flooded to greater than or equal to 23 feet, without regard to whether the reactor vessel upper internals assembly is in place or removed provided the reactor has been subcritical for at least 72 hours. (Ref: PTN-ENG-SENS-07-032)

5.1.1 (Cont'd)

21. Hoses and equipment which prevents closure of the equipment hatch and personnel airlock doors should be kept to a minimum when fuel is in the reactor vessel.

    a. The Work Controls Manager shall assign personnel to periodically monitor the number of lines.

    b. Lines and hoses should be equipped with quick disconnects at the hatch or airlock.

    c. When large equipment is fouling the hatches a specific plan shall be in place to clear the hatch in the event Containment Closure needs to be established. The equipment hatch (with a minimum of four bolts) and the personnel hatch shall be capable of closure following a loss of RHR cooling as follows:

        (1) In accordance with Enclosure 13.

        (2) Figures 1, 2 and 3 provide RCS heat-up rate information for planning purposes. Personnel required should be in place and dressed out, but may be assigned other duties that would not interfere with their ability to close the hatch.

        (3) The capability for containment closure includes provisions for unavailability of AC power, and the environmental conditions expected.

        (4) Activities which would prevent equipment hatch closure within the required time, will be included in the R-logic to ensure the ability to meet containment closure is maintained.

22. At least one process valve in each penetration that is NOT pressurized should be kept closed or capable of being closed whenever fuel is in the Reactor Vessel. Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.

    a. If an exception is taken, and at least one valve in the penetration is capable of closure either manually from the Control Room or locally, the penetration shall be logged on a form similar to Attachment 3. The log entry shall identify the actions necessary to close the penetration.

    b. If an exception is taken, and the penetration is NOT capable of being closed by at least one valve, a TCN with a contingency plan to achieve closure is required PRIOR to authorizing work on the penetration.

    c. If an exception is taken while RCS level is lower than 3 feet below the vessel flange, and the penetration is NOT capable of being closed by at least one valve, a TCN with a contingency plan to achieve closure and meet 20 psi containment pressure is required PRIOR to authorizing work on the penetration. [Commitment Step – 2.3.1]

5.1.1 (Cont'd)

23. **IF** the Containment Equipment Hatch is maintained open, **THEN** the individual responsible for Fast Closure of the Equipment Hatch shall sign Part B of Attachment 3 . The Equipment Hatch is required to be closed and held in place with a minimum of four bolts upon direction from the Shift Manager as follows: [Commitment Step 2.3.1]

    a. In accordance with Enclosure 13.

    b. The capability for containment closure includes provisions for unavailability of AC power, and the environmental conditions expected.

24. **IF** the Personnel Airlock Door is maintained open, **THEN** the individual responsible to close at least one Containment Personnel Airlock Door shall sign Part C of Attachment 3. This individual is required to close at least one airlock door if directed by the Shift Manager in accordance with Enclosure 13. [Commitment Step 2.3.1]

25. For U3 Cycle 22 Offload during U3RF023, Engineering concurrence is required prior to commencing full core offload (minimum 72 hrs after shutdown) to the spent fuel pool. Once fuel unload to the SFP has commenced, unload SHALL be suspended if Spent Fuel Pool temperature is greater than or equal to 145°F.

    For Unit 4, a minimum of 72 hours after shutdown is required prior to commencing full core offload to the Spent Fuel Pool. Engineering concurrence should be obtained prior to commencing full core offload to the spent fuel pool based on actual core power history, canal temperature etc. Additionally, there is an administrative limit of ≤ 140°F SFP temperature for fuel offload to occur.

26. ANYTIME the Reactor Coolant System is to be drained to less than 70% Pressurizer Level (Cold Cal. LT-*-462) INSTALL a Reactor Vessel Head Vent path **AND** a Pressurizer Vessel Vent path using *-OP-041.7, Draining the Reactor Coolant System, Subsection 5.1.
    (Refer to Substeps 2.1.3.10 and 2.1.3.11.)

27. If the Reactor Coolant System is to be drained lower than 3 feet below the Reactor Vessel Flange with fuel in the reactor vessel, the following requirements are applicable: [Commitment Step – 2.3.1]

    a. All prerequisites are met in accordance with 3 (4)-OP-041.9, Reduced Inventory Operations.

    b. Two CETs are in operation with continuous Control Room read out if the reactor head is on the flange.

    c. Both RCS level indications are available in the Control Room with continuous readout and the level hose is in service with an operator stationed locally in containment or monitoring from the Control Room via a camera and monitor with an Uninterruptible Power Supply (UPS).

5.1.1.27 (Cont'd)

d. Containment Closure will meet the requirements listed in the Precautions and Limitations of 3 (4)-OP-041.9, Reduced Inventory Operations.

e. One train of RHR in service and the other train of RHR operable.

f. 0-ADM-217, Conduct of Infrequently Performed Tests or Evolutions, Brief

g. Sufficient, non-hand held lighting available on L1-3-6422.

h. 2 of 4 Source Range NI with one audible count rate.

28. The requirements of Enclosures 1 through 7 are verified shiftly using 3/4-OSP-201.1, RO Daily Logs. If revisions are made to Enclosures 1 through 7, then 3/4-OSP-201.1 should be reviewed to determine if it also needs to be revised.

29. During A **OR** B 4kv Bus outages, grounds may be installed at *AC13 cubicle. The following requirements must be satisfied:

a. The specific steps for removal of grounds, and restoration of the *AC13 cubicle shall be provided in the associated A **OR** B 4kv Bus TCN.

b. The time that grounds are installed should be minimized.

5.2 Advanced Notification of Temporary Changes

5.2.1 The System Engineer should communicate and interact with cognizant and responsible Projects Supervisor, Operations, Maintenance, and Scheduling personnel to determine those upcoming (24 hours to 7 Days) activities which may effect the configuration of systems included in this procedure.

5.2.2 When the minimum equipment requirements of Enclosures 1 through 7 will not be met and results in a yellow, orange, or red risk color, or a discretionary TCN is requested by the Risk Assessment Team, the System Engineer shall complete a Temporary Change Notification along with a markup of applicable plant operating drawings. This notice shall also address any special notes, precautions, training briefs, procedural references, or Contingency Plans as necessary to adequately address the proposed change and maintain the Defense In Depth approach.

5.2.3 The System Engineer shall review the Temporary Change Notice with the Shift Manager to determine if sufficient detail is provided to adequately control the change and to inform the operations staff of the change.

5.2.4 The Shift Manager shall approve the change in plant status.

5.2.5 Temporary change notifications shall be approved/accepted by Plant Management as defined by the scope of the change. If a department is unaffected by the temporary change, it is acceptable to mark N/A on their respective signature line.

5.2.6 A Risk Assessment Team Member shall update the Outage Risk Assessment Notebook in the Control Room and the Work Control Center.

5.2.7 The Shift Manager is responsible through the shift turnover process to notify the oncoming shift of all new Temporary Changes received since the last time they stood shift.

5.2.8 A Risk Assessment Team Member shall notify the Shift Manager and revise the Outage Risk Assessment Notebook to reflect restoration of all Temporary Changes. This should be done within one working day of restoration. The Temporary Change Notice shall be removed from the Outage Risk Assessment Notebook in the Control Room and the WCC and a copy be retained for the post outage critique.

5.2.9 Emergent evolutions shall be performed as directed by the Shift Manager with follow up RSSC forms or TCNs, if required, completed and recorded in the Outage Risk Assessment Notebook in the Control Room and the WCC within 72 hours.

5.2.10 The Temporary Change Notice shall include a qualitative or quantitative (PSA Evaluation) of the total equipment that is out of service during the evolution. Equipment unavailability should be assessed against the reliability of maintaining the Key Safe Shutdown Functions.

5.2.11 The TCN will include recovery guidelines and procedure mark-ups, if applicable, to any off normal response procedure designed to mitigate the loss of a key safe shutdown function that is challenged by the system or equipment configuration. (Ref SOER 09-01)

5.3 <u>Outage Schedule Risk Assessment</u>

5.3.1 During development of the outage schedule, the Work Controls Manager shall perform the following activities:

1. Using input from Operations, Higher Risk Evolutions shall be identified.
2. Key Safe Shutdown Equipment maintenance windows should be kept to a minimum practical duration.
3. Obtain Risk Assessment Team review of the schedule.
4. Ensure that activities scheduled during Higher Risk Evolutions are kept to a minimum.
5. Establish the outage work schedules.

5.3.1 (Cont'd)

6. Obtain a thorough independent review of the schedule with emphasis on maintaining Key Safe Shutdown Functions.

7. Ensure that the schedule is distributed to all plant personnel who are required to perform or support activities in the schedule.

8. Identify activities that could result in open containment penetrations with fuel in the Reactor Vessel.

9. When it is determined that work on the protected/operating train is unavoidable, ensuring that prior approval is obtained using a form similar to Attachment 6.

5.3.2 During the outage the Work Controls Manager/OCC Outage Manager shall perform the following risk assessment activities:

1. Obtain prior risk review and prior approval as required for schedule changes that affect the Key Safe Shutdown Functions (R Logic) using a form similar to Attachment 7.

2. Risk Assessment Team meetings should be held at least weekly.

3. Contingency Plans for Higher Risk Evolutions shall be communicated to appropriate plant personnel.

4. Unavailability of Key Safe Shutdown Equipment shall be conveyed to appropriate plant personnel. An individual responsible for returning the equipment to Available status should normally be assigned. Means which should be used to communicate status include any of the following:

   a. Plant television monitors

   b. The Plan of the Day

   c. Weekly site newsletter

   d. Outage Communications Tool (see Enclosure 9)

5. The Work Controls OCC Outage Manager shall obtain Operations Manager, Maintenance Manager, Engineering Manager, and Plant Manager review and approval of all Contingency Plans developed. This shall be done when minimum equipment is not available or when Higher Risk Evolutions are planned.

6. Ensure that the Fire Protection Department performed a weekly overall assessment of impaired fire protection features and transient combustibles.

5.3.2 (Cont'd)

7. Ensure that activities are scheduled and performed in a manner in which Containment Closure can be achieved following a loss of cooling as follows:

   a. In accordance with Enclosure 13

   b. The capability for containment closure includes provisions for unavailability of AC power, and the environmental conditions expected.

   c. Figures 1, 2 and 3 provide RCS heat-up rate information for planning purposes.

8. When fuel is in the reactor vessel and RCS inventory will be lower than 3 feet below the vessel flange, equipment requirements will be controlled via plant procedure 3/4-OP-041.9, Reduced Inventory Operations. If minimum equipment requirements cannot be met, evolutions will be stopped or secured by the most expedient actions and RCS level will be restored to higher than 3 feet below the vessel flange.
   [Commitment Step – 2.3.1]

5.4 Minimum Required Equipment

5.4.1 Typical post shutdown unit heat up rates following a loss of cooling are shown in Figures 1, 2 and 3. The time frames for operator action prior to heating above 200°F at the core outlet can be derived from these curves.

NOTES

- *Enclosures 1 through 7 contain suggested preplanned contingency actions which the Shift Manager can evaluate for implementation when minimum equipment requirements are not met. The Shift Manager shall determine which contingencies are to be implemented for any given situation.*
- *Steps 5.4.2 through 5.4.4 only apply when fuel is in the Containment Building. When the reactor is defueled spent fuel pool status and required support systems should be as specified in the RO logs and Enclosure 7 and monitored by the System Engineers.*
- *If a loss of Spent Fuel Pit Cooling occurs when the reactor is defueled, take actions to restore the required systems as specified in 3/4-ONOP-033.1, Spent Fuel Pit Cooling System Malfunction, 3/4-ONOP-030, Component Cooling Water System Malfunction, 3/4-ONOP-019, Intake Cooling Water System Malfunction, and/or applicable TCNs. Typical reactor defueled Spent Fuel Pit heat up rates are provided in Figure 4, and can be utilized to estimate available repair/action time.*

5.4.2 During Phase I of an outage, the equipment listed in Enclosures 1 through 3 should be maintained Available. When the minimum equipment recommendations are not met, the Shift Manager shall determine the appropriate contingencies to be implemented.

5.4.3 During Phase II of an outage, the Equipment listed in Enclosures 4 through 6 should be maintained Available. When the minimum equipment recommendations are not met, the Shift Manager shall determine the appropriate contingencies to be implemented.

5.4.4 Except for approved testing, surveillances, and operating evolutions, which are screened per Enclosure 12, to reduce equipment below levels required in Enclosures 1 through 7, the following shall be accomplished:

1. The time of the equipment outage shall be minimized.
2. A Contingency Plan shall be developed and approved by the Work Controls Manager, Operations Manager, Maintenance Manager, Engineering Manager, and Plant Manager when work on the equipment results in yellow, orange or red color code. An exception to this is RCS level yellow condition in Enclosures 2 and 5; a TCN is not required.
3. The Risk Assessment Team shall review the deviation and any Contingency Plan.
4. A form similar to Attachment 2 shall be completed and filed in the Outage Risk Assessment Notebook in the Control Room and the WCC.
5. The Shift Manager may waive the above requirements for emergency problems arising on shift, however the Operations Manager and Plant Manager shall be notified as soon as practical, and the above requirements shall be performed within 72 working hours.

5.4.5 When the containment penetration status is reduced below that required in Substep 5.1.1.22, the deviation shall be recorded by the Unit Supervisor on a form similar Attachment 3 in the Outage Risk Assessment Notebook in the WCC.

5.5 <u>Protection of Required Equipment</u>

NOTES

- *Enclosure 10 depicts the general concept for protection of required equipment in active support of shutdown cooling.*
- *Specific guidance for placement and removal of signs and/or physical barriers is provided in Attachments 8 through 21.*
- *All postings are not intended to provide physical barriers, rather, to provide information and heightened awareness.*

5.5.1 The strategy for protection of shutdown cooling includes the concept that the designated operating shutdown cooling train, and its power supplies, shall always be protected.

5.5.2 In addition, when a single train of shutdown cooling is protected, it shall also be in operation. In cases where both shutdown cooling trains are protected, only one train is required to be operating.

5.5.3 Required equipment that actively supports shutdown cooling shall be protected by means of signs and/or physical barriers.

5.5.4 Required equipment not in active support of shutdown cooling should be protected by other administrative means which includes the following:

1. Schedule logic ties
2. Outage communication tools
3. Shift turnovers and turnover meetings
4. Periodic required equipment verifications performed by operations personnel

NOTES

For the purposes of this procedure, the following activities are not considered work:

- *Non-intrusive activities (e.g., walk-downs, Routine Security and Firewatch roves, etc.) that do not involve component manipulations*
- *Emergency response actions*
- *Chemistry sampling of the SFP in the SFP Heat Exchanger room*
- *Routine operator rounds*

Verbal permission to enter, as specified on the posted sign or barrier, is still required for the non-routine walkdowns.

5.5.5 In the attachments that post the protected train barriers, the D 4kv Bus Room is protected when the C ICW or CCW Pump is required to support operability on the protected RHR Train or SFP Cooling Train (i.e., B RHR train in service and protected with the B ICW Pump unavailable and C ICW Pump running with the D 4kv Bus aligned to the B 4kv Bus).

5.5.6 To maximize effectiveness of protected equipment signs and/or barriers work should not be scheduled or allowed on required equipment that is posted as protected unless plant design or emergent conditions make the work unavoidable.

5.5.7 When work on required equipment that is posted as protected is unavoidable due to plant design or emergent conditions, then the activity shall be reviewed by the Risk Assessment Team, and approved by the Senior Management Team. A form similar to Attachment 6 shall be used to document the deviation and approval.

5.5.8 A copy of the approved Attachment 6 shall be in hand at the job site prior to commencing work.

5.6 Outage Emergent Work Review

5.6.1 Emergent work shall be evaluated for addition to the outage per 0-ADM-003, Outage Planning, Scheduling and Implementation.

5.6.2 When emergent work and/or changing conditions impacts the outage schedule the Work Controls Manager, or OCC Outage Manager on shift, shall determine if the Key Safe Shutdown Functions are affected.

1. The Work Controls Manager shall use Operations Department input to make this determination.

2. A Temporary Change Notice is processed as required by Subsection 5.2 and 5.4.

NOTE

A minor change to a R flagged activity is when NO adverse risk significant change occurs due to the requested change having obvious inconsequential degradation to outage or shutdown safety risk. Review of Enclosure 1 through 7 and 11 should be considered to verify no adverse impact to risk. Ensure the basis is adequately documented.

3. If R Logic ties are impacted and the changes are not deemed as minor by the Risk Assessment Team leader, prior approval to break R Logic ties shall be obtained using a form similar to Attachment 7.

4. If R Logic ties are impacted, and the changes are deemed as minor by the Risk Assessment Team Leader, breaking R Logic ties may be done with the verbal approval of the Risk Assessment Team Leader provided such approval is documented using a form similar to Attachment 7.

5. If emergent conditions require work on protected/operating shutdown cooling train, approvals shall be obtained using a form similar to Attachment 6.

5.7 Post Outage Critique

5.7.1 The Operations Manager shall conduct a post outage critique of the outage activities from a risk perspective.

5.7.2 The post outage critique shall be approved by the Plant Manager.

5.7.3 Corrective action items from the critique shall be assigned to the responsible department head and tracked until closure.

END OF TEXT

FIGURE 1
(Page 1 of 1)

TYPICAL HEAT UP RATES W/VESSEL FULL

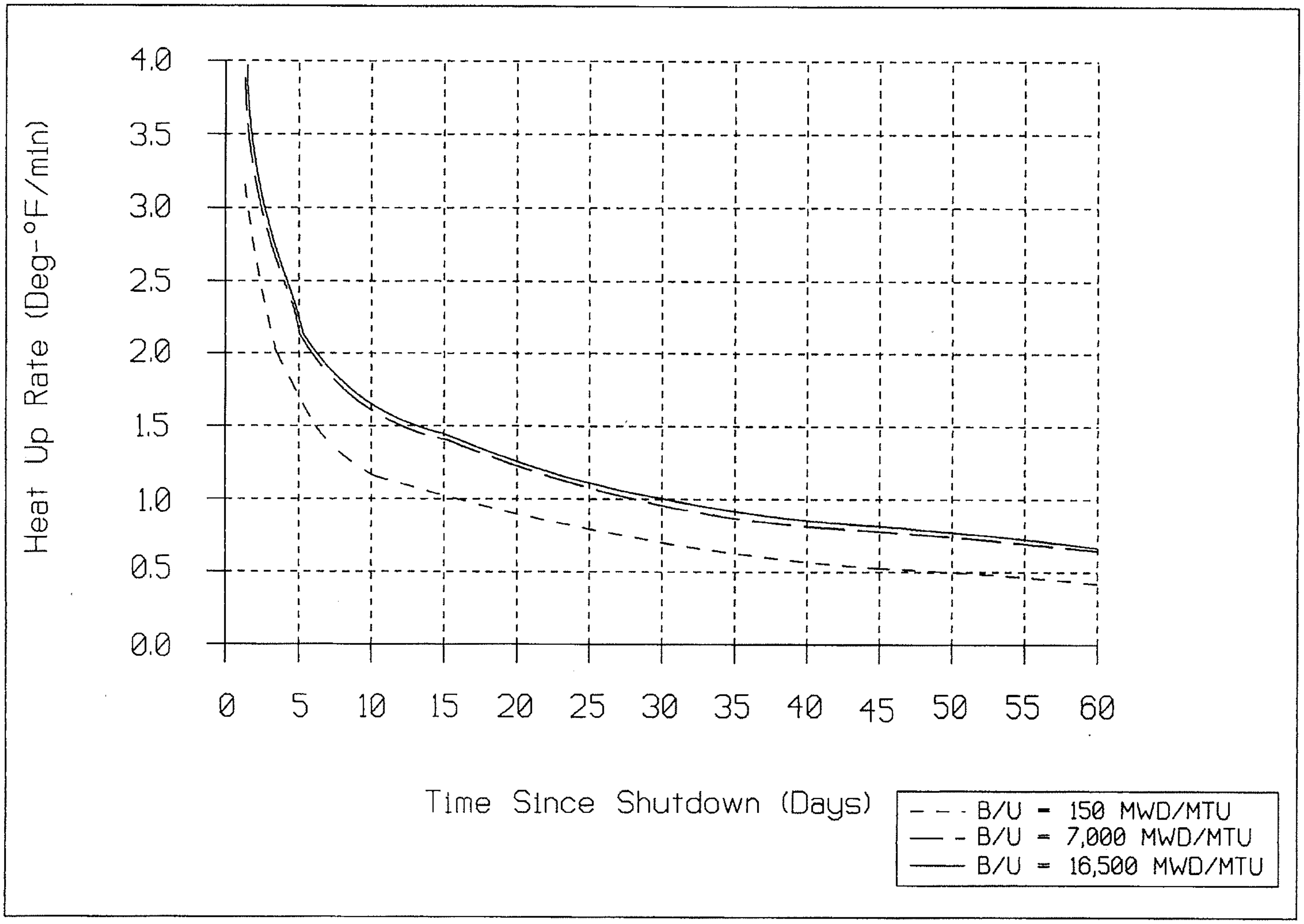


FIGURE 2
(Page 1 of 4)

TIME TO SATURATION W/LOSS OF RHR WITH RCS LEVEL 2 FEET BELOW RX VESSEL FLANGE

RCS Temperature (°F)

Time after Shutdown (Hours)

	60	65	70	75	80	85	90	95	100	105	110	115
24	19.53	18.88	18.24	17.59	16.94	16.29	15.64	14.99	14.34	13.70	13.05	12.41
28	20.25	19.58	18.91	18.24	17.57	16.89	16.22	15.55	14.87	14.20	13.53	12.87
32	20.97	20.28	19.58	18.89	18.19	17.50	16.80	16.10	15.40	14.71	14.02	13.33
36	21.70	20.98	20.26	19.54	18.82	18.10	17.38	16.66	15.94	15.22	14.50	13.79
40	22.42	21.67	20.93	20.19	19.45	18.70	17.95	17.21	16.47	15.73	14.98	14.25
44	23.14	22.37	21.61	20.84	20.07	19.30	18.53	17.77	17.00	16.23	15.47	14.71
48	23.86	23.07	22.28	21.49	20.70	19.91	19.11	18.32	17.53	16.74	15.95	15.17
52	24.51	23.70	22.89	22.08	21.26	20.45	19.63	18.82	18.01	17.20	16.39	15.58
56	25.17	24.33	23.50	22.66	21.83	20.99	20.16	19.32	18.49	17.66	16.82	15.99
60	25.82	24.96	24.11	23.25	22.39	21.54	20.68	19.83	18.97	18.12	17.26	16.41
64	26.45	25.58	24.70	23.82	22.94	22.06	21.19	20.31	19.43	18.56	17.68	16.81
68	27.09	26.19	25.29	24.39	23.49	22.59	21.69	20.80	19.90	19.00	18.11	17.21
72	27.72	26.80	25.88	24.96	24.04	23.12	22.20	21.28	20.36	19.45	18.53	17.62
76	28.32	27.38	26.44	25.50	24.56	23.62	22.68	21.74	20.80	19.87	18.93	18.00
80	28.92	27.96	27.00	26.04	25.08	24.12	23.16	22.20	21.24	20.29	19.33	18.38
84	29.53	28.55	27.57	26.59	25.61	24.63	23.65	22.67	21.69	20.71	19.74	18.76
88	30.13	29.13	28.13	27.13	26.13	25.13	24.13	23.13	22.13	21.13	20.14	19.14
92	30.71	29.69	28.68	27.66	26.64	25.62	24.60	23.58	22.56	21.54	20.53	19.52
96	31.28	30.24	29.21	28.17	27.13	26.09	25.05	24.01	22.98	21.94	20.91	19.88
100	31.85	30.79	29.74	28.68	27.62	26.56	25.50	24.45	23.39	22.34	21.29	20.24
104	32.40	31.32	30.25	29.17	28.10	27.02	25.94	24.87	23.79	22.73	21.66	20.58
108	32.93	31.84	30.74	29.65	28.56	27.46	26.37	25.28	24.18	23.10	22.01	20.92
112	33.46	32.35	31.24	30.13	29.02	27.91	26.79	25.68	24.57	23.47	22.37	21.26
116	33.99	32.86	31.73	30.61	29.48	28.35	27.22	26.09	24.96	23.84	22.72	21.60
120	34.52	33.38	32.23	31.09	29.94	28.79	27.64	26.50	25.35	24.22	23.08	21.94
124	35.01	33.85	32.69	31.53	30.37	29.20	28.04	26.88	25.71	24.56	23.41	22.25
128	35.51	34.33	33.15	31.97	30.79	29.61	28.43	27.26	26.08	24.91	23.74	22.56
132	36.00	34.81	33.61	32.42	31.22	30.03	28.83	27.64	26.44	25.26	24.07	22.88
136	36.46	35.25	34.04	32.83	31.62	30.41	29.20	27.99	26.78	25.58	24.38	23.17
140	36.93	35.70	34.48	33.25	32.03	30.80	29.58	28.35	27.13	25.91	24.69	23.47
144	37.39	36.15	34.91	33.67	32.43	31.19	29.95	28.71	27.47	26.24	25.00	23.77
148	37.75	36.50	35.25	34.00	32.75	31.49	30.24	28.99	27.74	26.49	25.24	24.00
152	38.12	36.85	35.59	34.33	33.06	31.80	30.53	29.27	28.00	26.75	25.49	24.23
156	38.48	37.21	35.93	34.65	33.38	32.10	30.82	29.55	28.27	27.00	25.73	24.46
160	38.85	37.56	36.27	34.98	33.69	32.40	31.12	29.83	28.54	27.26	25.97	24.69
164	39.21	37.91	36.61	35.31	34.01	32.71	31.41	30.11	28.81	27.51	26.21	24.92

