A.1.a Admin a RO/SRO Conduct of Operations ADMIN G2.1.7

TITLE: Critical Safety Function Status Tree Evaluation.

EVALUATION LOCATION: ☐ SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 10 MIN SIMULATOR IC NUMBER: N/A

☐ ALTERNATE PATH ☐ TIME CRITICAL ☐ PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. Requiring the examinee to acquire the required materials may or may not be included as part of the JPM.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Correctly assess and determine the status of ALL CSFs and then determine which FRP is required to be implemented using FNP-1-CSF-0.0.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Billy Thornton	Date: 2/7/2011
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to MONITOR AND EVALUATE CRITICAL SAFETY FUNCTION STATUS TREES. The conditions under which this task is to be performed are:

a. Unit 1 tripped from 100% power.
b. Plant conditions are given in the attached Table 1.
c. A Safety Injection occurred 30 minutes ago.
d. The crew is performing actions in EEP-1, Loss of Reactor or Secondary Coolant.
e. The SPDS computer is **NOT** available for monitoring Critical Safety Functions.
f. You have been directed to manually monitor the Critical Safety Functions using CSF-0.0, Critical Safety Function Status Trees on Unit 1.
g. Perform the following :
   - Document each CSF evaluation on **FNP-1-CSF-0.0** by circling the final colored ball indicating the CSF status.
   - Report the FRP that is required to be implemented, if any.

INITIATING **CUE**: IF you have no questions, you may begin.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
____ START TIME		
* 1. Evaluate CSF-0.1.	POWER RNG LESS THAN 5% - **YES** BOTH INT RNG SUR ZERO OR NEGATIVE – **NO** Determines that an Orange condition exists to go to FRP-S.1.	S / U
* 2. Evaluate CSF-0.2.	FIFTH HOTTEST CORE EXIT TC LESS THAN 1200°F – **YES** RCS SUBCOOLING FROM CORE EXIT TC'S GRTR THAN 16°F{45°F} – **YES** Determines that this CSF is SAT.	S / U

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*	3. Evaluate CSF-0.3.	NAR RNG LVL IN AT LEAST ONE SG GRTR THAN 31%{48%} - **NO** TOTAL AFW FLOW TO ALL SG'S GRTR THAN 395 GPM – **YES** PRESS IN ALL SG'S LESS THAN 1129 PSIG – **YES** NAR RNG LVL IN ALL SG'S LESS THAN 82% - **YES** PRESS IN ALL SG'S LESS THAN 1075 PSIG – **YES** NAR RNG LVL IN ALL SG'S GRTR THAN 31% - **NO** Determines that a Yellow condition exists to go to FRP-H.5.	S / U
*	4. Evaluate CSF-0.4.	TEMP DECR IN ALL CL IN LAST 60 MIN LESS THAN 100°F – **NO** ALL RCS PRESS CL TEMP (IN LAST 60 MIN) POINTS TO RIGHT OF LIMIT A – **YES** ALL RCS CL TEMPS IN LAST 60 MIN GRTR THAN 250°F – **NO** Determines that an Orange condition exists to go to FRP-P.1.	

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*	5. Evaluate CSF-0.5.	CTMT PRESS LESS THAN 54 PSIG – **YES** CTMT PRESS LESS THAN 27 PSIG – **YES** CTMT SUMP LVL LESS THAN 7.6 FT. – **YES** BOTH CTMT RAD LESS THAN 2 R/hr. - **YES** Determines that this CSF is SAT.	
*	6. Evaluate CSF-0.6.	PRZR LVL LESS THAN 92% - **YES** PRZR LVL GRTR THAN 15% - **NO** Determines that a Yellow condition exists to go to FRP-I.2.	
*	7. Determines FRP entry requirements.	Determines that FRP-S.1 is required to be implemented.	

____ STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-CSF-0.0, VER 17.0

2. KA: G2.1.7 RO (4.4) SRO (4.7)

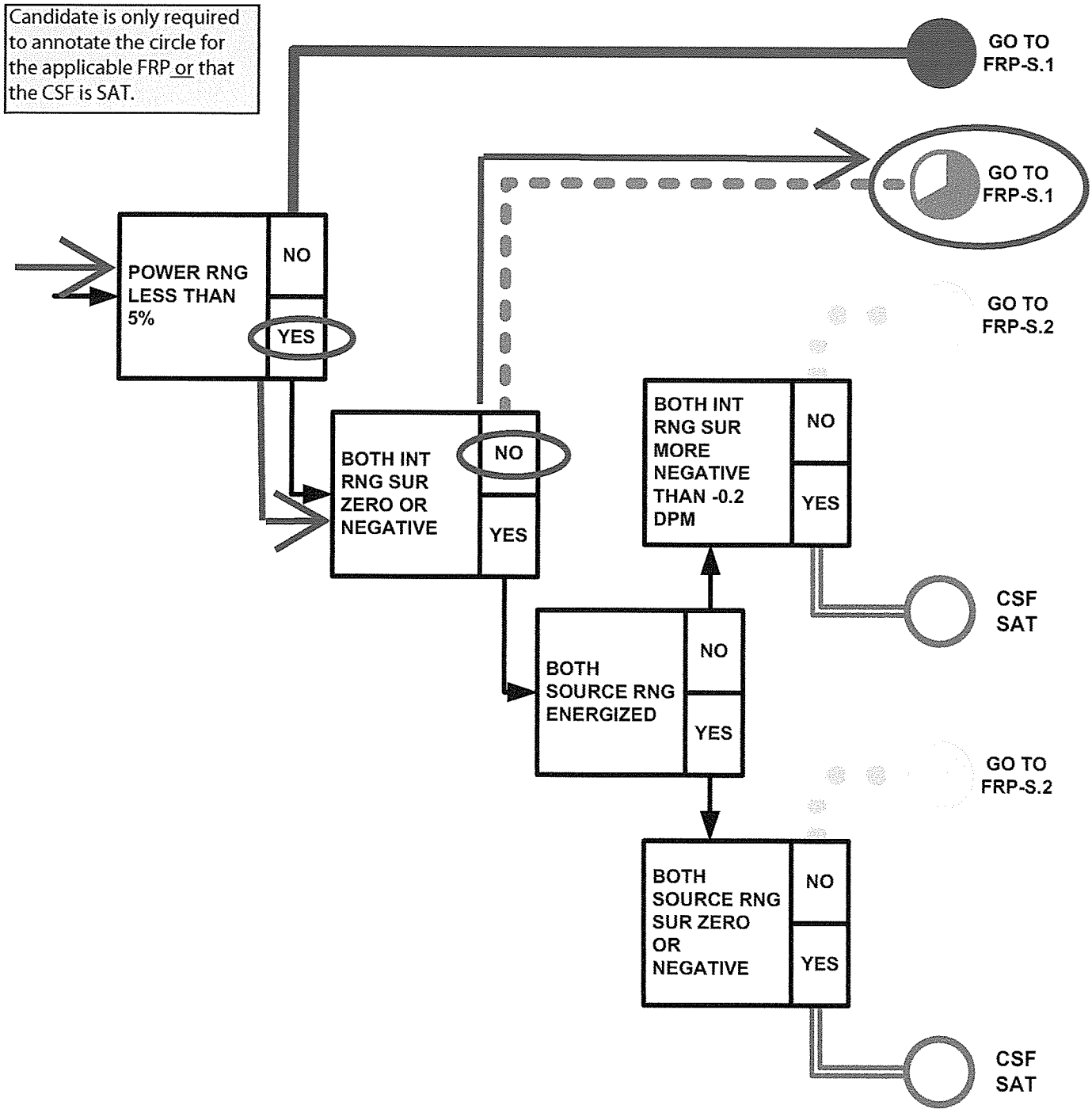
GENERAL TOOLS AND EQUIPMENT:

1. FNP-1-CSF-0.0, VER 17.0

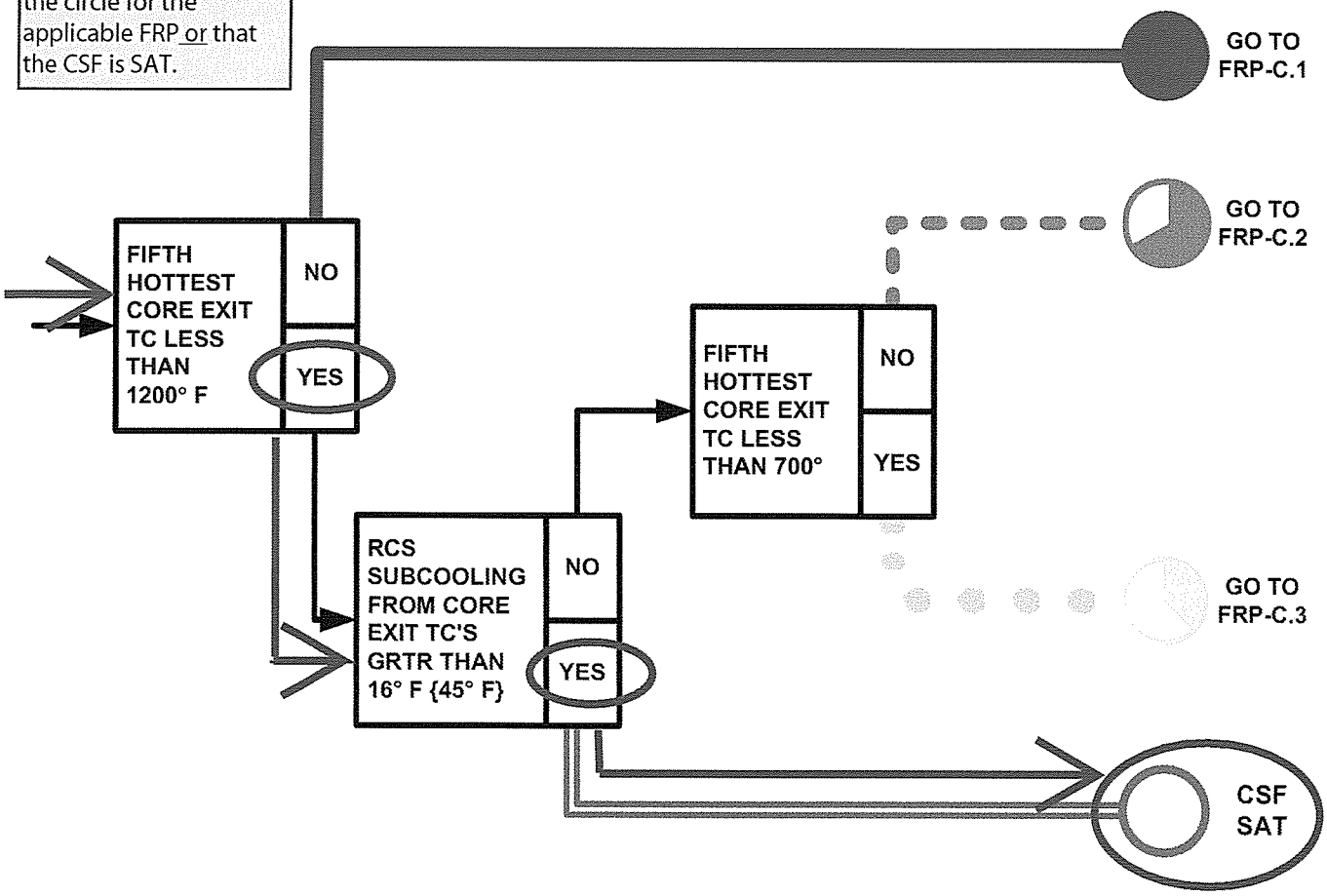
Critical ELEMENT justification:

STEP	Evaluation
1	**Critical:** Task completion: required to properly evaluate CSF-0.1 to determine that an Orange path condition exists. This is the highest priority FRP for the conditions given. If this is not evaluated properly, a transition to a lower level procedure could occur, and the highest priority FRP would not be implemented.
2-6	**Critical:** Task completion: Actions are required to evaluate each CSF properly to complete task successfully. This CSF evaluation should determine the CSF color and procedure, if any, that apply.
7	**Critical:** Task completion: required to determine that FRP-S.1 is to be implemented.