FIGURE 2
(Page 2 of 4)

TIME TO SATURATION W/LOSS OF RHR WITH RCS LEVEL 2 FEET BELOW RX VESSEL FLANGE

RCS Temperature (°F)

Time after Shutdown (Hours)

	60	65	70	75	80	85	90	95	100	105	110	115
168	39.57	38.26	36.95	35.64	34.32	33.01	31.70	30.39	29.07	27.77	26.46	25.15
172	39.94	38.61	37.29	35.96	34.64	33.31	31.99	30.66	29.34	28.02	26.70	25.38
176	40.30	38.96	37.63	36.29	34.95	33.62	32.28	30.94	29.61	28.28	26.94	25.61
180	40.66	39.32	37.97	36.62	35.27	33.92	32.57	31.22	29.87	28.53	27.19	25.84
184	41.03	39.67	38.31	36.95	35.58	34.22	32.86	31.50	30.14	28.79	27.43	26.07
188	41.39	40.02	38.65	37.27	35.90	34.53	33.15	31.78	30.41	29.04	27.67	26.30
192	41.76	40.37	38.99	37.60	36.22	34.83	33.45	32.06	30.68	29.30	27.92	26.54
196	42.12	40.72	39.32	37.93	36.53	35.13	33.74	32.34	30.94	29.55	28.16	26.77
200	42.48	41.07	39.66	38.26	36.85	35.44	34.03	32.62	31.21	29.81	28.40	27.00
204	42.85	41.43	40.00	38.58	37.16	35.74	34.32	32.90	31.48	30.06	28.64	27.23
208	43.21	41.78	40.34	38.91	37.48	36.04	34.61	33.18	31.74	30.32	28.89	27.46
212	43.57	42.13	40.68	39.24	37.79	36.35	34.90	33.46	32.01	30.57	29.13	27.69
216	43.94	42.48	41.02	39.57	38.11	36.65	35.19	33.74	32.28	30.83	29.37	27.92
220	44.30	42.83	41.36	39.89	38.42	36.95	35.48	34.01	32.54	31.08	29.62	28.15
224	44.67	43.18	41.70	40.22	38.74	37.26	35.78	34.29	32.81	31.34	29.86	28.38
228	45.03	43.54	42.04	40.55	39.05	37.56	36.07	34.57	33.08	31.59	30.10	28.61
232	45.39	43.89	42.38	40.88	39.37	37.86	36.36	34.85	33.35	31.85	30.34	28.84
236	45.76	44.24	42.72	41.20	39.68	38.17	36.65	35.13	33.61	32.10	30.59	29.07
240	46.12	44.59	43.06	41.53	40.00	38.47	36.94	35.41	33.88	32.36	30.83	29.31

FIGURE 2
(Page 3 of 4)

TIME TO SATURATION W/LOSS OF RHR WITH RCS LEVEL 2 FEET BELOW RX VESSEL FLANGE

RCS Temperature (°F)

Time after Shutdown (Hours)	120	125	130	135	140	145	150	155	160
24	11.76	11.12	10.48	9.83	9.19	8.55	7.92	7.28	6.64
28	12.20	11.53	10.86	10.20	9.53	8.87	8.21	7.55	6.89
32	12.63	11.94	11.25	10.56	9.87	9.19	8.50	7.82	7.13
36	13.07	12.36	11.64	10.93	10.21	9.50	8.79	8.08	7.38
40	13.51	12.77	12.03	11.29	10.55	9.82	9.09	8.35	7.62
44	13.94	13.18	12.42	11.65	10.89	10.13	9.38	8.62	7.87
48	14.38	13.59	12.81	12.02	11.23	10.45	9.67	8.89	8.11
52	14.77	13.96	13.15	12.35	11.54	10.74	9.94	9.13	8.33
56	15.16	14.33	13.50	12.67	11.84	11.02	10.20	9.38	8.56
60	15.55	14.70	13.85	13.00	12.15	11.31	10.47	9.62	8.78
64	15.93	15.06	14.19	13.32	12.45	11.58	10.72	9.86	8.99
68	16.32	15.42	14.53	13.64	12.74	11.86	10.98	10.09	9.21
72	16.70	15.79	14.87	13.96	13.04	12.14	11.23	10.33	9.42
76	17.06	16.13	15.19	14.26	13.32	12.40	11.48	10.55	9.63
80	17.42	16.47	15.52	14.56	13.61	12.67	11.72	10.78	9.83
84	17.79	16.81	15.84	14.87	13.89	12.93	11.97	11.00	10.04
88	18.15	17.16	16.16	15.17	14.18	13.20	12.21	11.23	10.25
92	18.50	17.49	16.48	15.47	14.45	13.45	12.45	11.45	10.45
96	18.84	17.81	16.78	15.75	14.72	13.70	12.68	11.66	10.64
100	19.18	18.13	17.08	16.04	14.99	13.95	12.91	11.87	10.83
104	19.51	18.44	17.38	16.31	15.25	14.19	13.13	12.07	11.01
108	19.83	18.75	17.66	16.58	15.50	14.42	13.35	12.27	11.19
112	20.15	19.05	17.95	16.85	15.75	14.65	13.56	12.47	11.38
116	20.47	19.35	18.23	17.12	16.00	14.89	13.78	12.67	11.56
120	20.79	19.66	18.52	17.39	16.25	15.12	14.00	12.87	11.74
124	21.09	19.94	18.78	17.63	16.48	15.34	14.19	13.05	11.91
128	21.38	20.22	19.05	17.88	16.71	15.55	14.39	13.23	12.07
132	21.68	20.50	19.31	18.13	16.94	15.77	14.59	13.42	12.24
136	21.96	20.76	19.56	18.36	17.16	15.97	14.78	13.59	12.40
140	22.25	21.03	19.81	18.60	17.38	16.17	14.97	13.76	12.55
144	22.53	21.30	20.07	18.83	17.60	16.38	15.16	13.93	12.71
148	22.75	21.50	20.26	19.02	17.77	16.54	15.30	14.07	12.83
152	22.97	21.71	20.46	19.20	17.94	16.70	15.45	14.20	12.96
156	23.19	21.92	20.65	19.38	18.11	16.86	15.60	14.34	13.08
160	23.41	22.13	20.85	19.57	18.29	17.02	15.75	14.48	13.21
164	23.62	22.33	21.04	19.75	18.46	17.17	15.89	14.61	13.33

FIGURE 2
(Page 4 of 4)

TIME TO SATURATION W/LOSS OF RHR WITH RCS LEVEL 2 FEET BELOW RX VESSEL FLANGE

RCS Temperature (°F)

Time after Shutdown (Hours)

	120	125	130	135	140	145	150	155	160
168	23.84	22.54	21.24	19.93	18.63	17.33	16.04	14.75	13.45
172	24.06	22.75	21.43	20.11	18.80	17.49	16.19	14.88	13.58
176	24.28	22.95	21.63	20.30	18.97	17.65	16.34	15.02	13.70
180	24.50	23.16	21.82	20.48	19.14	17.81	16.48	15.15	13.82
184	24.72	23.37	22.02	20.66	19.31	17.97	16.63	15.29	13.95
188	24.94	23.57	22.21	20.85	19.48	18.13	16.78	15.42	14.07
192	25.16	23.78	22.41	21.03	19.66	18.29	16.93	15.56	14.20
196	25.37	23.99	22.60	21.21	19.83	18.45	17.07	15.70	14.32
200	25.59	24.19	22.80	21.40	20.00	18.61	17.22	15.83	14.44
204	25.81	24.40	22.99	21.58	20.17	18.77	17.37	15.97	14.57
208	26.03	24.61	23.19	21.76	20.34	18.93	17.52	16.10	14.69
212	26.25	24.81	23.38	21.95	20.51	19.09	17.66	16.24	14.81
216	26.47	25.02	23.58	22.13	20.68	19.25	17.81	16.37	14.94
220	26.69	25.23	23.77	22.31	20.85	19.41	17.96	16.51	15.06
224	26.91	25.44	23.97	22.50	21.03	19.57	18.11	16.65	15.19
228	27.12	25.64	24.16	22.68	21.20	19.72	18.25	16.78	15.31
232	27.34	25.85	24.36	22.86	21.37	19.88	18.40	16.92	15.43
236	27.56	26.06	24.55	23.04	21.54	20.04	18.55	17.05	15.56
240	27.78	26.26	24.75	23.23	21.71	20.20	18.70	17.19	15.68

FIGURE 3
(Page 1 of 1)

TYPICAL RCS HEAT UP RATES FOR REDUCED INVENTORY

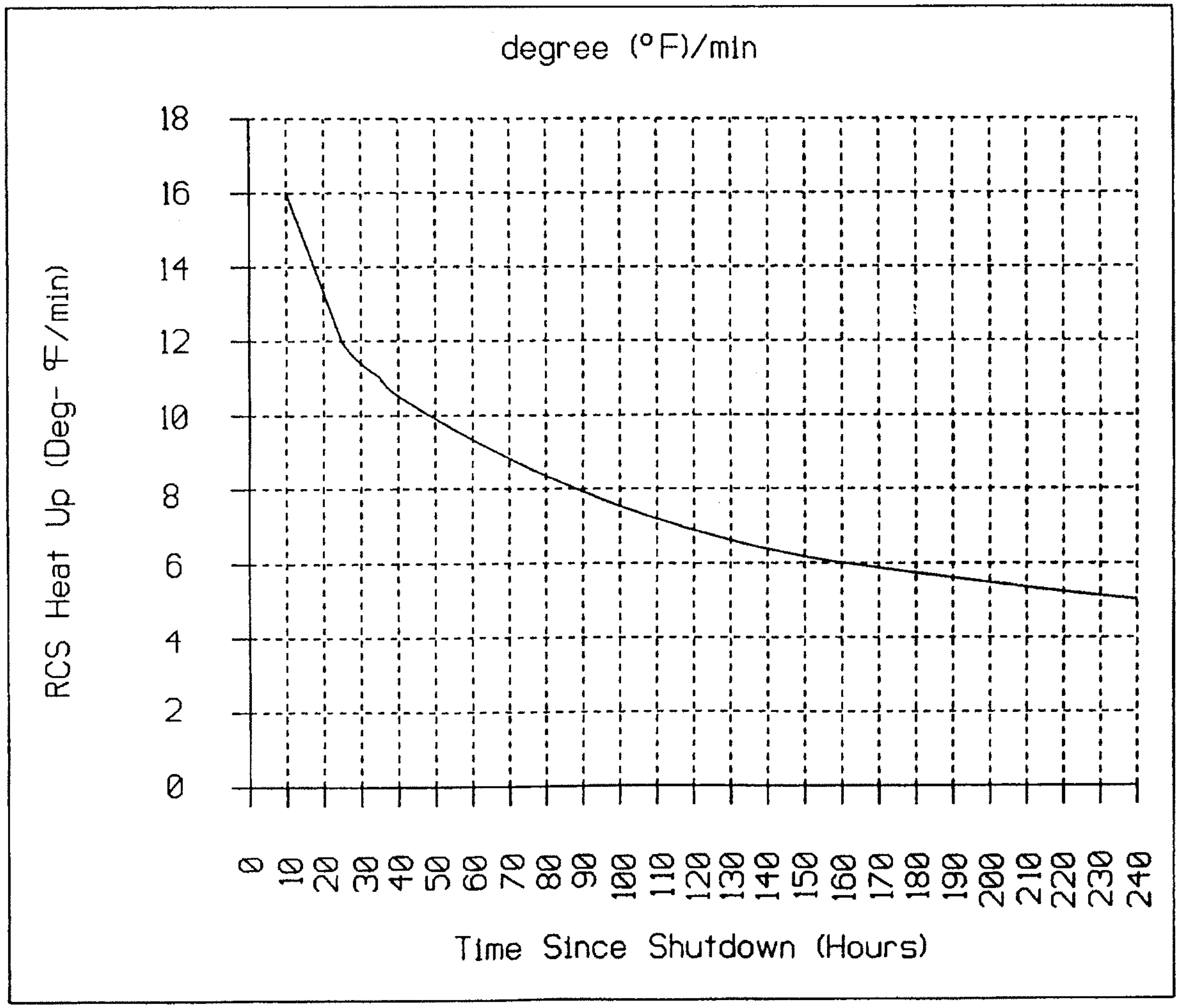
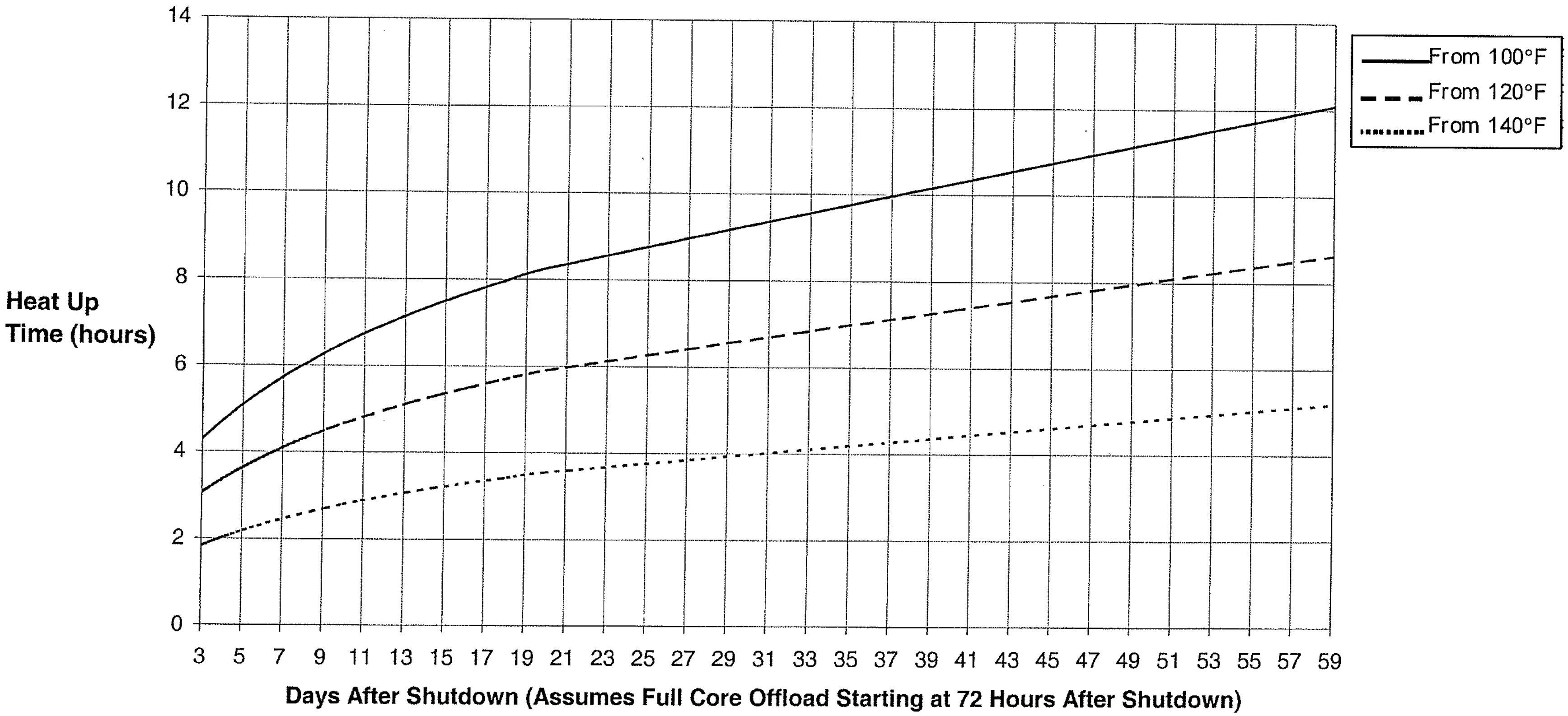


FIGURE 4
(Page 1 of 1)

TYPICAL HEAT UP RATES IN SFP

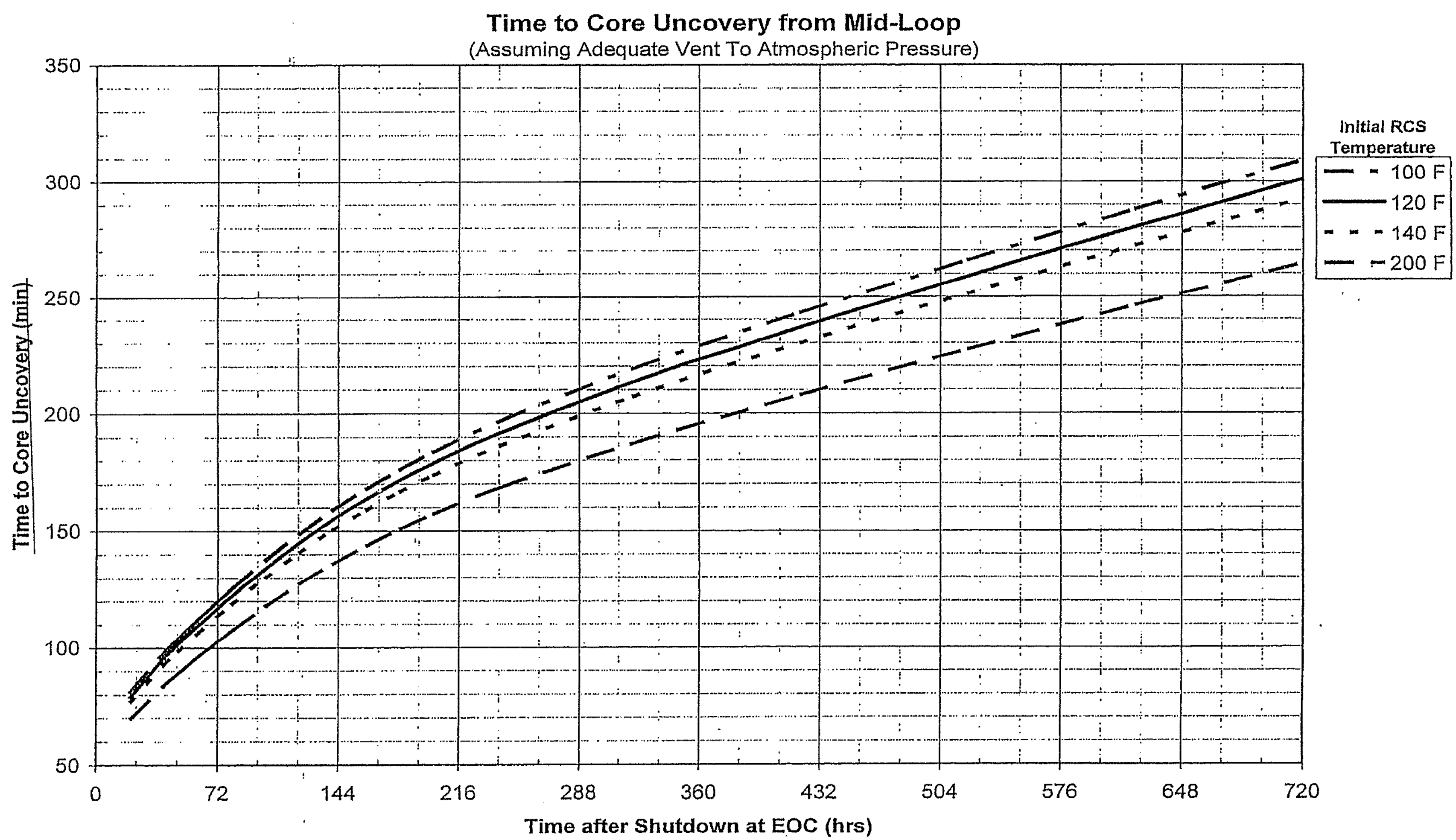


W/FULL OFFLOAD

NOTE: Heat Up Curves to 200°F are Found in the Plant Curve Book, Section 8

FIGURE 5
(Page 1 of 1)

TIME TO CORE UNCOVERY FROM MID-LOOP
(Assuming Adequate Vent to Atmospheric Pressure)



ENCLOSURE 1
(Page 1 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Maximize RCS inventory as much as is achievable. 4. Maintain RCS pressurized to 100 psig to meet loops filled criteria. 5. Maintain RCS temperature as low as possible. 6. Ensure Feed and Bleed Decay Heat Removal capability, using the HHSI pumps, is available. 7. Maintain Decay Heat Removal capability with at least two Steam Generators, including a source of feedwater. 8. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; and 4KV Bus. 9. Upon loss of both pumps, initiate actions to establish Containment Closure except for the equipment hatch. 10. Verify that the equipment hatch can be closed within the time frame to heat up to Mode 4 following a loss of shutdown cooling as predicted using the heatup rates of Figure 1. Station the necessary personnel at the hatch with direct communications to the RO.	1 – ORANGE 0 - RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two CCW Pumps	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions per RHR pumps above.	1 – ORANGE 0 - RED

ENCLOSURE 1
(Page 2 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. Take other actions as described for RHR Pumps.	1 Hx – ORANGE 0 - RED
	Two ICW Pumps	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – ORANGE 0 - RED
	Two ICW Headers	1. Verify that at least two ICW pumps and two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	1 – YELLOW 0 - RED
	Source of feedwater and a flowpath from one of the following: SGFP SSGFP Condensate PP Condensate Transfer PP SGWL PP	1. Take action to restore the unavailable component. 2. Restrict Activities that could potentially threaten RHR	0 - YELLOW
	2 Steam Dump to Atmosphere Valves	1. Take action to restore the unavailable component. 2. Restrict Activities that could potentially threaten RHR	0 – YELLOW

ENCLOSURE 1
(Page 3 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Inventory control	Two Charging Pumps (one with an available EDG power source to meet the requirement below).	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of at least two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory, if possible take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible. 6. Suspend activities that would place any remaining charging pump and its power supply at risk.	1 – YELLOW 0 - ORANGE
	Flowpath from the Charging Pumps to the RCS (Regen Hx or RCP seals) and suction capability from BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** a flowpath available to the RCS.	0 – ORANGE 0 – RED, if no HHSI flowpath
	Two of four Primary Water Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from the opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	1 – YELLOW 0 - ORANGE
	Two of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of two HHSI pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1 – YELLOW 0 - ORANGE

ENCLOSURE 1
(Page 4 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	Two of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least two charging pumps. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – YELLOW 0 - ORANGE
On-site and Off-site Power	Two Transformers capable of the below powering A or B 4KV Bus * • Startup • AUX on backfeed • Opposite unit startup transformer to **A** Bus • One **C** Bus transformer to **A** or **B** Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the availability of one C Bus to power A or B 4KV Bus. 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 xfmr with SBO tie - YELLOW 1 xfmr without SBO tie - ORANGE 0 xfrm - RED

* Reference Step 5.1.1.29

ENCLOSURE 1
(Page 5 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power	A, B and D 4KV Busses	1. Take action to restore the out-of-service components. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B, or D 4KV Busses unavailable, verify the ability to power A or B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable, maintain both associated unit EDGs available.	Loss of D Bus - YELLOW Loss of A or B Bus - ORANGE 1 - RED
	Two Emergency Diesel Generators on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A or B Bus from one C Bus transformer.	1 – YELLOW 0 - ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A or B Bus from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie <u>AND</u> • Opposite unit SU Xfmr - ORANGE

ENCLOSURE 1
(Page 6 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B> 0-OP-028.2 SDM Calculation	1. Take action to restore boron concentration (C_B) to > 0-OP-028.2 SDM Calculation. 2. Verify NO primary water additions in progress.	RED if C_B < 0-OP-028.2 SDM Calculation
Shutdown Monitoring Instrumentation	Two of four Source Range Instruments	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – WHITE 0 - YELLOW
	ARMS Channels: Three Inside Containment #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels: R-11, R-12, R-14, R-19	1. Take action to secure releases via the unmonitored pathway **<u>OR</u>** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more – WHITE
	2 Core Exit Thermocouples	1. Arrange with I&C for alternate readouts or monitoring of CETs if possible. 2. Verify that two channels of wide range T_{HOT} are available. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 - YELLOW

\# One at a time may be OOS for calibration.