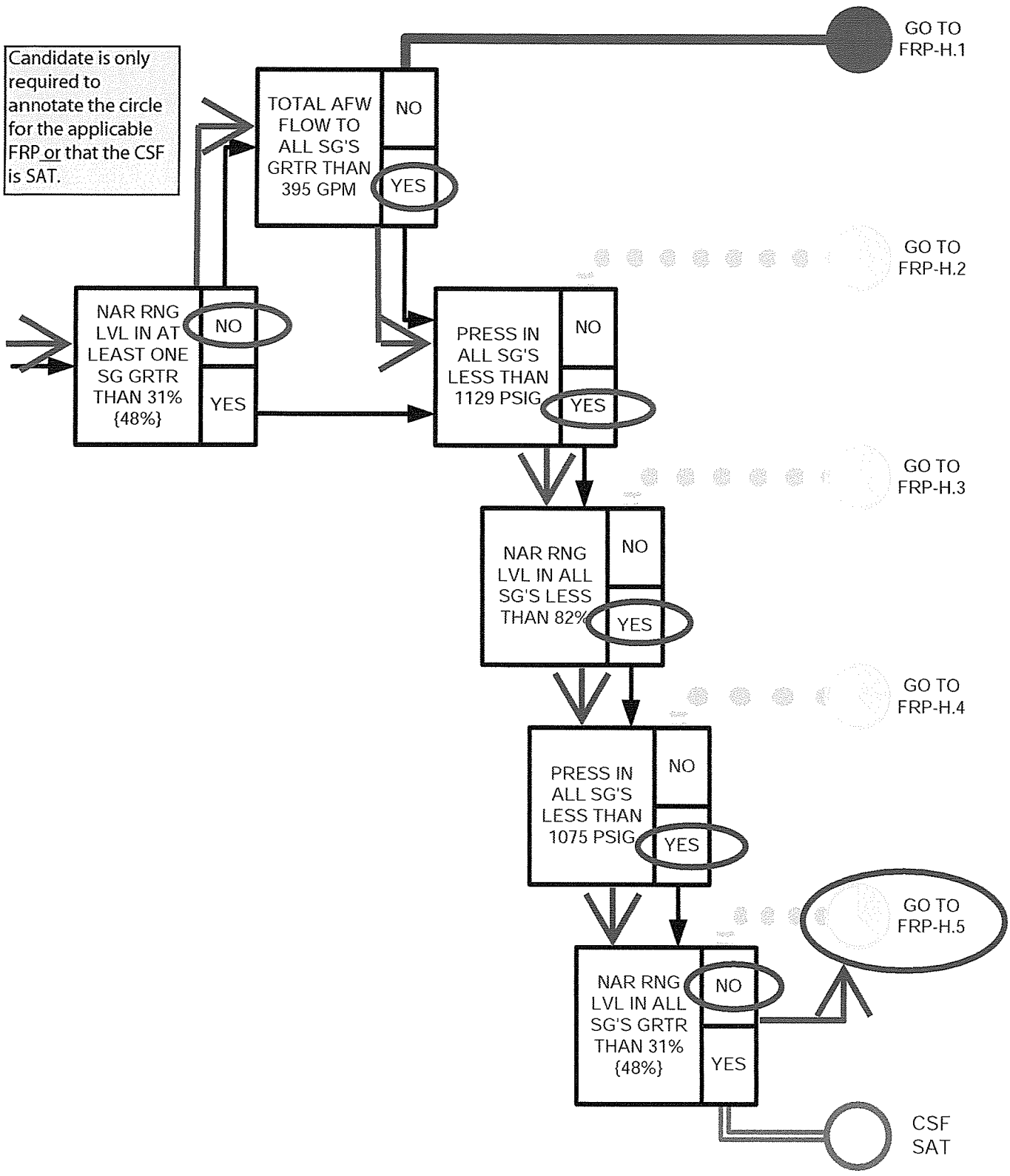
COMMENTS:

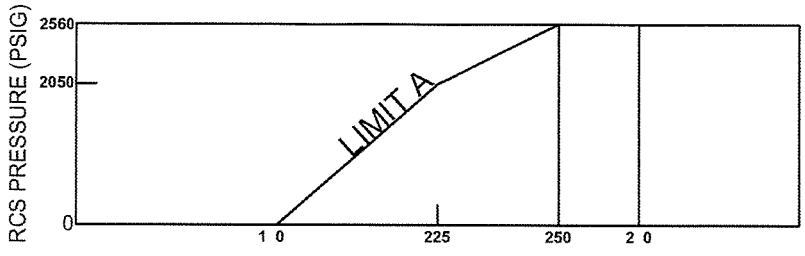

Candidate is only required to annotate the circle for the applicable FRP or that the CSF is SAT.
GO TO FRP-S.1
GO TO FRP-S.1
POWER RNG LESS THAN 5%
NO
YES
GO TO FRP-S.2
BOTH INT RNG SUR ZERO OR NEGATIVE
NO
YES
BOTH INT RNG SUR MORE NEGATIVE THAN -0.2 DPM
NO
YES
CSF SAT
BOTH SOURCE RNG ENERGIZED
NO
YES
GO TO FRP-S.2
BOTH SOURCE RNG SUR ZERO OR NEGATIVE
NO
YES
CSF SAT

Candidate is only required to annotate the circle for the applicable FRP or that the CSF is SAT.