ENCLOSURE 1

(Page 7 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Shutdown Monitoring Instrumentation (Cont'd)	One Channel of Reactor Vessel Level HJTC (QSPDS)	1. Take action to restore at least one channel as soon as possible. 2. Maximize RCS inventory as much as is allowed by plant conditions. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 - WHITE
	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 - WHITE
	Two Channels of Containment Sump Level Indication	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW
	One of Four Channels of Pressurizer Level Indication	1. Suspend activities which may result in RCS inventory loss.	0 - WHITE
	RCS Pressure Instruments PT-402, PT-403, and PT-405	1. Verify sufficient OMS trains are still available. 2. Secure power to any MOV which could result in RHR loss due to unwanted action from the unavailable pressure channel. (N/A if interlocks defeated.) 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	0 – WHITE
	RCS Wide Range T_{HOT} and T_{COLD}: At least one channel per loop	1. Verify the availability of two CETs. 2. Verify that OMS controls are not affected by the unavailable channel.	Per loop, only T_{HOT} or T_{COLD} – WHITE

ENCLOSURE 1
(Page 8 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment Closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13.) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met (TCN Required) - YELLOW
	Personnel Hatch (capable of being closed in accordance with Enclosure 13.) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed, or capable of being closed in accordance with Enclosure 13.) Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. Initiate action to restore closure capability. 4. Suspend activities that would risk required Decay Heat Removal Equipment. 5. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. **IF** out-of-service time is to exceed 119 hours, **THEN** notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the running RHR Pump.	0 - YELLOW

* Capability includes provisions for the unavailability of AC power and environmental conditions expected.

W97:DJT/cls/mr/emc

ENCLOSURE 1
(Page 9 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressor **AND** the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. **IF** out-of-service time is to exceed 548 hours, **THEN** notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - two of three units required E16D, E16E, E16F	1. Monitor temperature in the Inverter and DC Equipment Rooms. 2. Install portable fans **OR** verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 - YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE

ENCLOSURE 2
(Page 1 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Establish or maintain Reactor Vessel level higher than three feet below the vessel flange. Maximize RCS inventory as much as is achievable. 4. Maintain RCS temperature as low as possible. 5. Ensure Feed and Bleed decay heat removal capability, using the HHSI pumps, is available. 6. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; **AND** 4KV Bus. 7. Upon loss of both pumps, initiate actions to establish Containment Closure except for the equipment hatch. 8. Verify that the equipment hatch can be closed within the time frame to heat up to Mode 4 following a loss of shutdown cooling as time to saturation predicted using the Figure 2. Station the necessary personnel at the hatch with direct communications to the RO. 9. Investigate the possibility of flooding the Reactor Cavity to a height of 23 feet above the Reactor Vessel Flange. 10. If RCS inventory is at Mid-Loop, then refer to Figure 5, Time to Core Uncovery from Mid-Loop.	1 – ORANGE 0 - RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 Hx – ORANGE 0 Hx – RED
	Two CCW Pumps*	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions as described per RHR pumps above.	1 – ORANGE 0 - RED

* Powered from independent power sources if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

ENCLOSURE 2
(Page 2 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. Take other actions as described for RHR Pumps.	1 Hx – ORANGE 0 Hx - RED
	Two ICW Pumps*	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW Pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – ORANGE 0 - RED
	Two ICW Headers	1. Verify at least two ICW pumps **AND** two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	1 – YELLOW 0 - RED

* Powered from independent power sources if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

ENCLOSURE 2
(Page 3 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control	Two Charging Pumps (One with an available EDG power source. Both with an available EDG to meet the requirement below.*)	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory; if possible, take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible. 6. Suspend activities that would place any remaining charging pump and its power supply at risk.	1 – ORANGE 0 - RED
	Flowpath from the charging pump to the RCS (Regen Hx or RCP seals) and suction capability from BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0 – ORANGE 0 – RED if no HHSI flowpath
	Two of four Primary Water Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	1 – YELLOW 0 - ORANGE
	Two of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of two HHSI pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1 – YELLOW 0 - ORANGE

* Two charging pumps are required with available EDG power source, if RCS level is lower than 3 feet below the vessel flange.
[Commitment Step - 2.3.1]

ENCLOSURE 2
(Page 4 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	Two of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **<u>AND</u>** an available flowpath to the RCS*	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least two charging pumps. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1–YELLOW 0-ORANGE
	RCS Inventory at or above 5% level in pressurizer. (Color code determination only)	N/A	YELLOW drained to higher than 3 feet below flange ORANGE Drained hot leg mid nozzle
On-site and Off-site Power	Two of the below listed Transformers capable of powering A **<u>OR</u>** B 4KV Bus • Startup • AUX on backfeed • Opposite unit startup transformer to A Bus • Either unit's C Bus transformer to **A <u>OR</u> B** Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the ability of one C Bus to power A **<u>OR</u>** B 4KV Bus. 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 trf – ORANGE 0 trf – RED

* Both hot and cold leg injection path are required if RCS level is lower than 3 feet below the vessel flange.
[Commitment Step – 2.3.1]

ENCLOSURE 2
(Page 5 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power	A, B **AND** D 4KV Busses	1. Take action to restore the out-of-service components. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B, or D 4KV Busses unavailable, verify the ability to power A or B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable, maintain both associated unit EDGs available.	Loss of D bus – YELLOW Loss of A or B Bus – ORANGE 1 - RED
	Two Emergency Diesel Generators on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A **OR** B Bus from one C Bus transformer.	1 – YELLOW 0 – ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A **OR** B Bus from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie AND • Opposite unit SU Xfmr - ORANGE

ENCLOSURE 2
(Page 6 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B > 0-OP-028.2 SDM Calculation for Mode 5, or > Required Refueling C_B for Mode 6	1. Take action to restore boron concentration (C_B) to > 0-OP-028.2 SDM Calculation, or > Required Refueling C_B as applicable. 2. Verify NO primary water additions in progress.	RED if C_B < the required conc
Shutdown Monitoring Instrumentation	Two of Four Source Range Instruments (1 with Audible Count Rate in Mode 6)	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1/4 - WHITE 0/4 - YELLOW
	ARMS Channels: Three Inside Containment #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels: R-11, R-12, R-14	1. Take action to secure releases via the unmonitored pathway **OR** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more - WHITE
	2 Core Exit Thermocouples (Required when the reactor vessel head is fully tensioned.)*	1. Arrange with I&C for alternate readouts or monitoring of CETs if possible. 2. Verify that two channels of wide range T_{HOT} are available. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 YELLOW
	One Channel of Reactor Vessel Level HJTC (QSPDS) (Required when the reactor vessel head is fully tensioned.)	1. Take action to restore at least one channel as soon as possible. 2. Maximize RCS inventory as much as is allowed by plant conditions. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level. 4. If OOS as part of reactor disassembly, verify two channels of the reactor vessel draindown level indication available, one with control room readout. **IF** <2 channels available, maintain RCS level higher than 3 feet below the vessel flange.	0 - WHITE

* A minimum of two (2) CETs are required whenever RCS level is lower than 3 feet below the vessel flange.
[Commitment Step – 2.3.1]

\# In containment, one at a time may be OOS for calibration, if RCS level is NOT lower than 3 feet below the vessel flange.
[Commitment Step – 2.3.1]

ENCLOSURE 2
(Page 7 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Shutdown Monitoring Instrumentation (Cont'd)	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 - WHITE
	Two Channels of Containment Sump Level Indication*	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW
	One Pressurizer Cold Calibrated Level Indication ##, **	1. Suspend activities which may result in RCS inventory loss. 2. Monitor temporary drain hoses for loss of RCS inventory at least once per shift. 3. Consider installation of temporary level hose as appropriate for plant conditions.	0 - WHITE
	RCS Pressure Instruments PT-402, PT-403, **AND** PT-405	1. Verify sufficient OMS trains are still available. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – WHITE 0 – YELLOW
	RCS Wide Range T_{HOT} and T_{COLD}: At least one channel per loop	1. Verify the availability of two CETs. 2. Verify that OMS controls are not affected by the unavailable channel.	For each loop only T_{HOT} or T_{COLD} – WHITE None – YELLOW
	Reactor Vessel Draindown Level Indication: Two of three channels available, (includes level hose) one with Control Room indication #, ***	1. Maintain RCS level higher than three (3) feet below the vessel flange. 2. Do not reduce RCS inventory until two channels are available. 3. Investigate the possibility of verifying Reactor Vessel Level via some other means, (i.e., level hose or QSPDS).	1 – YELLOW 0 – ORANGE requires Control Room indication

\# The level hose **AND** both draindown level indicators are required for RCS level lower than 3 feet below the vessel flange.
[Commitment Step – 2.3.1]

\## May be OOS during depressurization of RCS for refill of reference leg.

* Two channels are required if RCS level is lower than 3 feet below the vessel flange.
[Commitment Step 2.3.1]

** **IF** RCS level is on scale in reactor vessel draindown level instruments, **THEN** pressurizer cold calibrated level instrument not required.

*** **IF** pressurizer cold calibrated level indication is greater than 10%, **THEN** reactor vessel draindown level indication is not required.

W97:DJT/cls/mr/emc

ENCLOSURE 2
(Page 8 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment Closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13) * +	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met (TCN Required) - YELLOW Required Time Not Met During Reduced Inventory - ORANGE
	Personnel Hatch (capable of being closed in accordance with Enclosure 13) * +	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed or capable of being closed in accordance with Enclosure 13) # Exceptions may be taken under administrative controls for testing, surveillance, and maintenance. *	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. If an exception is taken while RCS level is lower than 3' below the vessel flange, and the penetration is NOT capable of being closed by at least one valve, a TCN with a contingency plan to achieve closure and meet 20 psi containment pressure is required PRIOR to authorizing work on the penetration. 4. Initiate action to restore closure capability. 5. Suspend activities that would risk required Decay Heat Removal Equipment. 6. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. **IF** out-of-service time is to exceed 119 hours, **THEN** notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the running RHR pump.	0 - YELLOW

* If RCS level lower than 3 feet below the vessel flange prior to fuel offload, control in accordance with 3/4-OP-041.9, until RCS level returns above 3 feet below the vessel flange. [Commitment Step – 2.3.1]

\# See Substep 5.1.1.19.c for requirements if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

\+ Capability includes provisions for the unavailability of AC power and environmental conditions expected.

ENCLOSURE 2
(Page 9 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressor **AND** the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. If out-of-service time is to exceed 548 hours, notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - two of three units required E16D E16E E16F	1. Monitor temperature in the Inverter and DC Equipment Rooms. 2. Install portable fans or verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 – YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE

ENCLOSURE 3
(Page 1 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Maintain Reactor Cavity level greater than 23 feet above the vessel flange. 4. Maintain RCS temperature as low a possible. 5. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; and 4KV Bus. 6. Upon loss of both pumps, initiate actions to establish Containment Closure except for the equipment hatch. 7. Verify that the equipment hatch can be closed within the time frame specified in Enclosure 13. Station the necessary personnel at the hatch with direct communications to the RO.	1 – YELLOW 0 - RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 – YELLOW 0 - RED
	Two CCW Pumps	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions per RHR pumps above.	1 – YELLOW 0 – RED

ENCLOSURE 3
(Page 2 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. Take other actions as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two ICW Pumps	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW Pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – YELLOW 0 - RED
	Two ICW Headers	1. Verify that at least two ICW pumps **AND** two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	1 – YELLOW 0 – RED

ENCLOSURE 3
(Page 3 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control	Two Charging Pumps (one with an available EDG power source).	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory; if possible, take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible. 6. Suspend activities that would place any remaining charging pump and its power supply at risk.	1 – YELLOW 0 - ORANGE
	Flowpath from the charging pump to the RCS (Regen Hx or RCP seals) and suction capability from BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0- ORANGE 0 – RED if no HHSI flowpath
	One of four Primary Water Pump	1. Initiate action to repair the unavailable component. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	0 – YELLOW
	Two of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of two HHSI pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1 – YELLOW 0 – ORANGE

ENCLOSURE 3
(Page 4 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	Two of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least two charging pumps. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – YELLOW 0 – ORANGE
On-site and Off-site Power	Two Transformers capable of powering A **OR** B 4KV Bus * • Startup • AUX on backfeed • Opposite unit startup transformer to A Bus • One C Bus transformer to **A OR B** Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the availability of one C Bus to power A or B 4KV Bus 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 xfmr with SBO tie - YELLOW 1 xfmr without SBO tie - ORANGE 0 xfrm - RED

* Reference Step 5.1.1.29

ENCLOSURE 3
(Page 5 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power (Cont'd)	A, B **AND** D 4KV Busses	1. Except during refueling outage, scheduled bus outages (one bus at a time), take action to restore the out-of-service components. Go to the appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B, **OR** D 4KV Busses unavailable, verify the ability to power A or B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable, maintain both associated unit EDGs available.	2 – YELLOW Loss of D Bus and A or B - ORANGE Loss of A and B Busses - RED
	Two Emergency Diesel Generators on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A **OR** B Bus from one C Bus transformer.	1 – YELLOW 0 - ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A **OR** B Bus from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie AND • Opposite unit SU Xfmr - ORANGE

ENCLOSURE 3
(Page 6 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B > Required Refueling C_B	1. Take actions to increase boron concentration (C_B). 2. Suspend core alterations if in progress until C_B > Required Refueling C_B 3. Verify NO primary water additions to the refueling cavity in progress.	RED if < Required Refueling C_B
Shutdown Monitoring Instrumentation	Two of four Source Range Instruments 1 with Audible Count Rate	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1/4 - WHITE 0/4 - YELLOW Audible CR may be inoperable if no fuel movement in progress
	ARMS Channels: Three Inside Containment One Spent Fuel Pool #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels: R-11, R-12, R-14	1. Take action to secure releases via the unmonitored pathway **<u>OR</u>** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more - WHITE
	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 - WHITE
	Two Channels of Containment Sump Level Indication	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW

\# In containment, one at a time may be OOS for calibration.

ENCLOSURE 3
(Page 7 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment Closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13)*	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met, Core Alts NOT in Progress (TCN Required) - YELLOW Required Time Not Met, During Core Alts - ORANGE
	Personnel Hatch (capable of being closed in accordance with Enclosure 13)*	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed or capable of being closed in accordance with Enclosure 13) Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. Initiate action to restore closure capability. 4. Suspend activities that would risk required Decay Heat Removal Equipment. 5. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. **IF** out-of-service time is to exceed 119 hours, **THEN** notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the running RHR pump.	0 - YELLOW

* Capability includes provisions for the unavailability of AC power and environmental conditions expected.

ENCLOSURE 3
(Page 8 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE I, LARGE DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

System / Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressor **AND** the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. If out-of-service time is to exceed 548 hours, notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - two of three units required E16D, E16E, E16F	1. Monitor temperature in the Inverter **AND** DC Equipment Rooms. 2. Install portable fans or verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 – YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE
Spent Fuel Cooling (N/A if the reactor core is fully loaded)	SFP Cooling Pump A and B	1. Take immediate action to repair the failed pump, or switch to the other pump. 2. Establish Emergency SFP Cooling Pump operation per 3/4-ONOP-033.1, Spent Fuel Pit (SFP) Cooling System Malfunction. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 4. Monitor Spent Fuel Pool temperature and level frequently. 5. Suspend any activities that would risk remaining equipment required (ICW, CCW, Electrical, Makeup). 6. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	1- YELLOW *0 - ORANGE
	Spent Fuel Pit Exhaust Fan	1. Initiate action to restore exhaust fan to service. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Suspend any activities that would risk Spent Fuel Pool Cooling capabilities.	0 - WHITE
	C 480 Volt Load Center	1. Initiate action to restore power to C load center. 2. Notify Operations, Maintenance, Work Controls, and Plant Managers. 3. Verify the ability to power the Emergency SFP Cooling Pump IAW 3/4-OP-033, Spent Fuel Pit Cooling System. 4. Monitor SFP temperature and level frequently. 5. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	De-energized - YELLOW* De-energized ORANGE**
SFP Water Makeup Sources (N/A if the reactor core is fully loaded)	2 of following water sources: - RWST and RWST purification pump - PWT and PW pump - CVS Holdup Tank and Recirc Pump	1. Initiate actions to restore SFP makeup source in accordance with 3/4-OP-033. 2. Consider Fire Protection System and dual hose station. 3. Notify Operations, Maintenance, Work Controls and Plant Managers. 4. Monitor SFP level and temperature frequently. 5. Suspend all activities that would risk spent fuel cooling capabilities.	1 – YELLOW 0 – ORANGE

* With Alt SFP cooling system available.
** With Alt SFP cooling system unavailable.

ENCLOSURE 4
(Page 1 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Maintain Reactor Cavity level greater than 23 feet above the vessel flange. 4. Maintain RCS temperature as low as possible. 5. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; and 4KV Bus. 6. Upon loss of both pumps, initiate actions to establish Containment Closure except for the equipment hatch. 7. Verify that the equipment hatch can be closed within the time frame specified in Enclosure 13. Station the necessary personnel at the hatch with direct communications to the RO.	1 – YELLOW 0 - RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 – YELLOW 0 - RED
	Two CCW Pumps	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions per RHR pumps above.	1 – YELLOW 0 - RED

ENCLOSURE 4
(Page 2 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. Take other actions as described for RHR Pumps. 4. With only one CCW Heat Exchanger available, suspend activities that would risk the remaining heat exchanger.	1 – ORANGE 0 - RED
	Two ICW Pumps	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW Pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – YELLOW 0 - RED
	One ICW Header	1. Verify that at least two ICW pumps **AND** two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	0 - RED

ENCLOSURE 4
(Page 3 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control	One Charging Pump (one with an available EDG power source)	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of one HHSI Pump with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory; if possible, take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible.	0 – ORANGE
	Flowpath from the charging pump to the RCS (Regen Hx or RCP seals) and suction capability from the BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of one HHSI Pump with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0 – ORANGE 0 – RED if no HHSI flowpath
	One of four Primary Water Pumps	1. Initiate action to repair the unavailable component. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	0 - YELLOW
	One of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of one HHSI pump with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0 - ORANGE

ENCLOSURE 4
(Page 4 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	One of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least one charging pump. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	0 – YELLOW
On-site and Off-site Power	Two of the below listed Transformers capable of powering the A **OR** B 4KV Bus * • Startup • AUX on backfeed • Opposite unit startup transformer to A Bus • One C Bus transformer to A **OR** B Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the availability of one C Bus to power A OR B 4KV Bus. 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 xfmr with SBO tie - YELLOW 1 xfmr without SBO tie - ORANGE 0 xfrm - RED

* Reference Step 5.1.1.29

ENCLOSURE 4
(Page 5 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power (Cont'd)	A, B **AND** D 4KV Busses	1. Except during refueling outage, scheduled bus outages (one bus at a time), take action to restore the out-of-service components. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B, **OR** D 4KV Busses unavailable, verify the ability to power A or B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable, maintain both associated unit EDGs available.	2 – YELLOW Loss of D Bus and A or B Busses - ORANGE Loss of A and B Busses - RED
	One Emergency Diesel Generator on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A **OR** B Bus from one C Bus transformer.	0 - ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A **OR** B Bus from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie AND • Opposite unit SU Xfmr - ORANGE

ENCLOSURE 4
(Page 6 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B > Required Refueling C_B	1. Take action to increase boron concentration (C_B) to > Required Refueling C_B. 2. Suspend core alterations until C_B > Required Refueling C_B. 3. Verify NO primary water additions to the refueling cavity in progress.	RED if C_B < Required Refueling C_B
Shutdown Monitoring Instrumentat ion	Two of four Source Range Instruments 1 w/ Audible Count Rate	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1/4 - WHITE 0/4 – YELLOW Audible CR may be inoperable if no fuel movement.
	ARMS Channels: Three Inside Containment One Spent Fuel Pool #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels: R-11, R-12, R-14	1. Take action to secure releases via the unmonitored pathway **<u>OR</u>** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more - WHITE
	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 – WHITE
	Two Channels of Containment Sump Level Indication	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW

\# In containment, one at a time may be OOS for calibration.

ENCLOSURE 4
(Page 7 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment Closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met, Core Alts NOT in Progress (TCN Required) - YELLOW Required Time Not Met, During Core Alts - ORANGE
	Personnel Hatch (capable of being closed in accordance with Enclosure 13) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed or capable of being closed in accordance with Enclosure 13.) Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. Initiate action to restore closure capability. 4. Suspend activities that would risk required Decay Heat Removal Equipment. 5. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. **IF** out-of-service time is to exceed 119 hours, **THEN** notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the running RHR pump.	0 - YELLOW

* Capability includes provisions for unavailability of AC power and environmental conditions expected.

ENCLOSURE 4
(Page 8 of 8)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND REACTOR CAVITY FLOODED GREATER THAN 23 FEET ABOVE THE VESSEL FLANGE

System / Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressor **AND** the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. **IF** out-of-service time is to exceed 548 hours, **THEN** notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - Two of three units required E16D E16E E16F	1. Monitor temperature in the Inverter and DC Equipment Rooms. 2. Install portable fans or verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 - YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE
Spent Fuel Cooling (N/A if the reactor core is fully loaded)	SFP Cooling Pump A and B	1. Take immediate action to repair the failed pump or switch to other pump. 2. Establish Emergency SFP Cooling Pump operation per 3/4-O-NOP-033.1, Spent Fuel Pit (SFP) Cooling System Malfunction. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 4. Monitor Spent Fuel Pool temperature and level frequently. 5. Suspend any activities that would risk remaining equipment required (ICW, CCW, Electrical, Makeup). 6. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	1 - YELLOW 0 - ORANGE
	Spent Fuel Pit Exhaust Fan	1. Initiate action to restore exhaust fan to service. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Suspend any activities that would risk Spent Fuel Pool Cooling capabilities.	0 - WHITE
	C 480 Volt Load Center	1. Initiate action to restore power to C load center. 2. Notify Operations, Maintenance, Work Controls, and Plant Managers. 3. Verify the ability to power the Emergency SFP Cooling Pump IAW 3/4-OP-033, Spent Fuel Pit Cooling System. 4. Monitor SFP temperature and level frequently. 5. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	De-energized - YELLOW * De-energized – ORANGE**
SFP Water Makeup Sources (N/A if the reactor core is fully loaded)	2 of following water sources: - RWST and RWST purification pump - PWT and PW pump - CVS Holdup Tank and Recirc Pump	1. Initiate actions to restore SFP makeup source in accordance with 3/4–OP-033. 2. Consider Fire Protection System and dual hose station. 3. Notify Operations, Maintenance, Work Controls and Plant Managers. 4. Monitor SFP level and temperature frequently. 5. Suspend all activities that would risk spent fuel cooling capabilities.	1 or less – YELLOW

* With Alt SFP cooling system available.

** With Alt SFP cooling system unavailable.

ENCLOSURE 5
(Page 1 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Establish or maintain Reactor Vessel level higher than three feet below the vessel flange. Maximize RCS inventory as much as is achievable. 4. Maintain RCS temperature as low as possible. 5. Ensure Feed and Bleed decay heat removal capability, using the HHSI pumps, is available. 6. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; **AND** 4KV Bus. 7. Upon loss of both pumps, initiate actions to establish Containment Closure, except for the equipment hatch. 8. Verify that the equipment hatch can be closed within the time frame to heat up to Mode 4 following a loss of shutdown cooling as predicted using the time to saturation of Figure 2. Station the necessary personnel at the hatch with direct communications to the RO. 9. Investigate the possibility of flooding the Reactor Cavity to a height of 23 feet above the Reactor Vessel Flange. 10. If RCS inventory is at Mid-Loop, then refer to Figure 5, Time to Core Uncovery from Mid-Loop.	1 – ORANGE 0 - RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two CCW Pumps*	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions as described per RHR pumps above.	1 – ORANGE 0 - RED

* Powered from independent power sources if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

ENCLOSURE 5
(Page 2 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. With only one CCW heat exchanger available, suspend operations that would risk the remaining heat exchanger. 4. Take other actions as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two ICW Pumps*	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW Pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – ORANGE 0 - RED
	Two ICW Headers	1. Verify that at least two ICW pumps **AND** two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	1 – YELLOW 0 - RED

* Powered from independent power sources if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

ENCLOSURE 5
(Page 3 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control	Two Charging Pumps (One with an available EDG power source. Both with an available EDG to meet the requirement below #)	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory; if possible, take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible. 6. Suspend activities that would place any remaining charging pump and its power supply at risk.	1 – ORANGE 0 - RED
	Flowpath from the charging pump to the RCS (Regen Hx or RCP seals) and suction capability from the BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** available flowpath to the RCS.	0 - ORANGE 0 – RED if no HHSI Flowpath
	One of four Primary Water Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from the opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	0 – YELLOW
	Two of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of two HHSI pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1 – YELLOW 0 – ORANGE

Two charging pumps required with available EDG power source if RCS level is lower than 3 feet below the vessel flange.

[Commitment Step 2.3.1]

ENCLOSURE 5
(Page 4 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	Two of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.*	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least two charging pumps. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – YELLOW 0 - ORANGE
	RCS Inventory at or above 5% in pressurizer. (Color Code Determination Only)	N/A	YELLOW drained to higher than 3' below flange ORANGE Drained to hot leg mid nozzle
On-site and Off-site Power	Two of the below listed Transformers capable of powering A **OR** B 4KV Bus • Startup • AUX on backfeed • Opposite unit startup transformer to **A** Bus • Either unit's **C** Bus transformer to **A** or **B** Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the availability of one C Bus to power A **OR** B 4KV Bus. 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 trf – ORANGE 0 - RED

* Both hot and cold leg injection paths are required if RCS level is lower than 3 feet below the vessel flange.
[Commitment Step – 2.3.1]

ENCLOSURE 5
(Page 5 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power (Cont'd)	A, B **AND** D 4KV Busses	1. Take action to restore the out-of-service components. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B **OR** D 4KV Busses unavailable, verify the ability to power A **OR** B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable, maintain both associated unit EDGs available.	Loss of D Bus - YELLOW Loss of A or B Bus – ORANGE 1 - RED
	One Emergency Diesel Generator on the Associated Unit*	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A **OR** B from one C Bus transformer.	0 - ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A **OR** B from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie AND • Opposite unit SU Xfmr - ORANGE

* Two EDGs required if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

ENCLOSURE 5
(Page 6 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B > 0-OP-028.2 SDM Calculation for Mode 5, or > Required Refueling C_B for Mode 6	1. Take action to restore boron concentration (C_B) to > 0-OP-028.2 SDM Calculation, or > Required Refueling C_B as applicable. 2. Verify NO primary water additions in progress.	RED if C_B < the required conc
Shutdown Monitoring Instrumentation	Two of Four Source Range Instruments (1 w/ Audible Count Rate in Mode 6)	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1/4 - WHITE 0/4 - YELLOW
	ARMS Channels: Three Inside Containment One Spent Fuel Pool #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels: R-11, R-12, R-14	1. Take action to secure releases via the unmonitored pathway **OR** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more - WHITE
	2 Core Exit Thermocouples (Required when the reactor vessel head is fully tensioned.)*	1. Arrange with I&C for alternate readouts or monitoring of CETs if possible. 2. Verify that two channels of wide range T_{HOT} are available. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 – YELLOW
	One Channel of Reactor Vessel Level HJTC (QSPDS) (Required when the reactor vessel head is fully tensioned.)	1. Take action to restore at least one channel as soon as possible. 2. Maximize RCS inventory as much as is allowed by plant conditions. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level. 4. If OOS as part of reactor disassembly, verify two channels of the reactor vessel draindown level indication available, one with control room readout. **IF** <2 channels available, maintain RCS level higher than 3 feet below the vessel flange.	0 – WHITE

* A minimum of two (2) CETs are required whenever RCS level is lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

\# One at a time may be OOS for calibration.

ENCLOSURE 5
(Page 7 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function	Required Equipment	Contingency Action	Color Code
Shutdown Monitoring Instrumentati on (Cont'd)	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 - WHITE
	Two Channels of Containment Sump Level Indication	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW
	One Pressurizer Cold Calibrated Level Indication **	1. Suspend activities which may result in RCS inventory loss. 2. Monitor temporary drain hoses for loss of RCS inventory at least once per shift. 3. Consider installation of a temporary level hose as appropriate for plant conditions.	0 - WHITE
	RCS Pressure Instruments PT-402, PT-403, and PT-405	1. Verify sufficient OMS trains are still available. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	0 – WHITE
	RCS Wide Range T_{HOT} and T_{COLD}: At least one channel per loop	1. Verify the availability of two CETs. 2. Verify that OMS controls are not affected by the unavailable channel.	None –WHITE
	Reactor Vessel Draindown Level Indication: Two of three channels available, (includes level hose) one with Control Room indication*#	1. Maintain RCS level higher than 3 feet below the vessel flange. 2. Do not reduce RCS inventory until two channels are available. 3. Investigate the possibility of verifying Reactor Vessel Level via some other means, (i.e., level hose or QSPDS).	1 available – YELLOW 0 – ORANGE requires Control Room Indication

* The level hose **AND** both draindown level indicators are required for RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

** **IF** RCS level is on scale in reactor vessel draindown instruments, **THEN** pressurizer cold calibrated level instrument is not required.

\# **IF** pressurizer cold calibrated level indication is greater than 10%, **THEN** reactor vessel draindown level indication is not required.

ENCLOSURE 5
(Page 8 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13)* +	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met (TCN Required) - YELLOW Required Time Not Met During Reduced Inventory - ORANGE
	Personnel Hatch (capable of being closed in accordance with Enclosure 13)* +	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed or capable of being closed in accordance with Enclosure 13) # Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. If an exception is taken while RCS level is lower than 3' below the vessel flange, and the penetration is NOT capable of being closed by at least one valve, a TCN with a contingency plan to achieve closure and meet 20 psi containment pressure is required PRIOR to authorizing work on the penetration. 4. Initiate action to restore closure capability. 5. Suspend activities that would risk required Decay Heat Removal Equipment. 6. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. <ins>**IF**</ins> out-of-service time is to exceed 119 hours, <ins>**THEN**</ins> notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the running RHR pump.	0 – YELLOW

* If RCS level lower than 3 feet below the vessel flange prior to fuel offload, control in accordance with 3/4-OP-041.9, until RCS level returns above 3 feet below the vessel flange. [Commitment Step – 2.3.1]

\# See Substep 5.1.1.22.c for requirements if RCS level lower than 3 feet below the vessel flange. [Commitment Step – 2.3.1]

\+ Capability includes provisions for unavailability of AC power and environmental conditions expected.

ENCLOSURE 5
(Page 9 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITHOUT RCS LOOPS AVAILABLE

Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressors and the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. If out-of-service time is to exceed 548 hours, notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - Two of three units required E16D E16E E16F	1. Monitor temperature in the Inverter and DC Equipment Rooms. 2. Install portable fans or verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 - YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE

ENCLOSURE 6
(Page 1 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal	Two RHR Pumps	1. Take immediate action to repair the failed pump. 2. Go to 3/4-ONOP-050, LOSS OF RHR, for loss of RHR. 3. Maximize RCS inventory as much as is achievable. 4. Maintain RCS pressurized to 100 psig to meet loops filled criteria. 5. Maintain RCS temperature as low as possible. 6. Ensure Feed and Bleed decay heat removal capability, using the HHSI pumps, is available. 7. Maintain Decay Heat Removal capability with at least two Steam Generators, including a source of feedwater. 8. Suspend any activities that would risk the remaining RHR, ICW, or CCW Pumps; EDG; **AND** 4KV Bus. 9. Upon loss of both pumps, initiate actions to establish Containment Closure except for the equipment hatch. 10. Verify that the equipment hatch can be closed within the time frame to heat up to Mode 4 following a loss of shutdown cooling as predicted using the heatup rates of Figure 1. Station the necessary personnel at the hatch with direct communications to the RO.	1 – YELLOW 0 – RED
	Two RHR Heat Exchangers	1. Take action as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two CCW Pumps	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Carry out other actions as described per RHR pumps above.	1 – ORANGE 0 - RED

ENCLOSURE 6
(Page 2 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Decay Heat Removal (Cont'd)	Two CCW Heat Exchangers	1. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 2. Take action to restore the unavailable component to service. 3. Take other actions as described for RHR Pumps.	1 – ORANGE 0 - RED
	Two ICW Pumps	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Suspend activities that may risk the remaining ICW Pumps. 3. CCW cross-tie to the other unit may be appropriate. 4. Notify the Work Controls Manager, Operations Manager, Maintenance Manager, and Plant Manager.	1 – ORANGE 0 - RED
	Two ICW Headers	1. Verify at least two ICW pumps **AND** two CCW heat exchangers are aligned to the remaining ICW header. 2. Prior to removing an ICW header from service, verify that the basket strainer associated with the remaining header is clean. 3. Have a contingency plan, with responsible individuals designated, in place to restore the header to service.	1 – YELLOW 0 - RED
	Source of feedwater and a flowpath from one of the following: SGFP SSGFP Condensate PP Condensate Transfer PP SGWL PP	1. Take action to restore the unavailable component. 2. Restrict Activities that could potentially threaten RHR	0 - YELLOW
	2 Steam Dump to Atmosphere Valves	1. Take action to restore the unavailable component. 2. Restrict Activities that could potentially threaten RHR	0 - YELLOW

ENCLOSURE 6
(Page 3 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Inventory Control	Two Charging Pumps (one with an available EDG power source)	1. Initiate action to repair the unavailable charging pump. 2. Notify the Operations, Work Controls, Maintenance and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS. 4. Do not reduce RCS inventory; if possible, take action to maximize RCS inventory. 5. Maintain RCS temperature as low as possible. 6. Suspend activities that would place any remaining charging pump and its power supply at risk.	1 – YELLOW 0 - ORANGE
	Flowpath from the charging pump to the RCS (Regen Hx or RCP seals) and suction capability from BAST or RWST	1. Initiate action to repair the unavailable components. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of two HHSI Pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0 – ORANGE
	One of four Primary Water Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify capability to cross connect Primary Water from the opposite unit. 4. Verify the availability of the charging pump suction from the RWST.	0 – YELLOW
	One of four Boric Acid Pumps	1. Initiate action to repair the unavailable components. 2. Notify Operations, Work Controls, Maintenance, and Plant Managers. 3. Verify the availability of the charging pump suction from the RWST. 4. Verify the availability of two HHSI pumps with suction aligned to an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	0 - ORANGE

ENCLOSURE 6

(Page 4 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Inventory Control (Cont'd)	Two of four HHSI Pumps each with an emergency power supply and suction capability from an RWST with at least 20,000 gallons of water **AND** an available flowpath to the RCS.	1. Initiate action to restore the unavailable components. 2. Verify the availability of at least two charging pumps. 3. Maximize RCS inventory. 4. Maintain RCS temperature as low as possible. 5. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – YELLOW 0 - ORANGE
On-site and Off-site Power	Two of the below listed Transformers capable of powering A **OR** B 4KV Bus * • Startup • AUX on backfeed • Opposite unit startup transformer to **A** Bus • Either Unit's C Bus transformer to **A OR B** Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Go to 3/4-ONOP-092.3, STARTUP TRANSFORMER MALFUNCTION, for S/U transformer malfunction. 3. Initiate actions to return the required transformer to service. 4. Verify the availability of both EDGs. 5. Verify the availability of the station blackout tie. 6. Suspend activities that would risk the remaining power supplies. 7. Verify the availability of one C Bus to power A or B 4KV Bus 8. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 xfmr with SBO tie - YELLOW 1 xfmr without SBO tie - ORANGE 0 xfrm - RED

* Reference Step 5.1.1.29

ENCLOSURE 6
(Page 5 of 9)

**MINIMUM REQUIRED EQUIPMENT, PHASE II,
REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN
200 DEGREES WITH RCS LOOPS FILLED**

Function	Required Equipment	Contingency Action	Color Code
On-site and Off-site Power (Cont'd)	A, B **AND** D 4KV Busses	1. Take action to restore the out-of-service components. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS 3/4-ONOP-004.5, LOSS OF D 4KV BUS 2. Verify at least two on-site sources of AC power are available. 3. For loss of Off-site power go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER. 4. With A, B, **OR** D 4KV Busses unavailable, verify the ability to power A **OR** B Bus from one C Bus transformer. 5. With D 4KV Bus unavailable maintain both associated unit EDGs available.	Loss of D Bus - YELLOW Loss of A or B Bus – ORANGE 1 - RED
	One Emergency Diesel Generator on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the Off-site power sources. 3. Verify availability of the station blackout tie. 4. Verify the ability to power A or B Bus from one C Bus transformer.	0 - ORANGE
	Station Blackout Tie	1. Verify availability of both associated unit EDGs. 2. Suspend activities that may risk the Off-site power supplies. 3. Verify the ability to power A **OR** B Bus from one C Bus transformer.	0 w/ C bus tie – YELLOW 0 w/o: • C Bus tie AND • Opposite unit SU Xfmr - ORANGE

ENCLOSURE 6
(Page 6 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Reactivity Control	C_B > 0-OP-028.2 SDM Calculation	1. Take action to restore boron concentration (C_B) to > 0-OP-028.2 SDM Calculation. 2. Verify NO primary water additions in progress.	RED if C_B < 0-OP-028.2 SDM Calculation
Shutdown Monitoring Instrumentation	Two of Four Source Range Instruments 1 w/ Audible Count Rate	1. Take action to restore the failed components. 2. Suspend activities that could reduce the available Shutdown Margin. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1/4 - WHITE 0/4 - YELLOW
	ARMS Channels: Three Inside Containment #	1. Take action to restore the failed components. 2. Install temporary monitoring equipment in the affected area. 3. Suspend activities that may increase radiation levels in the affected area.	Loss of 1 or more - WHITE
	PRMS Channels R-11, R-12, R-14, R-19	1. Take action to secure releases via the unmonitored pathway **OR** take action to continue releases as allowed by Technical Specifications. 2. Consider installation of temporary monitoring equipment.	Loss of 1 or more - WHITE
	2 Core Exit Thermocouples	1. Arrange with I&C for alternate readouts or monitoring of CETs if possible. 2. Verify that two channels of wide range T_{HOT} are available. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 –YELLOW

\# One at a time may be OOS for calibration.

ENCLOSURE 6
(Page 7 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH AT LEAST TWO RCS LOOPS FILLED

Function	Required Equipment	Contingency Action	Color Code
Shutdown Monitoring Instrumentation (Cont'd)	One Channel of Reactor Vessel Level HJTC (QSPDS)	1. Take action to restore at least one channel as soon as possible. 2. Maximize RCS inventory as much as is allowed by plant conditions. 3. Maintain RCS greater than 10 percent Wide Range Pressurizer Level.	0 - WHITE
	One Channel of Containment Water Level Indication	1. Take action to restore one channel to service as soon as possible.	0 - WHITE
	Two Channels of Containment Sump Level Indication	1. Restore two channels to service as soon as possible. 2. Suspend activities that may result in increased sump level. 3. Verify that any temporary drain hoses are not resulting in loss of RCS inventory at least once per shift.	1 – WHITE 0 - YELLOW
	One of four channels of Pressurizer Level Indication +	1. Suspend activities which may result in RCS inventory loss.	0 - WHITE
	RCS Pressure Instruments PT-402, PT-403, and PT-405	1. Verify sufficient OMS trains are still available. 2. Secure power to any MOV which could result in RHR loss due to unwanted action from an unavailable pressure channel. (N/A if interlocks defeated.) 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers.	1 – YELLOW 0 – ORANGE
	RCS Wide Range T_{HOT} and T_{COLD}: At least one channel per loop	1. Verify the availability of two CETs. 2. Verify that OMS controls are not affected by the unavailable channel.	Per Loop only T_{HOT} or T_{COLD} – WHITE NONE – YELLOW

ENCLOSURE 6

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Function / Support Equipment	Required Equipment	Contingency Action	Color Code
Containment Closure	Equipment Hatch (capable of being closed with four bolts in accordance with Enclosure 13) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	Required Time Met - GREEN Required Time Not Met (TCN Required) - YELLOW
	Personnel Hatch (capable of being closed in accordance with Enclosure 13) *	1. Suspend activities that risk required Decay Heat Removal Equipment. 2. Initiate action to restore the capability to close the hatch in the required time frame. 3. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
	Containment Penetrations (At least one valve in each penetration that is **NOT** pressurized should be kept closed or capable of being closed in accordance with Enclosure 13) Exceptions may be taken under administrative controls for testing, surveillance, and maintenance.	1. If an exception is taken, and at least one valve in the penetration is capable of closure, either manually from the Control Room or locally, the penetration shall be logged on Attachment 3. The log entry shall identify the actions necessary to close the penetration. 2. If an exception is taken, and the penetration is **NOT** capable of being closed by at least one valve, a **TCN** with a contingency plan to achieve closure is required **PRIOR** to authorizing work on the penetration. 3. Initiate action to restore closure capability. 4. Suspend activities that would risk required Decay Heat Removal Equipment. 5. Notify the Maintenance, Operations, Work Controls, and Plant Managers.	
Risk Significant Equipment	One Auxiliary Building Exhaust Fan	1. **IF** out-of-service time is to exceed 119 hours, **THEN** notify the Work Controls Manager and Plant Manager. 2. Assess the impact on the operating unit. 3. Assess the impact on the Operating RHR pump.	0 - YELLOW

* Capability includes provisions for unavailability of AC power and environmental conditions expected.

ENCLOSURE 6
(Page 9 of 9)

MINIMUM REQUIRED EQUIPMENT, PHASE II, REDUCED DECAY HEAT LOAD AND RCS TEMP LESS THAN 200 DEGREES WITH RCS LOOPS FILLED

Support Equipment	Required Equipment	Contingency Action	Color Code
Risk Significant Equipment (Cont'd)	One Diesel Driven Instrument Air Compressor **AND** the Instrument Air Cross Tie Lines	1. Verify the availability of a portable Instrument Air Compressor. 2. Verify the availability of the Instrument Air Cross Tie. 3. **IF** out-of-service time is to exceed 548 hours, **THEN** notify the Work Controls Manager and Plant Manager. 4. Assess the impact on the operating unit.	0 – YELLOW
	Vital DC Room HVAC - Two of three units required E16D E16E E16F	1. Monitor temperature in the Inverter and DC Equipment Rooms. 2. Install portable fans or verify availability of portable fans. 3. Assess the impact on the operating unit.	1 – WHITE 0 - YELLOW
	Service Water Pumps - One Electric pump **AND** one Diesel driven pump	1. Assess the impact on the operating unit.	Loss of 1 or more - WHITE

ENCLOSURE 7
(Page 1 of 2)

MINIMUM REQUIRED EQUIPMENT SPENT FUEL POOL DURING REFUELING OUTAGES

System	Required Equipment	Contingency Action	Color Code
Spent Fuel Cooling	SFP Cooling Pump A **AND** B	1. Take immediate action to repair the failed pump, or switch to the other pump. 2. Establish Emergency SFP Cooling Pump operation per 3/4-ONOP-033.1, Spent Fuel Pit (SFP) Cooling System Malfunction. 3. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 4. Monitor Spent Fuel Pool temperature and level frequently. 5. Suspend any activities that would risk remaining equipment required (ICW, CCW, Electrical, Makeup). 6. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	1 - YELLOW 0 – RED
	Two ICW Pumps	1. Go to 3/4-ONOP-019, INTAKE COOLING WATER MALFUNCTION, for loss of ICW. 2. Initiate action to restore at least one (1) ICW Pump to service. 3. Monitor SFP temperature and level periodically. 4. Notify the Operations, Maintenance, Work Controls, and Plant Managers. 5. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	1 - YELLOW 0 - RED
	One ICW Header	1. Obtain Operations and Plant Manager permission prior to removing an ICW Header from service. 2. Verify one ICW pump **AND** one CCW Heat Exchanger are aligned to the functional header. 3. Verify functional header basket strainer is clean. 4. Initiate actions to restore at least one header to functional status. 5. Take actions as described for ICW Pump.	0 - RED
	Two CCW Pumps	1. Take action to restore at least one pump to service. 2. Go to 3/4-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for loss of CCW. 3. Notify Operations, Maintenance, Work Controls, and Plant Managers. 4. Monitor SFP temperature and level frequently. 5. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	1 - YELLOW 0 - RED
	One CCW Heat Exchanger	1. Take actions as described for CCW pump.	0 - RED

ENCLOSURE 7
(Page 2 of 2)

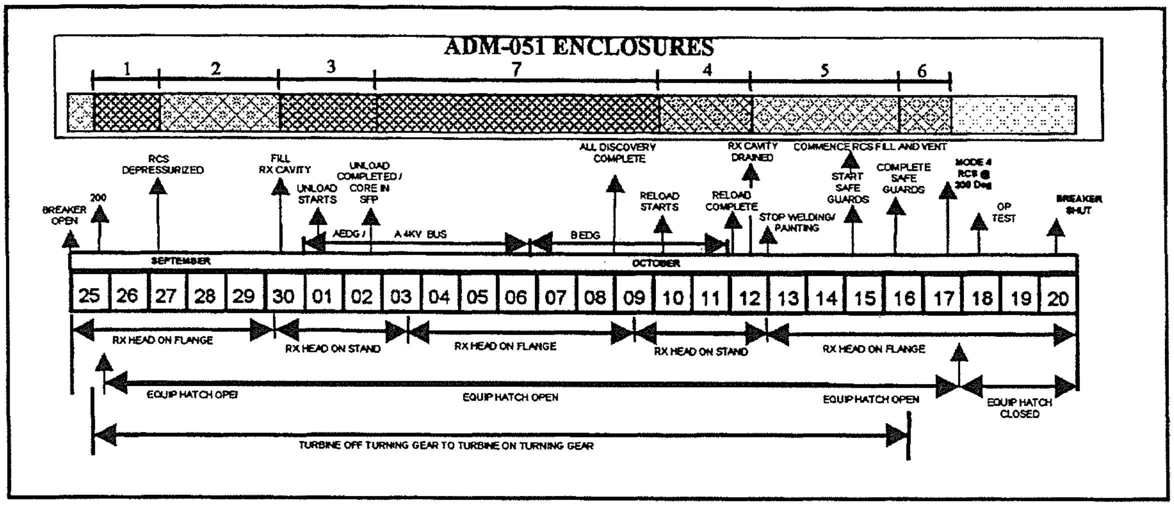
MINIMUM REQUIRED EQUIPMENT SPENT FUEL POOL DURING REFUELING OUTAGES

Function / System	Required Equipment	Contingency Action	Color Code
Spent Fuel Cooling	A **AND** B 4KV Bus	1. Go to 3/4-ONOP-004, LOSS OF OFF-SITE POWER, for loss of off-site power. 2. Take action to restore out-of-service components. 3. Notify Operations, Maintenance, Work Controls, and Plant Managers. 4. Go to appropriate procedure below: 3/4-ONOP-004.2, LOSS OF A 4KV BUS 3/4-ONOP-004.3, LOSS OF B 4KV BUS	1 - YELLOW 0 bus - RED
	Spent Fuel Pit Exhaust Fan	1. Initiate action to restore exhaust fan to service. 2. Notify the Operations, Work Controls, Maintenance, and Plant Managers. 3. Suspend any activities that would risk Spent Fuel Pool Cooling capabilities.	0 - WHITE
Onsite/ Offsite Power Function	One Emergency Diesel Generator on the Associated Unit	1. Take action to restore the unavailable EDG to service. 2. Suspend activities that may risk the off-site power sources. 3. Verify the availability of the Station Blackout Ties. 4. Verify the ability to energize A **OR** B 4KV Bus from either unit C Bus.	0 - ORANGE
	C 480 Volt Load Center	1. Initiate action to restore power to C load center. 2. Notify Operations, Maintenance, Work Controls, and Plant Managers. 3. Verify the ability to power the Emergency SFP Cooling Pump IAW 3/4-OP-033, Spent Fuel Pit Cooling System. 4. Monitor SFP temperature and level frequently. 5. Go to 3/4-ONOP-033.1, SPENT FUEL PIT (SFP) COOLING SYSTEM MALFUNCTION.	0 - YELLOW W/ALT SFP COOLING 0 - RED W/NO ALT SFP COOLING
SFP Water Makeup Sources	2 of following water sources: - RWST and RWST purification pump - PWT and PW pump - CVS Holdup Tank and Recirc Pump	1. Initiate actions to restore SFP makeup source in accordance with 3/4-OP-033. 2. Consider Fire Protection System and dual hose station. 3. Notify Operations, Maintenance, Work Controls and Plant Managers. 4. Monitor SFP level and temperature frequently. 5. Suspend all activities that would risk spent fuel cooling capabilities.	1 or less – YELLOW

ENCLOSURE 8
(Page 1 of 1)

UNIT 4 2000
REFUELING OUTAGE OVERVIEW

UNIT 4 2000
REFUELING OUTAGE OVERVIEW



ENCLOSURE 9
(Page 1 of 2)

SAMPLE OUTAGE COMMUNICATIONS TOOL

03/28/05 12:40 PM

Turkey Point Nuclear XX/XX/XX
PT4-22 – OCC Turnover (Nights to Days)

Industrial Safety & Human Performance

Injuries In Last 24 Hours : 0

TOTALS: 0 MINOR 0 OSHA RECORDABLES

Injuries: None

Near Misses: None

SAFETY NEVER TAKES A DAY OFF!

Outage Dose Status

Last 12 Hours: Actual – 0.000 Rem Estimate - 0.000 Rem

Outage Total: Actual – 0.0000 Rem Estimate - 0.000 Rem

PCR's last 12 Hours: 0

PCR's Outage Total : 0 Level I

0 Level II

Posting Changes:

Unit 3 Areas Of Focus

Unit 4 Status: Mode 3

Outage Unit Risk

Risk Status:

Critical Equipment:

Evolutions in Progress: None

Evolutions planned for next 24 hours:

Major Ops Evolutions

Critical Path & Priority Activity Status:

•

Expected Upcoming Milestones

•
•

Major Work Completed in Last 24 hours

•
•
•
•
•
•

Major Maintenance Activities

•
•
•
•
•
•

Major Engineering Activities

•
•
•

Parts Issues

•
•
•
•

Outage Paper Work Status

Total in Sched:		Total Scheduled To Date	Total Received
Total WO's:	0	0	0
Red WO's:	0	0	0
Yellow WO's:	0	0	0
~WA's:	0	0	0
..iks:	0	0	0
OL's:	0	0	0
..A's:	0	0	0
GL91-18:	0	0	0
Tops:	0	0	0

Major Projects Activities

•
•
•
•
•
•

Turbine Activities

Working Complete

G\WC\Common\OCC\U3 Cyc 21 – 2004\PT3-21 Turnover Sheets\Turnover (date days/nights or nights to days)

W97:DJT/cls/mr/emc

ENCLOSURE 9
(Page 2 of 2)

SAMPLE OUTAGE COMMUNICATIONS TOOL

03/28/05 12:40 PM

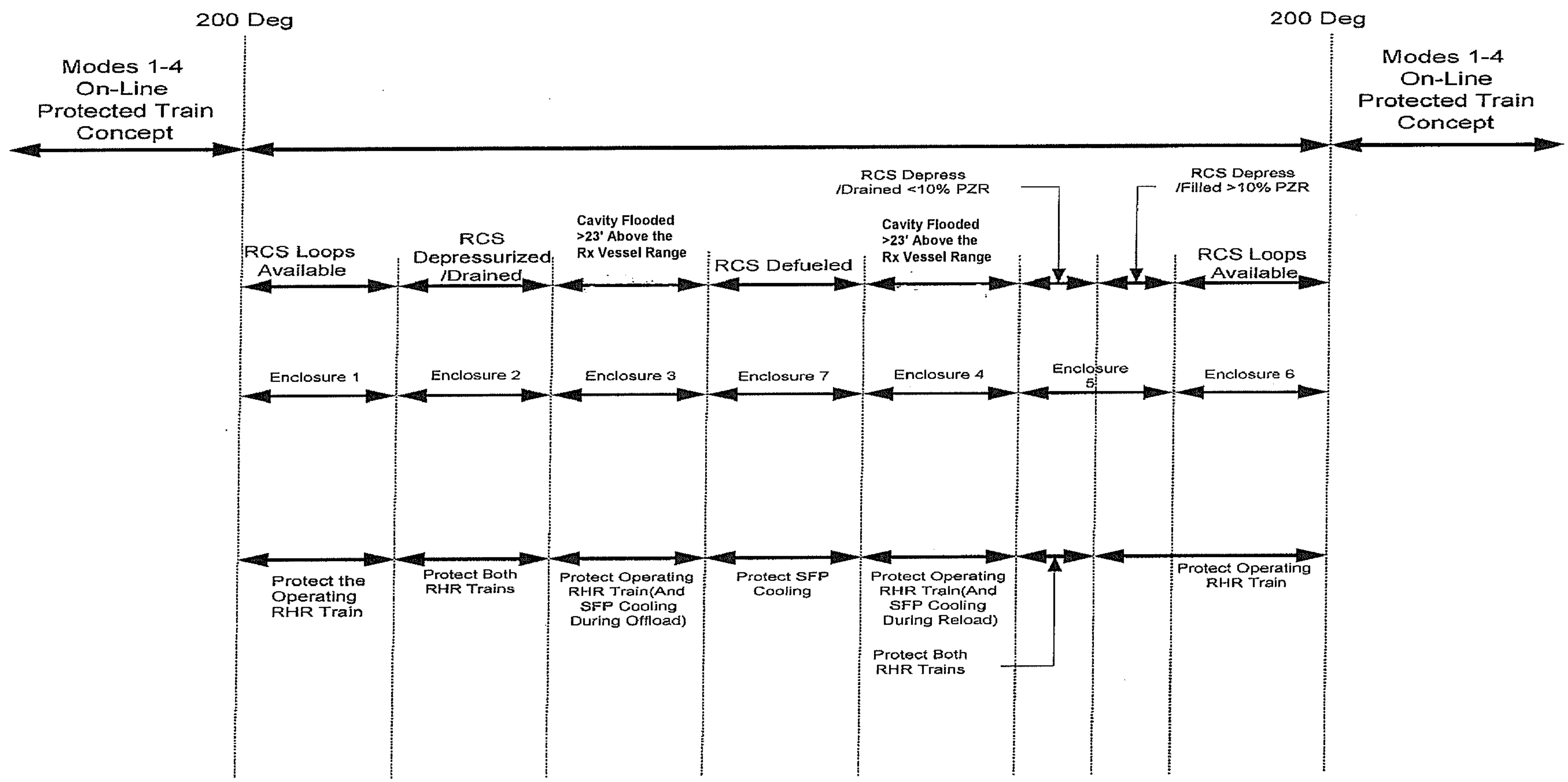
Protected Equipment

FUNCTION	REQUIRED EQUIPMENT
DECAY HEAT REMOVAL	3A & 3B RHR Pumps/ CCW/ ICW Pp – SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT
INVENTORY CONTROL	2 Chg Pumps with Boron Flow path – SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT
ON-SITE , OFF-SITE POWER	A,B,C & D 4KV Busses/One EDG – SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT
REACTIVITY CONTROL	Boron Concentration meets Plant Curve Book – SEE ENCL. 6 0-ADM-051 FOR LIST OF EQUIPMENT
SHUTDOWN MONITOR INSTRUMENTATION	2 Source Range Inst. - SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT
CONTAINMENT CLOSURE	30 Minute Closure – SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT
RISK SIGNIFICANT EQUIPMENT	2 Aux. Bldg. Exh. Fans / One Diesel I. Air Comp. - SEE ENCLOSURE 6 0-ADM-051 FOR LIST OF EQUIPMENT

G\WC\Common\OCC\U3 Cyc 21 – 2004\PT3-21 Turnover Sheets\Turnover (date days/nights or nights to days)

ENCLOSURE 10
(Page 1 of 4)

MODES 5, 6, AND DEFUELED ACTIVE SHUTDOWN COOLING EQUIPMENT PROTECTED TRAIN CONCEPT



ENCLOSURE 10
(Page 2 of 4)

MODES 5, 6, AND DEFUELED ACTIVE SHUTDOWN COOLING EQUIPMENT PROTECTED TRAIN CONCEPT

NOTE

Specific procedural guidance for the placement and removal of signs and barriers is provided in Attachments 8 through 21.

Enclosure 1 RCS Loops Available

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses.
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses.
- Operating RHR train 4kv switchgear
- Operating RHR train vital 480v load centers
- Operating RHR train EDG rooms
- 3A MCC Vital Section (3A Train only)
- D bus room (if C CCW pump or C ICW pump is required for the operating RHR Train)
- Operating RHR pump room
- Operating RHR train CCW pump
- Operating RHR train ICW pump
- 2 of 3 CCW Hx

Enclosure 2 and 5 (Pressurizer Drained <10%) Without RCS Loops Available

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses.
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses.
- Both A&B 4kv switchgear
- Vital 480v load centers
- Both EDG rooms
- 3A MCC Vital Section (3A Train only)
- D bus room (if C CCW pump or C ICW pump is required for the protected RHR Train)
- Both RHR pump rooms
- Operating RHR train CCW pump
- Operating RHR train ICW pump
- 1 non-operating RHR train CCW pump
- 1 non-operating RHR train ICW pump
- 2 of 3 CCW Hx

ENCLOSURE 10
(Page 3 of 4)

MODES 5, 6, AND DEFUELED ACTIVE SHUTDOWN COOLING EQUIPMENT PROTECTED TRAIN CONCEPT

Enclosure 3 and 4 Cavity Flooded >23' Above the Vessel Flange

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses
- Operating RHR train 4kv switchgear
- Operating RHR train vital 480v load centers or all vital 480v load centers when cross-tied
- C 480v load center (if core less than fully loaded)
- SFP cooling equipment room and heat exchanger (if core less than fully loaded)
- Operating RHR train EDG rooms
- 3A MCC Vital Section (3A Train only)
- D bus room (if C CCW pump or C ICW pump is required for the operating RHR Train)
- Operating RHR pump room
- Operating RHR train CCW pump
- Operating RHR train ICW pump
- 2 of 3 CCW Hx
- SFP makeup water sources (pumps)

Enclosure 5 (Pressurizer Filled >10%) Without RCS Loops Available

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses
- Operating RHR train 4kv switchgear
- Operating RHR train vital 480v load centers
- Operating RHR train EDG rooms
- 3A MCC Vital Section (3A Train only)
- D bus room (if C CCW pump or C ICW pump is required for the operating RHR Train)
- Operating RHR pump room
- Operating RHR train CCW pump
- Operating RHR train ICW pump
- 2 of 3 CCW Hx

Enclosure 6 RCS Loops Available

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses
- Operating RHR train 4kv switchgear
- Operating RHR train vital 480v load centers
- Operating RHR train EDG rooms
- 3A MCC Vital Section (3A Train only)
- D bus room (if C CCW pump or C ICW pump is required for the protected RHR Train)
- Operating RHR pump room
- Operating RHR train CCW pump
- Operating RHR train ICW pump
- 2 of 3 CCW Hx

ENCLOSURE 10
(Page 4 of 4)

MODES 5, 6, AND DEFUELED ACTIVE SHUTDOWN COOLING EQUIPMENT PROTECTED TRAIN CONCEPT

Enclosure 7 RCS Defueled

Protect the following equipment with signs and/or barriers:

- Switchyard bay for the transformer (Startup or Main) supplying the safety related 4 kv buses.
- Transformer (Startup or Main & Aux) supplying the safety related 4 kv buses.
- If C 480v load center fed from A 4kv bus:
  - A 4kv switchgear
  - A EDG rooms
  - 3A MCC Vital Section
  - A 480v load center
  - 1 A train CCW pump
  - 1 A train ICW pump
- If C 480v load center fed from D 480v load center:
  - B 4kv switchgear
  - B EDG rooms
  - B and D 480v load centers
  - 1 B train CCW pump
  - 1 B train ICW pump
- C 480v load center or all vital 480v load centers when cross-tied
- SFP cooling equipment room
- D bus room (if C CCW pump or C ICW pump is required for the operating SFP cooling loop)
- 1 of 3 CCW Hx
- SFP makeup water sources (pumps)

ENCLOSURE 11
(Page 1 of 1)

OUTAGE ACTIVITY REVIEW CHECKLIST

1.	Does the activity involve work in or affecting the Switchyard?	Yes ☐	No ☐
2.	Does the activity affect, or have the potential to effect, required equipment listed in Enclosures 1 through 7 (Even if not reducing below the minimum Required)?	Yes ☐	No ☐
3.	Does the activity involve configuration, or changing configuration of operating shutdown cooling trains?	Yes ☐	No ☐
4.	Does the activity involve work on or near protected/operating shutdown cooling equipment?	Yes ☐	No ☐
5.	Does the activity challenge containment closure or provide a direct path to atmosphere that does not meet the requirements of Attachment 3?	Yes ☐	No ☐
6.	Does the activity involve a freeze seal that threatens inventory control?	Yes ☐	No ☐
7.	Does the activity involve the potential introduction of hazards (e.g., fire, flooding, etc.) *	Yes ☐	No ☐
8.	Does the activity or evolution have the potential to result in a rapid loss of RCS or SFP inventory in the event of an active failure or personnel error.	Yes ☐	No ☐

A **Yes** answer indicates that the activity should be considered a **R-logic** activity in the outage schedule unless further review concludes the activity is adequately controlled by other existing processes or procedures.

* Evaluate hot work performed in areas that risk Key Safe Shutdown Functions. Determine if contingency plans are required.

ENCLOSURE 12
(Page 1 of 1)

COMPONENT AVAILABILITY SCREENING CHECKLIST

NOTE

A conservative approach should be employed when assessing component availability.

1. If the component is ECO tagged, is it under operations control, or capable of being placed under operations control, in a reasonable time frame? (i.e., the component is not under a danger tag) Yes ☐ No ☐
2. Can the component be restored in a time frame consistent with the anticipated need for the component? Yes ☐ No ☐
3. Is the component intact and can be made functional by automatic or simple manual action? Yes ☐ No ☐
4. Is the contingency plan for the restoration of the component well communicated and understood by all groups involved? Yes ☐ No ☐
5. Is the contingency plan for restoration of the component adequate and reasonably expected to be accomplished? Yes ☐ No ☐
6. Is the component under a non-intrusive surveillance not requiring extensive efforts(i.e., filling and venting of systems, etc) to restore? Yes ☐ No ☐
7. If the component or function is temporary, has the component been tested? Yes ☐ No ☐

All **Yes** answers support considering the component available. Any **No** answers indicate the component should be considered unavailable.

ENCLOSURE 13
(Page 1 of 1)

CONTAINMENT CLOSURE TIME LIMITS

0-ADM-051 Enclosure	Ctmt Closure Time Limit	May be extended with TCN?	Comments
1	30 minutes	Y	
2 (Not RI, time to core boil <30 minutes)	Time to core boiling	N	NUMARC 91-06 Guidelines
2 (Not RI, time to core boil >30 minutes)	30 minutes	Y	Still limited to time to core boiling (NUMARC 91-06)
2 (RI, time to core boil <30 minutes)	Time to core boiling	N	NUMARC 91-06 Guidelines
2 (RI, time to core boil >30 minutes)	30 minutes	N	NRC Commitment (GL88-17)
3 (no core alts)	30 minutes	Y	Time to core boiling is assumed to be >30 minutes in this enclosure. Still limited to time to core boiling. NUMARC 91-06 Guidelines
3 (During core alts)	30 minutes	N	NUMARC 93-01 Guidelines [Commitment 2.3.2]
4 (no core alts)	30 minutes	Y	Time to core boiling is assumed to be >30 minutes in this enclosure. Still limited to time to core boiling. NUMARC 91-06 Guidelines
4 (During core alts)	30 minutes	N	NUMARC 93-01 Guidelines [Commitment 2.3.2]
5 (Not RI, time to core boil <30 minutes)	Time to core boiling	N	NUMARC 91-06 Guidelines
5 (Not RI, time to core boil >30 minutes)	30 minutes	Y	Still limited to time to core boiling. NUMARC 91-06 Guidelines
5 (RI, time to core boil <30 minutes)	Time to core boiling	N	NUMARC 91-06 Guidelines
5 (RI, time to core boil >30 minutes)	30 minutes	N	NRC Commitment (GL88-17)
6	30 minutes	Y	
7	N/A		
RI - Reduced Inventory			

ATTACHMENT 1
(Page 1 of 1)

INTENTIONALLY LEFT BLANK

ATTACHMENT 2
(Page 1 of 2)

TEMPORARY CHANGE NOTIFICATION

Temporary Change Number ________ ________ ________
UNIT CYCLE or **FO** name NUMBER

System Number ______________________ System Name ______________

Initiating Document/Activity ______________

Description:

Expected Duration of Change ______________________

Plant Contact ______________________

Work Phone ______________ Home Phone ______________ Beeper ______________

KEY SAFE SHUTDOWN FUNCTION(S) AFFECTED:

Decay Heat Removal	Inventory Control	Power Availability	Reactivity Control	Containment Integrity	Instrumentation	Fire Protection	Risk Significant Support Equipment

Evaluation/Assessment of Key Safe Shutdown Functions

Note: Evaluation should include:

1. Consideration of common or unit specific equipment that affects the other unit.
2. Review of all TCNs in effect during the duration of this TCN to ensure the total impact of all equipment out of service is considered.

ATTACHMENT 2
(Page 2 of 2)

TEMPORARY CHANGE NOTIFICATION

Temporary Change Number ______________ ____________ ____________

Affected Drawings and Procedures (Attach Markups and OTSCs)

____
____
____
____
____
____
____
____

☐ Yes ☐ No The applicable off-normal response procedures are challenged by this TCN.

If Yes, the appropriate recovery guidelines are included in the procedure mark-ups and are available in the Control Room.

Special Notes/Off Normal Guidance/Contingencies:

☐ YES ☐ NO PWO requires contingency actions

If YES, then verify PWO contingencies are incorporated and reviewed as acceptable.

Approval/Acceptance

Risk Assessment Lead ______________________________ Date ____________

System Engineer ______________________ SM ______________________ Date ____________

Operations Manager ______________________ Plant General Manager ______________________

Engineering Manager ______________________ Work Controls Manager ______________________

Maintenance Manager ______________________

F-367 2:2 – Rev. 2 (8/30/10 – 0-ADM-051)

ATTACHMENT 3
(Page 1 of 3)

CONTAINMENT PENETRATION EXCEPTIONS

Part A

Penetration	Actions Required For Closure	Department Responsible For Closure	Estimated Time to Close	Date Entered	Date Closed

ATTACHMENT 3
(Page 2 of 3)

CONTAINMENT PENETRATION EXCEPTIONS
EQUIPMENT HATCH DOOR

Date:______________________

Part B

Date and Time Accepted	Containment Coordinator/Designee Name (Print)	Signature*	Notify SM/US Ext 6493

* Signature - Indicates designated individual accepts responsibility to close the Containment Equipment Hatch with a minimum of 4 bolts in accordance with 0-ADM-051, Enclosure 13, when and if directed by the Shift Manager. The designated person has an assigned crew of individuals and has verified the necessary equipment to close the Equipment Hatch is staged in accordance with 0–GMM–051.2, including provisions for unavailability of AC power and environmental conditions expected.

Reviewed by:______________________________
Shift Manager or SRO Designee

ATTACHMENT 3
(Page 3 of 3)

CONTAINMENT PENETRATION EXCEPTIONS
PERSONNEL AIRLOCK DOOR

Date:___________________________

Part C

Date and Time Accepted	Name (Print)	Signature*

* Signature – Indicates designated individual accepts responsibility to close in an expeditious manner within 30 minutes, or prior to time to core boiling, (whichever is less) at least one Containment Personnel Airlock Door when directed by the Shift Manager. If RCS level lower than 3 feet below the vessel prior to fuel offload, control in accordance with 3/4-OP-041.9 until RCS level returns above 3 feet below the vessel. [Commitment Step 2.3.1]

Reviewed by: ______________________________________
Shift Manager or SRO Designee

ATTACHMENT 4
(Page 1 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

INSTRUCTIONS FOR COMPLETING OUTAGE RISK ASSESSMENT FORMS

NOTES

- *Complete Parts A and B at the following times:*
  - *Prior to shift turnover and to be available for the crew meetings.*
  - *When changing enclosures or minimum equipment as used to determine risk color.*
  - *Upon commencing or completing fuel movement in containment or the SFP.*
- *Part B should be completed each shift when swapping protected train equipment*
- *Updates to Attachment 4, Part A and B should be provided as soon as reasonably possible.*
- *Part C is a daily verification of protected train postings and should be performed each dayshift and documented in the RCO logs when completed.*

Completion of Part A

1. Evaluate color determination using the current enclosure based on plant conditions.
2. Obtain review of Attachment 4 Part A from the Shift Manager or designee.
3. Scan Attachment 4 Part A and email to Document Control Technician at documentcontrolptn@fpl.com who will:
   a. Provide a copy to the OCC Manager.
   b. Place a copy of the Risk Assessment Book in the WCC.
4. Place the reviewed copy of Attachment 4 Part A in the Risk Assessment Book in the Control Room.

NOTE

Part B will be maintained electronically and the following pages provide an example of the information contained in the electronic version.

Completion of Part B

1. Open the electronic version of the Risk Control Form.
2. Obtain a copy of the latest revision to the outage schedule from the Work Controls web site.
3. Open the Risk Control Form worksheet tab corresponding to the applicable enclosure of 0-ADM-051.

ATTACHMENT 4
(Page 2 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

INSTRUCTIONS FOR COMPLETING OUTAGE RISK ASSESSMENT FORMS

4. Update the Risk Control Form for the current plant conditions. Identify the status of components by the following convention:
   a. Protected or required components per 0-ADM-51 will be shaded a light gray.
   b. Running or energized equipment will be bolded.
5. Update the top of the form with current date, time and risk color determination.
6. Calculate and record the time to boil for the reactor. When applicable, use the Plant Curve Book to determine time to heat SFP to 200°F.
7. Include the applicable TCNs number and title if currently in affect.
8. **IF** risk color is less than white due to an equipment failure or unanticipated change in plant condition and a TCN has not been completed, **THEN** provide information identifying the at risk components.
9. Provide the completed copy to the Shift Manager or SRO designee for review.
10. Post the reviewed copy of Attachment 4 Part B in an appropriate location in the Control Room.
11. Save a copy Attachment 4 Part B in G:\Wc\DeptShares\0-ADM-051 Risk Status\PTX-XX.
12. E-mail Attachment 4 Part B to Document Control Technician at documentcontrolptn@fpl.com who will:
   a. Provide eight color 11 X 17 copies to the OCC Manager.
   b. Provide three color 11 X 17 copies and post them at the OCC, WCC and Operation's Turnover Meeting Room.
13. The OCC Manager will ensure that the applicable department supervisor places a copy of Attachment 4 Part B, in an appropriate location assessable to his personnel, at:
   a. I&C Maint.
   b. Elect. Maint
   c. Mech. Maint
   d. AMES
   e. Projects
   f. RSS
   g. Turbine Team
   h. EPU

ATTACHMENT 4
(Page 3 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

INSTRUCTIONS FOR COMPLETING OUTAGE RISK ASSESSMENT FORMS

Completion of Part C

1. Obtain a copy of the current protected train posting attachment in the risk assessment book.
2. Perform a check of the protected train postings:
   a. Ensure the proper placement of postings and barriers has been maintained to adequately identify protected equipment or areas.
   b. Ensure no unauthorized work is occurring in these protected areas.
3. Document completion of this walk down in the appropriate RCO logbook.

ATTACHMENT 4
(Page 4 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

COLOR CODE DETERMINATION WORKSHEET

PART A

KEY SAFE SHUTDOWN FUNCTION	EQUIPMENT	EQUIPMENT COLOR CODE	FUNCTION COLOR CODE
Decay Heat Removal	RHR Pumps	G Y O R N/A	
	RHR Hx	G Y O R N/A	
	CCW Pumps	G Y O R N/A	
	CCW Hx	G Y O R N/A	
	ICW Pumps	G Y O R N/A	
	ICW Headers	G Y O R N/A	
	Feed Source/Flow Path	G Y N/A	
	SDTA	G Y N/A	
Inventory Control	Charging Pumps	G Y O R N/A	
	Chg Flowpath	G O R N/A	
	Primary Wtr Pmp	G Y O N/A	
	BA Trf Pumps	G Y O R N/A	
	HHSI Pumps	G Y O R N/A	
	RCS Inventory	G Y O N/A	
Power Availability	Transformers	G Y O R N/A	
	A, B, D Busses	G Y O R N/A	
	EDG	G Y O N/A	
	Sta Blkout Tie	G Y O N/A	
Reactivity Control	Boron Conc	G R N/A	
Instrumentation	Source Range	G W Y N/A	
	ARMs Channels	G W N/A	
	PRMS Channels	G W N/A	
	CETs	G Y O R N/A	
	RVLIS	G W Y 0 N/A	
	Cont Water Ind	G W N/A	
	Cont Sump Ind	G W Y N/A	
	PRZ Lvl Ind	G W Y N/A	
	RCS Press Ind	G W Y O N/A	
	RCS Wde Rng Temp	G W Y N/A	
	Rx Drndwn Lvl	G Y O R N/A	

ATTACHMENT 4
(Page 5 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

COLOR CODE DETERMINATION WORKSHEET

PART A

KEY SAFE SHUTDOWN FUNCTION / SYSTEM / SUPPORT EQUIPMENT	EQUIPMENT	EQUIPMENT COLOR CODE	FUNCTION COLOR CODE
Containment Integrity	Penetration Isolation	G Y O N/A	
Risk Significant Equipment	Aux Bldg Exh Fan	G Y N/A	
	IAC – Diesel D	G Y N/A	
	DC Room HVAC	G W Y N/A	
	Svc Water Pumps	G W N/A	
Spent Fuel Cooling	SFP Cooling Pump A and B	G Y O R N/A	
	Two ICW Pumps	G Y R N/A	
	One ICW Header	G R N/A	
	Two CCW Pumps	G Y R N/A	
	One CCW Hx	G R N/A	
	A and B SWGR	G Y R N/A	
	One EDG	G O N/A	
	C Load Center	G Y O R N/A	
	SFP Exh Fan	G W N/A	
SF Makeup WTR	2 of four	G Y N/A	

Dayshift/Nightshift (circle one)

Prepared by:____________________________ Enclosure____________

Date:______________ Time:______________

Risk:______________

Reviewed by:____________________________ ________________
Shift Manager/SRO Designee *Date*

ATTACHMENT 4

(Page 6 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 1

Phase 1, Fuel in Reactor, RCS Temperature < 200 F, At Least Two RCS Loops Available

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Headers	A	B			
Source of Feedwater					
SGFP	4A	4B			
SSGFP	A	B			
Condensate Pump	4A	4B	4C		
Condensate Transfer Pump	Unit 3	Unit 4			
SGWL Pump	4A	4B	4C		
Steam Dump to Atmosphere	CV-4-1606	CV-4-1607	CV-4-1608		
Charging Pumps	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	C Bus Xfmr	
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channels	R-11	R-12	R-14	R-19	
Two Core Exit Thermocouples	Yes	No			
QSPDS Channel Reactor Vessel HJTC	A	B	Reactor Disassembled		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Pressurizer Level	LT-4-459	LT-4-460	LT-4-461	LT-4-462	
RCS Pressure	PT-4-402	PT-4-403	PT-4-405		
RCS Wide Range THOT	TI-4-412	TI-4-422	TI-4-432		
RCS Wide Range TCOLD	TI-4-410	TI-4-420	TI-4-430		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					

Reason for Reduced Risk

Performed By:		Reviewed By:	
Accepted By:	Cont Room, OSC, WCC, OSG		Date / Time

ATTACHMENT 4
(Page 7 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION
PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 2

Phase 1, Fuel in Reactor, RCS Temperature < 200 F, No RCS Loops Available

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Headers	A	B			
Charging Pumps	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
RCS Inventory at or above 5% PRZ Level	Yes	No			
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	Unit 4 C Bus Xfmr	Unit 3 C Bus Xfmr
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
480 Volt Load Centers	A, C, H	B, D, H			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channel	R-11	R-12	R-14	R-19	
Two Core Exit Thermocouples	Yes	No	Reactor Disassembled		
QSPDS Channel Reactor Vessel HJTC	A	B	Reactor Disassembled		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Pressurizer Cold Cal Level	LT-4-462				
RCS Pressure	PT-4-402	PT-4-403	PT-4-405		
RCS Wide Range THOT	TI-4-412	TI-4-422	TI-4-432		
RCS Wide Range TCOLD	TI-4-410	TI-4-420	TI-4-430		
RCS Drain Down Level	LIS-4-6421	LI-4-6422	LIS-4-6423		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					
Reason for Reduced Risk					

Performed By:		Reviewed By:	
Accepted By:		/	
	Cont Room, OSC, WCC, OSG	Date / Time	

ATTACHMENT 4
(Page 8 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION
PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 3

Phase 1, Fuel in Reactor, Reactor Cavity Flooded > 23 Feet Above Flange

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Headers	A	B			
Charging Pumps	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	Unit 4 C Bus Xfmr	Unit 3 C Bus Xfmr
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channel	R-11	R-12	R-14		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
SFP Cooling Pump	A	B			
SFP Exhaust Fan	On	Off			
480 Volt LC 'C' Energized	Yes	No			
SFP Make-up Water Source	RWST & purification pump	PWST & PW pump	CVCS Hold-up Tank & Recirc Pmp		
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					
Reason for Reduced Risk					

Performed By:		Reviewed By:	
Accepted By:			/
	Cont Room, OSC, WCC, OSG		Date / Time

EXAMPLE OF ELECTRONIC VERSION

ATTACHMENT 4
(Page 9 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION
PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 4
Phase 2, Fuel in Reactor, Reactor Cavity Flooded > 23 Feet Above Flange

Status: COLOR

Date: xx/xx/xx **Time:** xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Header	A	B			
Charging Pump	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	Unit 4 C Bus Xfmr	Unit 3 C Bus Xfmr
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channel	R-11	R-12	R-14		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
SFP Cooling Pump	A	B			
SFP Exhaust Fan	On	Off			
480 Volt LC 'C' Energized	Yes	No			
SFP Make-up Water Source	RWST & purification pump	PWST & PW pump	CVCS Hold-up Tank & Recirc Pmp		
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					

Reason for Reduced Risk

Performed By:		Reviewed By:	
Accepted By:	Cont Room, OSC, WCC, OSG	/ Date / Time	

ATTACHMENT 4

(Page 10 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 5

Phase 2, Fuel in Reactor, RCS Temperature < 200 F, No RCS Loops Available

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Headers	A	B			
Charging Pumps	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
RCS Inventory at or above 5% PRZ Level	Yes	No			
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	Unit 4 C Bus Xfmr	Unit 3 C Bus Xfmr
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channel	R-11	R-12	R-14		
Two Core Exit Thermocouples	Yes	No	Reactor Disassembled		
QSPDS Channel Reactor Vessel HJTC	A	B	Reactor Disassembled		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Pressurizer Cold Cal Level	LT-4-462				
RCS Pressure	PT-4-402	PT-4-403	PT-4-405		
RCS Wide Range THOT	TI-4-412	TI-4-422	TI-4-432		
RCS Wide Range TCOLD	TI-4-410	TI-4-420	TI-4-430		
RCS Drain Down Level	LIS-4-6421	LI-4-6422	LIS-4-6423		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					
Reason for Reduced Risk					
Performed By:			Reviewed By:		
Accepted By:	Cont Room, OSC, WCC, OSG		/ Date / Time		

ATTACHMENT 4

(Page 11 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION

PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 6

Phase 2, Fuel in Reactor, RCS Temperature < 200 F, At Least Two RCS Loops Available

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
RHR Pumps	4A	4B			
RHR Heat Exchangers	4A	4B			
CCW Pumps	4A	4B	4C		
CCW Heat Exchangers	4A	4B	4C		
ICW Pumps	4A	4B	4C		
ICW Headers	A	B			
Source of Feedwater					
SGFP	4A	4B			
SSGFP	A	B			
Condensate Pump	4A	4B	4C		
Condensate Transfer Pump	Unit 3	Unit 4			
SGWL Pump	4A	4B	4C		
Steam Dump to Atmosphere	CV-4-1606	CV-4-1607	CV-4-1608		
Charging Pumps	4A	4B	4C		
Boration Source	BAST	RWST	Tank Level =		
Primary Water Pumps	4A	4B	3A	3B	
Boric Acid Pumps	4A	4B	3A	3B	
HHSI Pumps	4A	4B	3A	3B	
Offsite Power Source	U4 Startup Xfmr	U4 Aux Xfmr Backfeed	U3 Startup Xfmr	Unit 4 C Bus Xfmr	Unit 3 C Bus Xfmr
4160 Bus	4A	4B	4C	4D	
Emergency Diesels	4A	4B			
Station Blackout Tie	4AD07	3AD07			
Shutdown Boron Concentration Adequate	Yes	No	Actual =	Required =	
Source Range	N-31	N-32	"A" Gamma metrics	"B" Gamma metrics	
ARMS Channels	R1404	R1405	R1406	R1408	R1422
PRMS Channels	R-11	R-12	R-14	R-19	
Two Core Exit Thermocouples	Yes	No			
QSPDS Channel Reactor Vessel HJTC	A	B	Reactor Disassembled		
Containment Water Level	LI-4-6309A	LI-4-6309B			
Containment Sump Level	LI-4-6308A	LI-4-6308B	LT-4-1546		
Pressurizer Level	LT-4-459	LT-4-460	LT-4-461	LT-4-462	
RCS Pressure	PT-4-402	PT-4-403	PT-4-405		
RCS Wide Range THOT	TI-4-412	TI-4-422	TI-4-432		
RCS Wide Range TCOLD	TI-4-410	TI-4-420	TI-4-430		
Equipment Hatch	Open	Closed			
Personnel Hatch	Open	Closed			
Aux Bldg Exhaust Fan	A	B			
Instrument Air CD	3CD	4CD			
Instrument Air Crosstie	Yes	No			
Vital DC Room HVAC	E16D	E16E	E16F		
Service Water Pumps	A	B	C	D	
Reactor Time to Boil	xx	Minutes			
Spent Fuel Pool Time to Boil	xxx	Minutes			
Applicable TCNs					
Reason for Reduced Risk					
Performed By:			Reviewed By:		
Accepted By:	Cont Room, OSC, WCC, OSG		Date / Time		

ATTACHMENT 4
(Page 12 of 12)

OUTAGE RISK ASSESSMENT AND PROTECTED TRAIN POSTING VERIFICATION
PART B - RISK CONTROL

PART B - RISK CONTROL - Enclosure 7

Spent Fuel Pool Minimum Required Equipment

Status: COLOR

Date: xx/xx/xx Time: xxxx

Designation: Shaded = Protected Bold = Running or Energized

Protected Train	4A	4B			
SFP Cooling Pump	A	B			
ICW Pump	4A	4B	4C		
ICW Header	A	B			
CCW Pump	4A	4B	4C		
CCW Heat Exchanger	4A	4B	4C		
4160 Bus	4A	4B			
SFP Exhaust Fan	On	Off			
Emergency Diesels	4A	4B			
480 Volt LC 4C	Yes	No			
SFP Make-up Water Source	RWST & purification pump	PWST & PW pump	CVCS Hold-up Tank & Recirc Pmp	Tank Level =	
Spent Fuel Pool Time to Boil	XX	Minutes			
Applicable TCNs					
Reason for Reduced Risk					
Performed By:			Reviewed By:		
Accepted By:			/		
	Cont Room, OSC, WCC, OSG		Date / Time		

EXAMPLE OF ELECTRONIC VERSION

ATTACHMENT 5
(Page 1 of 1)

TEMPORARY CHANGE INDEX

TEMPORARY CHANGE INDEX

Number	Key Function	Description	Date Entered	Date Restored

F-368 Rev. 1(8/22/07 – 0-ADM-051)

ATTACHMENT 6
(Page 1 of 2)

APPROVAL OF WORK ON PROTECTED/OPERATING TRAIN

Description of Activity

Justification For Work on Protected/Operating Train (i.e., plant design, emergent condition, etc)

Risk Assessment Team Review

Required equipment will be reduced below the level of Enclosures 1 through 7 (i.e., TCN is required) Yes ☐ No ☐

Required equipment not reduced below the level of Enclosures 1 through 7, but TCN recommended? Yes ☐ No ☐

Additional protected equipment signs or barriers required as a result of the work? If Yes, list specific components/locations. Yes ☐ No ☐

Any additional recommended compensatory actions? If Yes, list below. Yes ☐ No ☐

Recommendation by the Risk Assessment Team: Yes ☐ No ☐ ____________________
RAT Leader (Ops)

ATTACHMENT 6
(Page 2 of 2)

APPROVAL OF WORK ON PROTECTED/OPERATING TRAIN

NOTES

- *Approval by the below individuals must be in a **face to face** or per telecom group discussion.*
- *Delegation of signature authority for the individuals below must be in writing to the Risk Assessment Team Leader. Delegation of that authority is allowable only when the individual is not on site.*
- *Review by the Shift Manager is required prior to performing activity permitted by this attachment.*
- *A copy of this approved attachment shall be in hand at the job site prior to commencing work.*

Approved by: ______________________________
Engineering Manager

Approved by: ______________________________
Work Controls Manager

Approved by: ______________________________
Operations Manager

Approved by: ______________________________
Plant General Manager

Approval Expires: ______________________________
(Date/Time or specific plant condition)

Reviewed by: ______________________________
Shift Manager

Restoration

If additional protected equipment signs and barriers used, verify removed upon completion of activity.

____
Shift Manager or SRO Designee

ATTACHMENT 7
(Page 1 of 2)

RISK SIGNIFICANT SCHEDULE CHANGE (RSSC)

NOTES

- *Submittal of this form is the responsibility of the department or project lead requesting an R-Logic or potentially risk significant schedule change.*
- *A minor change to a R flagged activity is when NO adverse risk significant change occurs due to the requested change having obvious inconsequential degradation to outage or shutdown safety risk. Review of Enclosures 1 through 7 and 11 should be considered to verify no adverse impact to risk. Ensure the basis is adequately documented.*
- *Complete only Section 1 or 2 as applicable and retain the approved copy in the Outage Risk Assessment Notebook.*
- *A Condition Report must be attached to all Risk Significant Schedule Changes not deemed as minor.*

Section 1: Minor Change Yes ☐ No ☐ (See Section 2)

1. Describe the change:

2. Describe impact or reason determined as minor change:

3. Approval as Minor RSSC

   ______________________________ *Risk Assessment Team Lead* ______________ *Date*

4. Schedule changes processed: ______________ *WC Initials*

5. Retain this form in the Outage Risk Assessment Notebook.

ATTACHMENT 7
(Page 2 of 2)

RISK SIGNIFICANT SCHEDULE CHANGE (RSSC)

Section 2: Risk Significant Schedule Change Yes ☐ No ☐

1. Describe Risk Significant Schedule Change and Activities:

2. Discuss overall benefits and risk of change in terms of nuclear safety/outage risk including the impact on required equipment in Enclosures 1 through 7.

3. Approval of RSSC: Yes ☐ No ☐

   Remarks: ______________________________

   ____

   ____

   ______________________________ ______________
   Risk Assessment Team Lead *Date*

   ______________________________ ______________
   Operations Manager *Date*

   ______________________________ ______________
   Plant General Manager *Date*

4. RAT member delineate risk logic ties for the approved change.

   ____

   ____

5. Schedule changes processed: ______________
   WC Initials

6. WC and/or OCC Outage Managers apprised of changes: ______________
   Initials

7. Document in Condition Report and attach copy of CR.

8. Retain this form in the Outage Risk Assessment Notebook.

ATTACHMENT 8
(Page 1 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 8
(Page 2 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

3. **IF** 3A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 3A 4kv bus room at the following locations:

____ (1) East side of the 3A switchgear bus from the north wall to the south wall

____ (2) West side of the 3A switchgear bus from the north wall to the south wall (Allow access to LP34.)

b. Install barriers and sign in the U3 480v load center rooms:

____ (1) Install barriers in front of 3A and 3C 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

c. Install barriers at the following entry doors to 3A EDG rooms:

____ (1) Door 073-1

____ (2) Door 072-2

____ (3) Door 131-1 to the 3A EDG radiator area

____ (4) Door 075-1to the 3A EDG Daytank room

d. Post 3A MCC 480v MCC Vital Section as follows:

____ (1) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ (2) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ (3) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

e. **IF** the 3A ICW or CCW pump is unavailable and the 3D bus is aligned to the 3A bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

ATTACHMENT 8
(Page 3 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

3. (Cont'd)

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3A CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3A ICW Pump

OR

____ ii. 3C ICW Pump

4. **IF** 3B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 3B 4kv bus room at the following locations:

____ (1) East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 3B switchgear bus from the north wall to the south wall

b. Perform the following in the U3 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 3B 480v LC

____ • In front of 3D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

c. Install barriers at the following entry doors to 3B EDG rooms:

____ (1) Door 072-1

____ (2) Door 072-2

____ (3) Vital area door 3EDG3131 to the 3B EDG radiator area

____ (4) Door 074-1 to the 3B EDG Daytank room.

ATTACHMENT 8
(Page 4 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

4. (Cont'd)

d. **IF** the 3B ICW or CCW pump is unavailable and the 3D bus is aligned to the 3B bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

e. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3B CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3B ICW Pump

OR

____ ii. 3C ICW Pump

5. In the 3A 4kv bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 3AA09

____ c. Place a protected equipment sign on the 3AA04 cubicle door.

ATTACHMENT 8
(Page 5 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

6. In the 3B 4kv bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 3AB22

____ c. Place a protected equipment sign on the 3AB04 cubicle door.

____ 7. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________

____ 8. Install barriers at the top of stairway to running protected RHR Pump Room (10 ft).

____ a. Record RHR Pump Room protected ____________

____ 9. Install barriers on the south end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________

____ 10. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS
____________________	__________
____________________	__________
____________________	__________

ATTACHMENT 9
(Page 1 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

NOTE

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

   a. In the switchyard, install barriers around the startup transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

   a. In the switchyard, install barriers around the main transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 9
(Page 2 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

3. Install barriers in the 3A 4KV Bus room at the following locations:

____ a. East side of the 3A switchgear bus from the north wall to the south wall

____ b. West side of the 3A switchgear bus from the north wall to the south wall (Permit access to LP34.)

4. Install barriers in the 3B 4KV Bus room at the following locations:

____ a. East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ b. West side of the 3B switchgear bus from the north wall to the south wall.

5. Perform the following in the U3 480v load center rooms:

a. Install barriers at the following locations:

____ • In front of 3A 480v LC

____ • In front of 3B 480v LC

____ • In front of 3C 480v LC

____ • In front of 3D 480v LC

___ b. Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

6. Install barriers at the following entry doors to 3A and 3B EDG rooms:

____ a. Door 073-1

____ b. Door 075-1to the 3A EDG Daytank room

____ c. Door 072-1

____ d. Vital area door 3EDG3131 to the 3B EDG radiator area

____ e. Door 074-1 to the 3B EDG Daytank room.

7. Post 3A MCC 480v MCC Vital Section as follows:

____ a. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ b. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ c. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

ATTACHMENT 9
(Page 3 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

8. In the 3A 4kv bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 3AA09

____ c. Place a protected equipment sign on the 3AA04 cubicle door.

9. In the 3B 4kv bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 3AB22

____ c. Place a protected equipment sign on the 3AB04 cubicle door.

10. **IF** 3C CCW pump, OR 3C ICW pump, is required to support operability of either RHR train (i.e., any A or B ICW/CCW pump is unavailable), **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ a. Door 134-1

____ b. Door 134-2

____ 11. In the CCW room, install barriers around the CCW pumps whose 4kv power supplies were protected above.

____ a. Record pumps protected ________________________

____ 12. Install barriers at the top of stairway to the 3A RHR Pump Room (10 ft).

____ 13. Install barriers at the top of stairway to the 3B RHR Pump Room (10 ft).

ATTACHMENT 9
(Page 4 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

____ 14. Install barriers on the south end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 15. At the Intake, install barriers around the ICW pumps whose 4kv power supplies were protected above.

____ a. Record pumps protected ____________________

16. In the control room, place unique information tags on the following Pump control switches identifying them as the protected/operating Train: (N/A pumps not operating)

____ a. 3A RHR Pump

____ b. 3B RHR Pump

____ c. 3A CCW Pump

____ d. 3B CCW Pump

____ e. 3C CCW Pump

____ f. 3A ICW Pump

____ g. 3B ICW Pump

____ h. 3C ICW Pump

____ i. Record operating train ____________________

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS

ATTACHMENT 10
(Page 1 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 10
(Page 2 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

3. **IF** 3A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3A 4kv bus room at the following locations:

____ (1) East side of the 3A switchgear bus from the north wall to the south wall

____ (2) West side of the 3A switchgear bus from the north wall to the south wall (Allow access to LP34.)

   b. In the 3A 4kv bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 3AA09

____ (3) Place a protected equipment sign on the 3AA04 cubicle door.

____ c. In the 3B 4kv bus room, place a protected equipment sign on the 3AB04 cubicle door.

   d. **IF** the 480v LCs are split, **THEN:**

____ (1) Install barriers in front of 3A and 3C 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   e. Install barriers at the following entry doors to 3A EDG rooms:

____ (1) Door 073-1

____ (2) Door 072-2

____ (3) Door 131-1 to the 3A EDG radiator area

____ (4) Door 075-1 to the 3A EDG Daytank room

ATTACHMENT 10
(Page 3 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

3. (Cont'd)

f. Post 3A MCC 480v MCC Vital Section as follows:

____ (1) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ (2) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ (3) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

g. **IF** the 3A ICW or CCW pump is unavailable and the 3D bus is aligned to the 3A bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

____ h. Install barriers at the top of stairway to the 3A RHR Pump Room (10 ft).

i. In the Control Room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3A CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3A ICW Pump

OR

____ ii. 3C ICW Pump

ATTACHMENT 10
(Page 4 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4. **IF** 3B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3B 4kv bus room at the following locations:

____ (1) East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 3B switchgear bus from the north wall to the south wall

   b. In the 3B 4kv bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 3AB22

____ (3) Place a protected equipment sign on the 3AB04 cubicle door.

   c. **IF** the 480v LCs are split, **THEN:**

____ (1) Install barriers in front of 3B and 3D 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 3B EDG rooms:

____ (1) Door 072-1

____ (2) Door 072-2

____ (3) Vital area door 3EDG3131 to the 3B EDG radiator area

____ (4) Door 074-1 to the 3B EDG Daytank room.

   e. **IF** 3B ICW or CCW pump is unavailable and the 3D bus is aligned to the 3B bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

ATTACHMENT 10
(Page 5 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4. (Cont'd)

f. **IF** the reactor core is less than fully loaded, **THEN** perform the following:

(1) **IF** 3C 480v LC is fed from 3A 4kv bus, then post signs and/or barriers as follows:

a) Install barriers in the 3A 4KV Bus room at the following locations:

____ 1) East side of the 3A switchgear bus from the north wall to the south wall

____ 2) West side of the 3A switchgear bus from the north wall to the south wall (Allow access to LP34.)

b) In the 3A 4kv bus room, install signs as follows:

____ 1) Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ 2) Place a protected equipment sign on the cubicle door for breaker 3AA09

c) Install barriers at the Unit 3 480v load center rooms:

____ 1) Install barriers in front of 3A and 3C 480v LCs.

____ 2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

d) Install barriers at the following entry doors to 3A EDG rooms:

____ 1) Door 073-1

____ 2) Door 075-1 to the 3A EDG Daytank room

____ g. In the 3A 4kv bus room, place a protected equipment sign on the 3AA04 cubicle door.

____ h. Install barriers at the top of stairway to the 3B RHR Pump Room (10 ft).

ATTACHMENT 10
(Page 6 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4. (Cont'd)

i. In the Control Room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3B CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3B ICW Pump

OR

____ ii. 3C ICW Pump

5. **IF** the 480v LCs are cross-tied, **THEN** post signs and/or barriers as follows:

a. Perform the following in the U3 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 3A 480v LC

____ • In front of 3B 480v LC

____ • In front of 3C 480v LC

____ • In front of 3D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

____ 6. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 7. Install barriers on the south end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

ATTACHMENT 10
(Page 7 of 7)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

8. **IF** the reactor core is less than fully loaded, **THEN** perform the following:

____ a. Install a barrier at the SFP Pump and Hx Room entry door.

____ b. Install a barrier at the SFP Cooling Heat Exchanger.

____ c. Place a magnetic stop sign on 480 V LC Breaker Cubicle 30309, SFP Cooling Pumps.

____ d. Place a magnetic stop sign on 480V LC Breaker Cubicle 40309, SFP Cooling Pumps.

____ 9. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ______________________

____ 10. **IF** offsite power is from backfeed, **THEN** place a protected equipment sign at the safeguards racks to protect the Aux Transformer breaker.

a. 3QR42

b. 3QR43

c. 3QR44

d. 3QR45

____ 11. **IF** the RWST is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on RWST purification pump breaker 30788 (U3 outage) or 40788 (U4 outage).

a. Record the breaker protected ______________________

____ 12. **IF** Primary Water is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on ONE of the following Primary Water Pump breakers: 0885 (3A), 30664 (3B), 0884 (4A), 40664 (4B).

a. Record the breaker protected ______________________

____ 13. **IF** the CVCS HUT is one of two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on CVCS HUT recirculation pump breaker, 0853.

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
______________________	____________
______________________	____________
______________________	____________

ATTACHMENT 11
(Page 1 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 11
(Page 2 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

3. **IF** 3A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 3A 4kv bus room at the following locations:

____ (1) East side of the 3A switchgear bus from the north wall to the south wall

____ (2) West side of the 3A switchgear bus from the north wall to the south wall (Permit access to LP34.)

b. In the 3A 4kv bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 3AA09

____ (3) Place a protected equipment sign on the 3AA04 cubicle door.

c. Perform the following in the U3 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 3A 480v LC

____ • In front of 3C 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

d. Install barriers at the following entry doors to 3A EDG rooms:

____ (1) Door 073-1

____ (2) Door 072-2

____ (3) Door 131-1 to the 3A EDG radiator area

____ (4) Door 075-1 to the 3A EDG Daytank room

ATTACHMENT 11
(Page 3 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

3 (Cont'd)

e. Post 3A MCC 480v MCC Vital Section as follows:

____ (1) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ (2) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ (3) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

____ f. Install barriers at top of stairway to the 3A RHR Pump Room (10 ft).

g. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3A CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3A ICW Pump

OR

____ ii. 3C ICW Pump

ATTACHMENT 11
(Page 4 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

4. **IF** 3B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3B 4kv bus room at the following locations:

____ (1) East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 3B switchgear bus from the north wall to the south wall

   b. In the 3B 4kv bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

> **NOTE**
>
> *The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.*

____ (2) Place a protected equipment sign on the cubicle door for breaker 3AB22

____ (3) Place a protected equipment sign on the 3AB04 cubicle door.

   c. Perform the following in the U3 480v load center rooms:

   (1) Install barriers at the following locations:

____ • In front of 3B 480v LC

____ • In front of 3D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 3B EDG rooms:

____ (1) Door 072-1

____ (2) Door 072-2

____ (3) Vital area door 3EDG3131 to the 3B EDG radiator area

____ (4) Door 074-1 to the 3B EDG Daytank room.

____ e. Install barriers at top of stairway to the 3B RHR Pump Room (10 ft).

ATTACHMENT 11
(Page 5 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

4. (Cont'd)

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3B CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3B ICW Pump

OR

____ ii. 3C ICW Pump

____ 5. **IF** the 3C CCW or ICW pump is running and required for operability of the protected RHR train, **THEN** install barriers at the following entry doors to the 3D 4kv bus room.

a. Door 134-1

b. Door 134-2

ATTACHMENT 11
(Page 6 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

____ 6. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 7. Install barriers on the south end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 8. At the intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS

ATTACHMENT 12
(Page 1 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

   a. In the switchyard, install barriers around the startup transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

   a. In the switchyard, install barriers around the main transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 12
(Page 2 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

3. **IF** 3A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3A 4kv bus room at the following locations:

   ____ (1) East side of the 3A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 3A switchgear bus from the north wall to the south wall (Permit access to LP34.)

   b. In the 3A 4kv bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 3AA09

   ____ (3) Place a protected equipment sign on the 3AA04 cubicle door.

   c. Perform the following in the U3 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 3A 480v LC

   ____ • In front of 3C 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 3A EDG rooms:

   ____ (1) Door 073-1

   ____ (2) Door 072-2

   ____ (3) Door 131-1 to the 3A EDG radiator area

   ____ (4) Door 075-1to the 3A EDG Daytank room

ATTACHMENT 12
(Page 3 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

3. (Cont'd)

e. Post 3A MCC 480v MCC Vital Section as follows:

____ (1) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ (2) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ (3) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

f. **IF** the 3A ICW or CCW pump is unavailable and the 3D bus is aligned to the 3A bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

g. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3A CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3A ICW Pump

OR

____ ii. 3C ICW Pump

ATTACHMENT 12
(Page 4 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

4. **IF** 3B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3B 4kv bus room at the following locations:

   ____ (1) East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

   ____ (2) West side of the 3B switchgear bus from the north wall to the south wall

   b. In the 3B 4kv bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 3AB22

   ____ (3) Place a protected equipment sign on the 3AB04 cubicle door.

   c. Perform the following in the U3 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 3B 480v LC

   ____ • In front of 3D 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 3B EDG rooms:

   ____ (1) Door 072-1

   ____ (2) Door 072-2

   ____ (3) Vital area door 3EDG3131 to the 3B EDG radiator area

   ____ (4) Door 074-1 to the 3B EDG Daytank room.

   e. **IF** the 3B ICW or CCW pump is unavailable and the 3D bus is aligned to the 3B bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

   ____ (1) Door 134-1

   ____ (2) Door 134-2

ATTACHMENT 12
(Page 5 of 5)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

4.f. (Cont'd)

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 3B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 3B CCW Pump

OR

____ ii. 3C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 3B ICW Pump

OR

____ ii. 3C ICW Pump

____ 5. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 6. Install barriers at the top of the stairway to the running protected RHR pump room (10 ft).

____ a. Record RHR Pump Room protected ____________________

____ 7 Install barriers on the south end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 8 At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
______________________________	________________
______________________________	________________
______________________________	________________

ATTACHMENT 13

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

NOTE

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 13
(Page 2 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

3. **IF** 3C 480v LC is fed from 3A 4kv bus, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3A switchgear bus room at the following locations:

   ____ (1) East side of the 3A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 3A switchgear bus from the north wall to the south wall (Permit access to LP34.)

   b. In the 3A 4kv bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 3C23A (Old Sequencer Cabinet) located on the north wall of the 3A 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 3AA09.

   ____ (3) Place a protected equipment sign on the 3AA04 cubicle door.

   ____ c. In the 3B 4kv Bus Room, place a Protected Equipment sign on the 3AB04 Cubicle Door.

   d. Perform the following in the U3 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 3A 480v LC

   ____ • In front of 3C 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   (3) **IF** load centers are cross-tied, **THEN** install barriers at the following locations:

   ____ • In front of 3B 480v LC

   ____ • In front of 3D 480v LC

ATTACHMENT 13
(Page 3 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

3. (Cont'd)

e. Install barriers at the following entry doors to 3A EDG rooms:

____ (1) Door 073-1

____ (2) Door 072-2

____ (3) Door 131-1 to the 3A EDG radiator area

____ (4) Door 075-1to the 3A EDG Daytank room

f. Post 3A MCC 480v MCC Vital Section as follows:

____ (1) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ (2) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the north side facing north.

____ (3) At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), place a magnetic **STOP** sign on the south side facing south.

g. **IF** the 3A ICW or CCW pump is unavailable and the 3D bus is aligned to the 3A bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

h. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

(1) Select one: (N/A pump not operating)

____ i. 3A CCW Pump

OR

____ ii. 3C CCW Pump

(2) Select one: (N/A pump not operating)

____ i. 3A ICW Pump

OR

____ ii. 3C ICW Pump

ATTACHMENT 13
(Page 4 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

4. **IF** 3C 480v LC is fed from 3D LC, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 3B 4KV Bus room at the following locations:

   ____ (1) East side of the 3B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

   ____ (2) West side of the 3B switchgear bus from the north wall to the south wall

   b. In the 3B 4kv bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 3C23B (Old Sequencer Cabinet) located on the north wall of the 3B 4kv bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 3AB22

   ____ (3) Place a protected equipment sign on the 3AB04 cubicle door.

   ____ c. In the 3A 4kv Bus Room, place a Protected Equipment sign on the 3AA04 Cubicle Door.

   d. Perform the following in the U3 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 3A 480v LC

   ____ • In front of 3B 480v LC

   ____ • In front of 3C 480v LC

   ____ • In front of 3D 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

ATTACHMENT 13
(Page 5 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

4. (Cont'd)

e. Install barriers at the following entry doors to 3B EDG rooms:

____ (1) Door 072-1

____ (2) Door 072-2

____ (3) Vital area door 3EDG3131 to the 3B EDG radiator area

____ (4) Door 074-1 to the 3B EDG Daytank room.

f. **IF** 3B ICW or CCW pump is unavailable and the 3D bus is aligned to the 3B bus, **THEN** install barriers at the following entry doors to 3D 4kv bus room:

____ (1) Door 134-1

____ (2) Door 134-2

g. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

(1) Select one: (N/A pump not operating)

____ i. 3B CCW Pump

OR

____ ii. 3C CCW Pump

(2) Select one: (N/A pump not operating)

____ i. 3B ICW Pump

OR

____ ii. 3C ICW Pump

____ 5. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 6. Install barriers on the south end of 1 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

ATTACHMENT 13
(Page 6 of 6)

UNIT 3 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

____ 7. At the SFP pump and Hx room, install a barrier at the entry door.

____ 8. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 9. **IF** offsite power is from backfeed, **THEN** place a protected equipment sign at the safeguards racks to protect the Aux Transformer breaker.

a. 3QR42

b. 3QR43

c. 3QR44

d. 3QR45

____ 10. Place a magnetic stop sign on 480 V LC Breaker Cubicle 40309, SFP Cooling Pumps.

____ 11. Place a magnetic stop sign on 480V LC Breaker Cubicle 30309, SFP Cooling Pumps.

____ 12. **IF** the RWST is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on RWST purification pump breaker 30788 (U3 outage) or 40788 (U4 outage).

a. Record the breaker protected ____________________

____ 13. **IF** Primary Water is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on ONE of the following Primary Water Pump breakers: 0885 (3A), 30664 (3B), 0884 (4A), 40664 (4B).

a. Record the breaker protected ____________________

____ 14. **IF** the CVCS HUT is one of two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on CVCS HUT recirculation pump breaker, 0853.

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS

ATTACHMENT 14
(Page 1 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

    a. In the switchyard, install barriers around the startup transformer bay as follows:

    ____ (1) Install a barrier on the east side of the bay facing east.

    ____ (2) Install a barrier on the north side facing north.

    ____ (3) Install a barrier on the west side facing west

    ____ (4) Install a barrier on the south side facing south.

    ____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

    ____ a. In the switchyard, install barriers around the main transformer bay as follows:

    ____ (1) Install a barrier on the east side of the bay facing east.

    ____ (2) Install a barrier on the north side facing north.

    ____ (3) Install a barrier on the west side facing west

    ____ (4) Install a barrier on the south side facing south.

    ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 14
(Page 2 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

3. **IF** 4A Train is the designated operating train , **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4A 4KV bus room at the following locations:

   ____ (1) East side of the 4A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

   b. Perform the following in the U4 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 4A 480v LC

   ____ • In front of 4C 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   c. Install barriers at the following entry doors to 4A EDG rooms:

   ____ (1) Door 138-1

   ____ (2) Door 133-2

   ____ (3) Door 141-1 to the 4A EDG DOTP area

   ____ (4) Door 138-2

   ____ (5) Door 140-1

   ____ (6) Door 139-2

   ____ d. **IF** the 4A ICW or CCW pump is unavailable and the 4D bus is aligned to 4A bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

   ____ (1) Door 139-1

   ____ (2) Door 139-2

   ____ (3) Door 135-2

ATTACHMENT 14
(Page 3 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

3. (Cont'd)

e. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4A CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4A ICW Pump

OR

____ ii. 4C ICW Pump

4. **IF** 4B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 4B 4KV bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

b. Perform the following in the U4 480v load center rooms:

____ (1) Install barriers at the following locations:

____ • In front of 4B 480v LC

____ • In front of 4D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

ATTACHMENT 14
(Page 4 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

4. (Cont'd)

c. Install barriers at the following entry doors to 4B EDG rooms:

____ (1) Door 133-1

____ (2) Door 133-2

____ (3) Door 136-1 to the 4B EDG DOTP area

____ (4) Door 133-3

____ (5) Door 135-2

____ (6) Door 135-1

____ (7) Door 134-2

____ d. **IF** the 4B ICW or CCW pump is unavailable and the 4D bus is aligned to 4B bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

e. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4B CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4B ICW Pump

OR

____ ii. 4C ICW Pump

ATTACHMENT 14
(Page 5 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

5. In the 4A 4KV Bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 4AA09.

____ c. Place a protected equipment sign on the 4AA04 cubicle door.

6. Perform the following in the 4B 4KV Bus room:

____ a. Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 4AB22

____ c. Place a protected equipment sign on the 4AB04 cubicle door.

ATTACHMENT 14
(Page 6 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 1

____ 7. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 8. Install barriers at the top of stairway to running protected RHR Pump Room (10 ft)

____ a. Record RHR Pump Room protected ____________________

____ 9. Install barriers on the north end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 10. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
______________________________	________________
______________________________	________________
______________________________	________________

ATTACHMENT 15
(Page 1 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTING DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

   a. In the switchyard, install barriers around the startup transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

   a. In the switchyard, install barriers around the main transformer bay as follows:

   ____ (1) Install a barrier on the east side of the bay facing east.

   ____ (2) Install a barrier on the north side facing north.

   ____ (3) Install a barrier on the west side facing west

   ____ (4) Install a barrier on the south side facing south.

   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 15
(Page 2 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTING DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

3. Install barriers in the 4A and 4B 4KV Bus rooms as follows:

   a. Install barriers in the 4A 4KV Bus room at the following locations:

____ (1) East side of the 4A switchgear bus from the north wall to the south wall

____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

   b. Install barriers in the 4B 4KV Bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

4. Perform the following in the U4 480v load center rooms:

   a. Install barriers at the following locations:

____ • In front of 4A 480v LC

____ • In front of 4B 480v LC

____ • In front of 4C 480v LC

____ • In front of 4D 480v LC

____ b. Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

5. Install barriers at the following entry doors to 4A and 4B EDG rooms:

____ a. Door 138-1

____ b. Door 133-1

____ c. Door 141-1 to the 4A EDG DOTP area

____ d. Door 136-1 to the 4B EDG DOTP area

____ e. Door 138-2

____ f. Door 133-3

ATTACHMENT 15
(Page 3 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTING DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

6. In the 4A 4KV Bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the 4AA09 cubicle door.

____ c. Place a protected equipment sign on the 4AA04 cubicle door.

7. In the 4B 4KV Bus room, install signs as follows:

____ a. Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ b. Place a protected equipment sign on the cubicle door for breaker 4AB22

____ c. Place a protected equipment sign on the 4AB04 cubicle door.

8. **IF** 4C CCW pump, **OR** 4C ICW pump, is required to support operability of either RHR train (i.e., any A or B ICW/CCW pump is unavailable), **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ a. Door 139-1

____ b. Door 139-2

____ c. Door 135-2

ATTACHMENT 15
(Page 4 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTING DURING ENCLOSURE 2 AND 5 (PRESSURIZER DRAINED <10%)

____ 9. In the CCW room, install barriers around the CCW pumps whose 4kv power supplies were protected above.

____ a. Record pumps protected ____________________

____ 10. Install barriers at the top of stairway to the 4A RHR Pump Room (10 ft).

____ 11. Install barriers at the top of stairway to the 4B RHR Pump Room (10 ft).

____ 12. Install barriers on the north end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 13. At the Intake, install barriers around the ICW pumps whose 4kv power supplies were protected above.

____ a. Record pumps protected ____________________

14. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train: (N/A pumps not operating)

____ a. 4A RHR Pump

____ b. 4B RHR Pump

____ c. 4A CCW Pump

____ d. 4B CCW Pump

____ e. 4C CCW Pump

____ f. 4A ICW Pump

____ g. 4B ICW Pump

____ h. 4C ICW Pump

____ i. Record operating train ____________________

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
____________________	____________
____________________	____________
____________________	____________

ATTACHMENT 16
(Page 1 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

   a. In the switchyard, install barriers around the startup transformer bay as follows:

____ (1) Install a barrier on the east side of the bay facing east.

____ (2) Install a barrier on the north side facing north.

____ (3) Install a barrier on the west side facing west

____ (4) Install a barrier on the south side facing south.

____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

   a. In the switchyard, install barriers around the main transformer bay as follows:

____ (1) Install a barrier on the east side of the bay facing east.

____ (2) Install a barrier on the north side facing north.

____ (3) Install a barrier on the west side facing west

____ (4) Install a barrier on the south side facing south.

____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 16
(Page 2 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

3. **IF** 4A train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4A 4KV Bus room at the following locations:

   ____ (1) East side of the 4A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

   b. In the 4A 4KV bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 4AA09.

   ____ (3) Place a protected equipment sign on the 4AA04 cubicle door.

   ____ c. In the 4B 4kv bus room, place a protected equipment sign on the 4AB04 cubicle door.

   d. **IF** the 480v LCs are split, **THEN:**

   ____ (1) Install barriers in front of 4A and 4C 480v LCs.

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   ____ e. **IF** the reactor core is less than fully loaded, **THEN** place a magnetic stop sign on 480V LC Breaker Cubicle 40309, SFP Cooling Pumps (4P212A/B).

   f. Install barriers at the following entry doors to 4A EDG rooms:

   ____ (1) Door 138-1

   ____ (2) Door 133-2

   ____ (3) Door 141-1 to the 4A EDG DOTP area

   ____ (4) Door 138-2

   ____ (5) Door 140-1

   ____ (6) Door 139-2

ATTACHMENT 16
(Page 3 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

3. (Cont'd)

g. **IF** the 4A ICW or CCW pump is unavailable and the 4D bus is aligned to the 4A bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

____ h. Install barriers at the top of stairway to the 4A RHR pump room.

i. In the Control Room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4A CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4A ICW Pump

OR

____ ii. 4C ICW Pump

ATTACHMENT 16
(Page 4 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4. **IF** 4B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4B 4KV Bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

   b. In the 4B 4KV Bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 4AB22

____ (3) Place a protected equipment sign on the 4AB04 cubicle door.

   c. **IF** the 480v LCs are split, **THEN:**

____ (1) Install barriers in front of 4B and 4D 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 4B EDG rooms:

____ (1) Door 133-1

____ (2) Door 133-2

____ (3) Door 136-1 to the 4B EDG DOTP area.

____ (4) Door 133-3

____ (5) Door 135-2

____ (6) Door 134-2

____ (7) Door 135-1

ATTACHMENT 16
(Page 5 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4. (Cont'd)

e. **IF** the 4B ICW or CCW pump is unavailable and the 4D bus is aligned to the 4B bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

f. **IF** the reactor core is less than fully loaded, **THEN** perform the following:

(1) **IF** 4C 480v LC is fed from 4A 4kv bus, then post signs and/or barriers as follows:

a) Install barriers in the 4A 4KV bus room at the following locations:

____ 1) East side of the 4A switchgear bus from the north wall to the south wall

____ 2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

b) In the 4A 4KV bus room, install signs as follows:

____ 1) Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV bus room.

____ 2) Place a protected equipment sign on the cubicle door for breaker 4AA09.

c) Install barriers at the following locations in the Unit 4 480v load center rooms:

____ 1) Install barriers in front of 4A, 4B and 4C, 4D 480v LCs.

____ 2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

ATTACHMENT 16
(Page 6 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

4.f.(1) (Cont'd)

d) Install barriers at the following entry doors to 4A EDG rooms:

____ 1) Door 138-1

____ 2) Door 141-1 to the 4A EDG DOTP area

____ 3) Door 138-2

____ 4) Door 139-2

____ g. In the 4A 4kv bus room, place a protected equipment sign on the 4AA04 cubicle door.

____ h. Install barriers at the top of stairway to the 4B RHR pump room.

i. In the Control Room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4B CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4B ICW Pump

OR

____ ii. 4C ICW Pump

5. **IF** the 480v LCs are cross-tied, **THEN** post signs and/or barriers as follows:

a. Install barriers at the following locations in the Unit 4 480v load center rooms:

____ (1) Install barriers in front of 4A, 4B and 4C, 4D 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

ATTACHMENT 16
(Page 7 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

____ 6. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 7. Install barriers on the north end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 8. **<u>IF</u>** the reactor core is less than fully loaded, **<u>THEN</u>** perform the following:

____ a. Install a barrier at the SFP pump and Hx room entry door.

____ b. Install a barrier at the SFP Cooling Heat Exchanger.

____ c. Place a magnetic stop sign on 480V LC Breaker Cubicle 40309, SFP Cooling Pumps

____ d. Place a magnetic stop sign on 480 V LC Breaker Cubicle 30309, SFP Cooling Pumps.

____ 9. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 10. **<u>IF</u>** offsite power is from backfeed, **<u>THEN</u>** place a protected equipment sign at the safeguards racks to protect the Aux Transformer breaker.

a. 4QR42

b. 4QR43

c. 4QR44

d. 4QR45

____ 11. **<u>IF</u>** the RWST is one of the two credited sources of makeup water to the Spent Fuel Pit, **<u>THEN</u>** place a magnetic stop sign on RWST purification pump breaker 30788 (U3 outage) or 40788 (U4 outage).

a. Record the breaker protected ____________________

ATTACHMENT 16
(Page 8 of 8)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 3 AND 4 CAVITY FLOODED >23' ABOVE THE VESSEL FLANGE

____ 12. **IF** Primary Water is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on ONE of the following Primary Water Pump breakers: 0885 (3A), 30664 (3B), 0884 (4A), 40664 (4B).

a. Record the breaker protected ____________________

____ 13. **IF** the CVCS HUT is one of two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on CVCS HUT recirculation pump breaker, 0853.

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS

ATTACHMENT 17
(Page 1 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 17
(Page 2 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

3. **IF** 4A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers at in the 4A 4KV Bus room at the following locations:

____ (1) East side of the 4A switchgear bus from the north wall to the south wall

____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

b. In the 4A 4KV Bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 4AA09

____ (3) Place a protected equipment sign on the 4AA04 cubicle door.

c. Perform the following in the U4 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 4A 480v LC

____ • In front of 4C 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

d. Install barriers at the following entry doors to 4A EDG rooms:

____ (1) Door 138-1

____ (2) Door 133-2

____ (3) Door 141-1 to the 4A EDG DOTP area

____ (4) Door 138-2

____ (5) Door 140-1

____ (6) Door 139-2

____ e. Install barriers at the top of stairway to the 4A RHR Pump Room (10 ft).

ATTACHMENT 17
(Page 3 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

3. (Cont'd)

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4A CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4A ICW Pump

OR

____ ii. 4C ICW Pump

4. **IF** 4B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 4B 4KV Bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

b. In the 4B 4KV Bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 4AB22

____ (3) Place a protected equipment sign on the 4AB04 cubicle door.

ATTACHMENT 17
(Page 4 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

4. (Cont'd)

c. Perform the following in the U4 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 4B 480v LC

____ • In front of 4D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

d. Install barriers at the following entry doors to 4B EDG rooms:

____ (1) Door 133-1

____ (2) Door 133-2

____ (3) Door 136-1 to the 4B EDG DOTP area

____ (4) Door 133-3

____ (5) Door 135-2

____ (6) Door 134-2

____ (7) Door 135-1

____ e. Install barriers at the top of stairway to the 4B RHR Pump Room (10 ft).

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4B CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4B ICW Pump

OR

____ ii. 4C ICW Pump

ATTACHMENT 17
(Page 5 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 5 (PRESSURIZER FILLED >10%)

____ 5. **IF** the 4C CCW or 4C ICW pump is running and required for operability of the protected RHR train, **THEN** install barriers at the following entry doors to the 4D 4kv bus room.

a. Door 139-1

b. Door 139-2

c. Door 135-2

____ 6. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 7. Install barriers on the north end of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 8 At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
______________________________	________________
______________________________	________________
______________________________	________________

ATTACHMENT 18
(Page 1 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:

   a. In the switchyard, install barriers around the startup transformer bay as follows:

   _____ (1) Install a barrier on the east side of the bay facing east.

   _____ (2) Install a barrier on the north side facing north.

   _____ (3) Install a barrier on the west side facing west

   _____ (4) Install a barrier on the south side facing south.

   _____ b. At the startup transformer, install barriers around the startup transformer.

2. **IF** offsite power is from backfeed, **THEN** perform the following:

   a. In the switchyard, install barriers around the main transformer bay as follows:

   _____ (1) Install a barrier on the east side of the bay facing east.

   _____ (2) Install a barrier on the north side facing north.

   _____ (3) Install a barrier on the west side facing west

   _____ (4) Install a barrier on the south side facing south.

   _____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 18
(Page 2 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

3. **IF** 4A Train is the designated operating train, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4A 4KV Bus room at the following locations:

   ____ (1) East side of the 4A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

   b. In the 4A 4KV Bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 4 (Old Sequencer Cabinet) located on the north wall of the 4A 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the cubicle door for breaker 4AA09.

   ____ (3) Place a protected equipment sign on the 4AA04 cubicle door.

   c. Perform the following in the U4 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 4A 480v LC

   ____ • In front of 4C 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   d. Install barriers at the following entry doors to 4A EDG rooms:

   ____ (1) Door 138-1

   ____ (2) Door 133-2

   ____ (3) Door 141-1 to the 4A EDG DOTP area

   ____ (4) Door 138-2

   ____ (5) Door 140-1

   ____ (6) Door 139-2

ATTACHMENT 18
(Page 3 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

3. Cont'd)

e. **IF** the 4A ICW or CCW pump is unavailable and the 4D bus is aligned to the 4A bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4A RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4A CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4A ICW Pump

OR

____ ii. 4C ICW Pump

4. **IF** 4B Train is the designated operating train, **THEN** post signs and/or barriers as follows:

a. Install barriers in the 4B 4KV Bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

b. In the 4B 4KV Bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

ATTACHMENT 18
(Page 4 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

4.b. (Cont'd)

> **NOTE**
>
> *The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.*

____ (2) Place a protected equipment sign on the cubicle door for breaker 4AB22

____ (3) Place a protected equipment sign on the 4AB04 cubicle door.

c. Perform the following in the U4 480v load center rooms:

(1) Install barriers at the following locations:

____ • In front of 4B 480v LC

____ • In front of 4D 480v LC

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

d. Install barriers at the following entry doors to 4B EDG rooms:

____ (1) Door 133-1

____ (2) Door 133-2

____ (3) Door 136-1 to the 4B EDG DOTP area

____ (4) Door 133-3

____ (5) Door 135-2

____ (6) Door 134-2

____ (7) Door 135-1

e. **IF** the 4B ICW or CCW pump is unavailable and the 4D bus is aligned to the 4B bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

ATTACHMENT 18
(Page 5 of 5)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 6

4. (Cont'd)

f. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

____ (1) 4B RHR Pump

(2) Select one: (N/A pump not operating)

____ i. 4B CCW Pump

OR

____ ii. 4C CCW Pump

(3) Select one: (N/A pump not operating)

____ i. 4B ICW Pump

OR

____ ii. 4C ICW Pump

____ 5. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 6. Install barriers at the top of the stairway to the running protected RHR pump room (10 ft).

____ a. Record RHR pump room protected ____________________

____ 7 Install barriers on the north side of 2 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 8 At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
______________________________	________________
______________________________	________________
______________________________	________________

ATTACHMENT 19
(Page 1 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

NOTES

- *The steps in this attachment may be performed in any order.*
- *Due to the size of the switchyard bay, the size of the area around the transformers, and the size of the area around the CCW Heat Exchangers, those specified postings are not intended to provide a physical barrier, rather, to provide information and heightened awareness.*
- *If the operating train is swapped, or if components within a train are swapped, protected equipment postings should be placed or removed as necessary to maintain the postings and equipment status consistent. The new alignment should be posted prior to deposting the previously protected equipment.*

1. **IF** offsite power is from the startup transformer, **THEN** perform the following:
   a. In the switchyard, install barriers around the startup transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the startup transformer, install barriers around the startup transformer.
2. **IF** offsite power is from backfeed, **THEN** perform the following:
   a. In the switchyard, install barriers around the main transformer bay as follows:
      ____ (1) Install a barrier on the east side of the bay facing east.
      ____ (2) Install a barrier on the north side facing north.
      ____ (3) Install a barrier on the west side facing west
      ____ (4) Install a barrier on the south side facing south.
   ____ b. At the main and aux transformers, install barriers around the main and aux transformers.

ATTACHMENT 19
(Page 2 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

3. **IF** 4C 480v LC is fed from 4A 4kv bus, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4A 4KV Bus room at the following locations:

   ____ (1) East side of the 4A switchgear bus from the north wall to the south wall

   ____ (2) West side of the 4A switchgear bus from the north wall to the south wall (Permit access to LP44.)

   b. In the 4A 4KV Bus room, install signs as follows:

   ____ (1) Place a protected equipment sign on the front of 4C23A (Old Sequencer Cabinet) located on the north wall of the 4A 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

   ____ (2) Place a protected equipment sign on the 4AA09 cubicle door.

   ____ (3) Place a protected equipment sign on the 4AA04 cubicle door.

   ____ c. In the 4B 4kv Bus Room, place a Protected Equipment sign on the 4AB04 Cubicle Door.

   d. Perform the following in the U4 480v load center rooms:

   (1) Install barriers at the following locations:

   ____ • In front of 4A 480v LC

   ____ • In front of 4C 480v LC

   ____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   (3) **IF** load centers are cross-tied, **THEN** install barriers at the following locations:

   ____ • In front of 4B 480v LC

   ____ • In front of 4D 480v LC

ATTACHMENT 19
(Page 3 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

3. (Cont'd)

e. Install barriers at the following entry doors to 4A EDG rooms:

____ (1) Door 138-1

____ (2) Door 133-2

____ (3) Door 141-1 to the 4A EDG DOTP area

____ (4) Door 138-2

____ (5) Door 140-1

____ (6) Door 139-2

f. **IF** the 4A ICW or CCW pump is unavailable and the 4D bus is aligned to the 4A bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

g. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

(1) Select one: (N/A pump not operating)

____ i. 4A CCW Pump

OR

____ ii. 4C CCW Pump

(2) Select one: (N/A pump not operating)

____ i. 4A ICW Pump

OR

____ ii. 4C ICW Pump

ATTACHMENT 19
(Page 4 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

4. **IF** 4C 480v LC is fed from 4D LC, **THEN** post signs and/or barriers as follows:

   a. Install barriers in the 4B 4KV Bus room at the following locations:

____ (1) East side of the 4B switchgear bus from the north wall to the south wall (Permit access to the ASD panel.)

____ (2) West side of the 4B switchgear bus from the north wall to the south wall

   b. In the 4B 4KV Bus room, install signs as follows:

____ (1) Place a protected equipment sign on the front of 4C23B (Old Sequencer Cabinet) located on the north wall of the 4B 4KV Bus room.

NOTE

The C bus tie breaker cubicle contains an HGA relay that if mechanically agitated could cause a bus lockout.

____ (2) Place a protected equipment sign on the cubicle door for breaker 4AB22

____ (3) Place a protected equipment sign on the 4AB04 cubicle door.

____ c. In the 4A 4kv Bus Room, place a Protected Equipment sign on the 4AA04 Cubicle Door.

   d. Install barriers at the following locations in the Unit 4 480v load center rooms:

____ (1) Install barriers in front of 4A, 4B and 4C, 4D 480v LCs.

____ (2) Install protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

   e. Install barriers at the following entry doors to 4B EDG rooms:

____ (1) Door 133-1

____ (2) Door 133-2

____ (3) Door 136-1 to the 4B EDG DOTP area

____ (4) Door 133-3

____ (5) Door 135-2

____ (6) Door 134-2

____ (7) Door 135-1

ATTACHMENT 19
(Page 5 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

4. (Cont'd)

f. **IF** the 4B ICW or CCW pump is unavailable and the 4D bus is aligned to the 4B bus, **THEN** install barriers at the following entry doors to 4D 4kv bus room:

____ (1) Door 139-1

____ (2) Door 139-2

____ (3) Door 135-2

g. In the control room, place unique information tags on the following pump control switches identifying them as the protected/operating train:

(1) Select one: (N/A pump not operating)

____ i. 4B CCW Pump

OR

____ ii. 4C CCW Pump

(2) Select one: (N/A pump not operating)

____ i. 4B ICW Pump

OR

____ ii. 4C ICW Pump

____ 5. In the CCW room, install barriers around the CCW pump whose 4kv power supply is protected above.

____ a. Record pump protected ________________________

ATTACHMENT 19
(Page 6 of 6)

UNIT 4 PROTECTED EQUIPMENT POSTINGS DURING ENCLOSURE 7 RCS DEFUELED

____ 6. Install barriers on the north end of 1 of 3 CCW Hxs.

____ a. Record Hxs protected ____________________

____ 7. At the SFP pump and Hx room, install a barrier at the entry door.

____ 8. Place a magnetic stop sign at 480V LC Breaker Cubicle 40309, SFP Cooling Pumps.

____ 9. Place a magnetic stop sign on 480 V LC Breaker Cubicle 30309, SFP Cooling Pumps.

____ 10. **IF** offsite power is from backfeed, **THEN** place a protected equipment sign at the safeguards racks to protect the Aux Transformer breaker.

a. 4QR42

b. 4QR43

c. 4QR44

d. 4QR45

____ 11. At the Intake, install barriers around the ICW pump whose 4kv power supply is protected above.

____ a. Record pump protected ____________________

____ 12. **IF** the RWST is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on RWST purification pump breaker 30788 (U3 outage) or 40788 (U4 outage).

a. Record the breaker protected ____________________

____ 13. **IF** Primary Water is one of the two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on ONE of the following Primary Water Pump breakers: 0885 (3A), 30664 (3B), 0884 (4A), 40664 (4B).

a. Record the breaker protected ____________________

____ 14. **IF** the CVCS HUT is one of two credited sources of makeup water to the Spent Fuel Pit, **THEN** place a magnetic stop sign on CVCS HUT recirculation pump breaker, 0853.

Date/Time Completed:__________/__________

PERFORMED BY (Print)	INITIALS

ATTACHMENT 20
(Page 1 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS RESTORATION

____ 1. Ensure Unit 3 RCS temperature is above 200 deg.

NOTE

The remainder of this attachment may be completed in any order.

2. In switchyard, perform the following:

   a. In the startup transformer bay, ensure the following barriers are removed:

____ (1) Barrier on the east side of the bay facing east.

____ (2) Barrier on the north side facing north.

____ (3) Barrier on the west side facing west

____ (4) Barrier on the south side facing south.

   b. In the main transformer bay, ensure the following barriers are removed:

____ (1) Barrier on the east side of the bay facing east.

____ (2) Barrier on the north side facing north.

____ (3) Barrier on the west side facing west

____ (4) Barrier on the south side facing south.

____ 3. At the startup transformer, ensure all barriers around the startup transformer are removed.

____ 4. At the main and aux transformers, ensure all barriers around the main and aux transformers are removed.

5. At the 4kv bus rooms, perform the following:

   a. Ensure barriers are removed from the following entry locations:

____ (1) East side of the 3A switchgear bus from the north wall to the south wall

____ (2) West side of the 3A switchgear bus from the north wall to the south wall

____ (1) East side of the 3B switchgear bus from the north wall to the south wall

____ (2) West side of the 3B switchgear bus from the north wall to the south wall

ATTACHMENT 20
(Page 2 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS RESTORATION

5. (Cont'd)

b. In the 3A 4kv bus room, ensure protected equipment signs and barriers are removed at the following locations:

____ (1) Breaker 3AA09, Cross-tie to 3C Bus breaker

____ (2) Cubicle door 3AA04

____ (3) 3C23A (old sequencer panel)

c. In the 3B 4kv bus room, ensure protected equipment signs and barriers are removed at the following locations:

____ (1) Breaker 3AB22, Cross-tie to 3C Bus breaker

____ (2) Cubicle door 3AB04

____ (3) 3C23B (old sequencer panel)

6. At the 480v load center rooms, perform the following:

a. Ensure barriers removed from the following locations:

____ (1) In front of 3A, 3B and 3C, 3D 480v LCs

____ (2) Remove protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

7. At the EDG rooms ensure barriers are removed from the following entry doors:

____ a. Door 073-1

____ b. Door 072-2

____ c. Door 131-1 to the 3A EDG radiator area

____ d. Door 075-1to the 3A EDG Daytank room

____ e. Door 072-1

____ f. Vital area door 3EDG3131 to the 3B EDG radiator area

____ g. Door 074-1 to the 3B EDG Daytank room

ATTACHMENT 20
(Page 3 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS RESTORATION

8. Remove 3A MCC 480v MCC Vital Section as follows:

____ a. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), remove magnetic **STOP** signs on each cabinet door of 3A 480v MCC Vital Section (8 signs total).

____ b. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), remove a magnetic **STOP** sign on the north side facing north.

____ c. At 3A 480v MCC Vital Section (east side of Turbine Bldg walkway, immediately above condensate pumps), remove a magnetic **STOP** sign on the south side facing south.

9. At the 3D 4kv bus room, ensure barriers at the following entry doors are removed:

____ (1) Door 134-1

____ (2) Door 134-2

____ 10. In the Control Room, ensure any information tags on the RHR, CCW, or ICW pump control switches for designated operating and protected trains are removed.

____ 11. In the Control Room, ensure any protected equipment signs are removed from safeguards racks 3QR42/43/44/45.

____ 12. In the CCW room, ensure all barriers around the CCW pumps are removed.

____ 13. At the RHR pump rooms, ensure all barriers to 3A and 3B RHR pumps are removed.

____ 14. In the CCW room, ensure all barriers around CCW Hxs are removed.

____ 15. At the Intake, ensure all barriers around the ICW pumps are removed.

____ 16. At the U3 SFP pump room, ensure all barriers are removed from the entrance door and SFP Cooling Heat Exchanger.

____ 17. At 480V LC Breaker Cubicle 30309 SFP Cooling Pump ensure stop sign removed

____ 18. At 480V LC Breaker Cubicle 40309 SFP Cooling Pump ensure stop sign removed.

ATTACHMENT 20
(Page 4 of 4)

UNIT 3 PROTECTED EQUIPMENT POSTINGS RESTORATION

___ 19. Ensure magnetic stop signs are removed from the following locations:

__ a. the RWST purification pump breakers : 30788, 407788.

__ b. the Primary Water Pumps breakers: 0885, 30664, 0884, 40664.

__ c. the CVCS HUT recirculation pump breaker: 0853.

Date/Time Completed:___________/___________

PERFORMED BY (Print)	INITIALS
______________________	____________
______________________	____________
______________________	____________

ATTACHMENT 21
(Page 1 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTINGS RESTORATION

____ 1. Ensure Unit 4 RCS temperature is above 200 deg.

NOTE

The remainder of this attachment may be completed in any order.

2. In switchyard, perform the following:

   a. In the startup transformer bay, ensure the following barriers are removed:

____ (1) Barrier on the east side of the bay facing east.

____ (2) Barrier on the north side facing north.

____ (3) Barrier on the west side facing west

____ (4) Barrier on the south side facing south.

   b. In the main transformer bay, ensure the following barriers are removed:

____ (1) Barrier on the east side of the bay facing east.

____ (2) Barrier on the north side facing north.

____ (3) Barrier on the west side facing west

____ (4) Barrier on the south side facing south.

____ 3. At the startup transformer, ensure all barriers around the startup transformer are removed.

____ 4. At the main and aux transformers, ensure all barriers around the main and aux transformers are removed.

5. At the 4kv bus rooms, perform the following:

   a. Ensure barriers are removed from the following entry locations:

____ (1) East side of 4A switchgear bus from north to south wall

____ (2) West side of 4A switchgear bus from north to south wall

____ (3) East side of 4B switchgear bus from north to south wall

____ (4) West side of 4B switchgear bus from north to south wall

ATTACHMENT 21
(Page 2 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTINGS RESTORATION

5. (Cont'd)

b. In the 4A 4KV Bus room, ensure protected equipment signs are removed from the following cubicle doors:

____ (1) Breaker 4AA09, Cross-tie to 4C Bus breaker

____ (2) Cubicle door 4AA04

____ (3) 4C23A (old sequencer panel)

c. In the 4B 4KV Bus room, ensure protected equipment signs are removed from the following cubicle doors:

____ (1) Breaker 4AB22, Cross-tie to 4C Bus breaker

____ (2) Cubicle door 4AB04

____ (3) 4C23B (old sequencer panel)

a. Ensure barriers removed from the following locations:

____ (1) In front of 4A and 4B 480v load centers

____ (2) In front of 4C and 4D 480v load centers

____ b. Remove protected equipment signs at their respective undervoltage relay panels located on the south wall of the 480v load center rooms.

ATTACHMENT 21
(Page 3 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTINGS RESTORATION

7. At the EDG rooms ensure barriers are removed from the following entry doors:

____ a. Door 138-1

____ b. Door 133-2

____ c. Door 141-1 to the 4A EDG DOTP area

____ d. Door 138-2

____ e. Door 139-1

____ f. Door 139-2

____ g. Door 133-1

____ h. Door 136-1 to the 4B EDG DOTP area

____ i. Door 133-3

____ j. Door 135-2

____ k. Door 134-2

____ l. Door 140-1

____ 8. In the control room, ensure any information tags on the RHR, CCW, or ICW pump control switches for designated operating and protected trains are removed.

ATTACHMENT 21
(Page 4 of 4)

UNIT 4 PROTECTED EQUIPMENT POSTINGS RESTORATION

____ 9. In the Control Room, ensure any protected equipment signs are removed from safeguards racks 4QR42/43/44/45.

____ 10. In the CCW room, ensure all barriers around the CCW pumps are removed.

____ 11. At the RHR pump rooms, ensure all barriers to 4A and 4B RHR pumps are removed.

____ 12. In the CCW room, ensure all barriers around CCW Hxs are removed.

____ 13. At the Intake, ensure all barriers around the ICW pumps are removed.

____ 14. At door to the U4 SFP pump room, ensure all barriers are removed from the entrance door and SFP Cooling Heat Exchanger.

____ 15. At 480V LC Breaker Cubicle 40309 SFP Cooling Pump 4P212A/B, ensure stop sign removed.

____ 16. At 480V LC Breaker Cubicle 30309 SFP Cooling Pump ensure stop sign removed.

____ 17. Ensure magnetic stop signs are removed from the following locations:

__ a. the RWST purification pump breakers : 30788, 407788.

__ b. the Primary Water Pumps breakers: 0885, 30664, 0884, 40664.

__ c. the CVCS HUT recirculation pump breaker: 0853.

Date/Time Completed:____________/____________

PERFORMED BY (Print)	INITIALS
____________________	____________
____________________	____________
____________________	____________

FINAL PAGE