8/29/2007 08:33 FNP-1-CSF-0.3	HEAT SINK	Revision 17





ALL RCS PRESS -- CL TEMP IN LAST 60 MIN POINTS TO RIGHT OF LIMIT A
NO
YES

GO TO FRP-P.1

GO TO FRP-P.1

ALL RCS CL TEMPS IN LAST 60 MIN GRTR THAN 250° F
NO
YES

GO TO FRP-P.2

ALL RCS CL TEMPS IN LAST 60 MIN GRTR THAN 2 0° F
NO
YES

CSF SAT

Candidate is only required to annotate the circle for the applicable FRP or that the CSF is SAT.

TEMP ECF IN ALL CL IN LAST 60 MIN LESS THAN 100° F
NO
YES

GO TO FRP-P.1

ALL RCS CL TEMPS GRTR THAN 250° F
NO
YES

RCS PRESS LESS THAN 450 PSIG
NO
YES

GO TO FRP-P.2

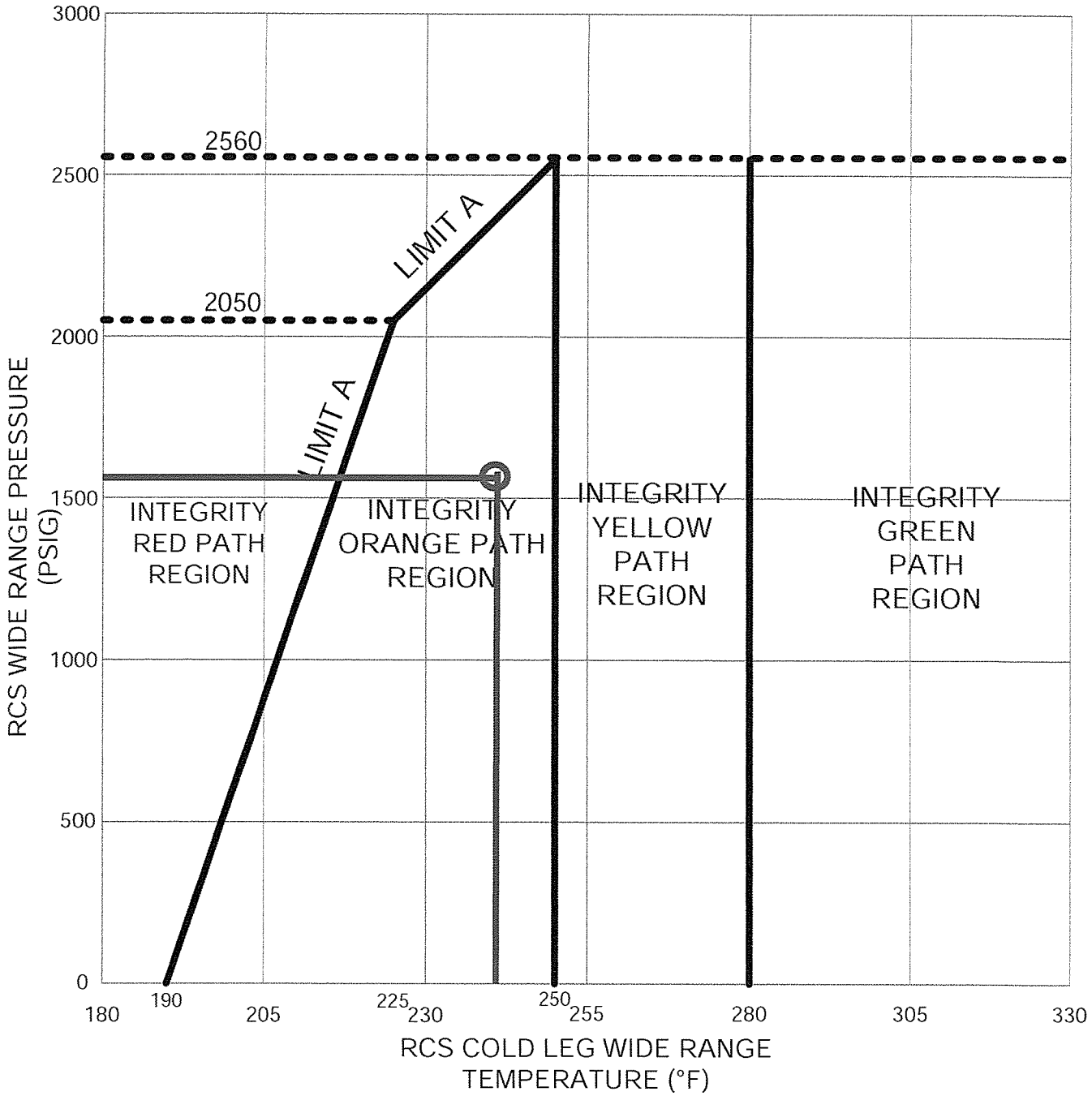
ALL RCS TEMPS GRTR THAN 325° F
NO
YES

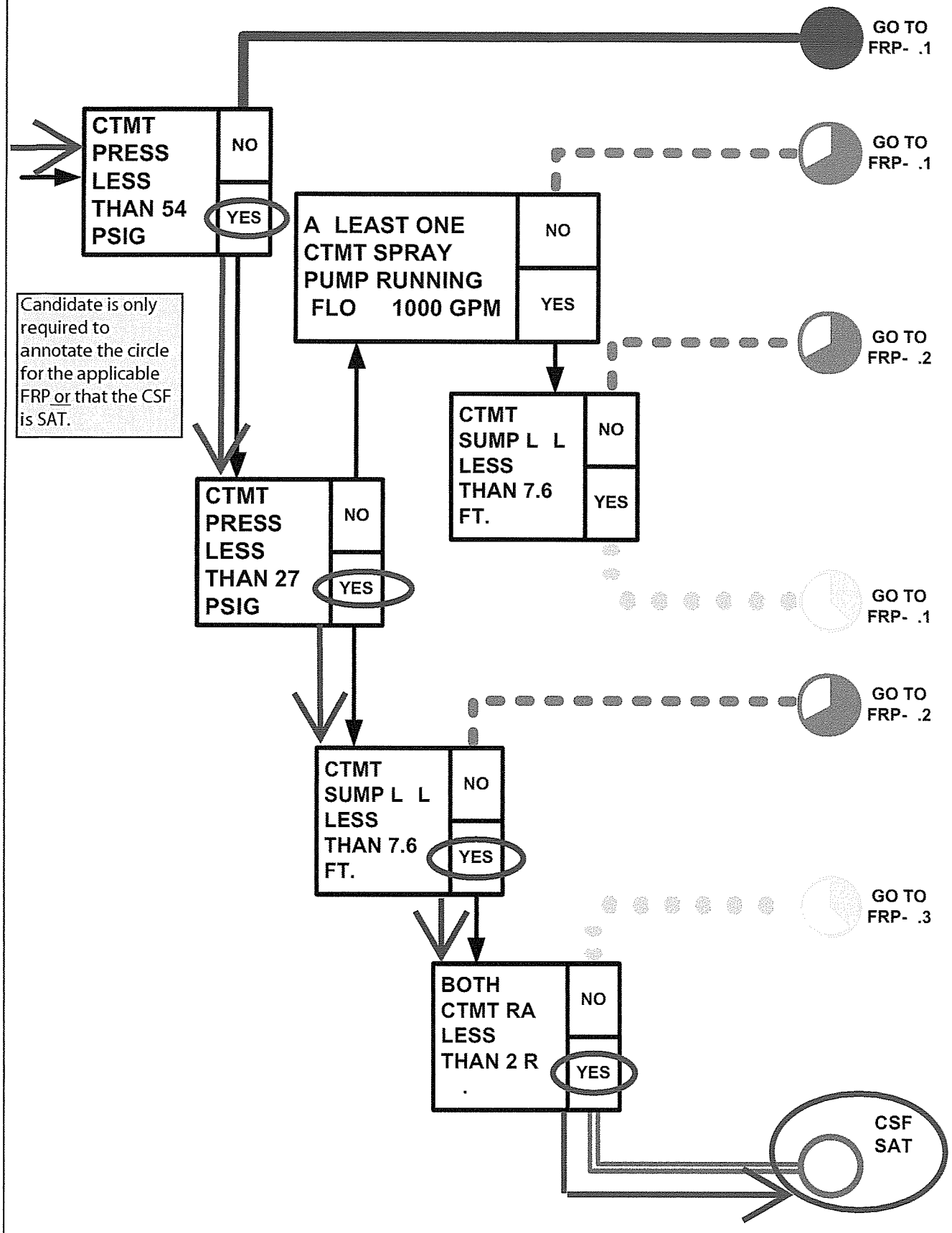
CSF SAT

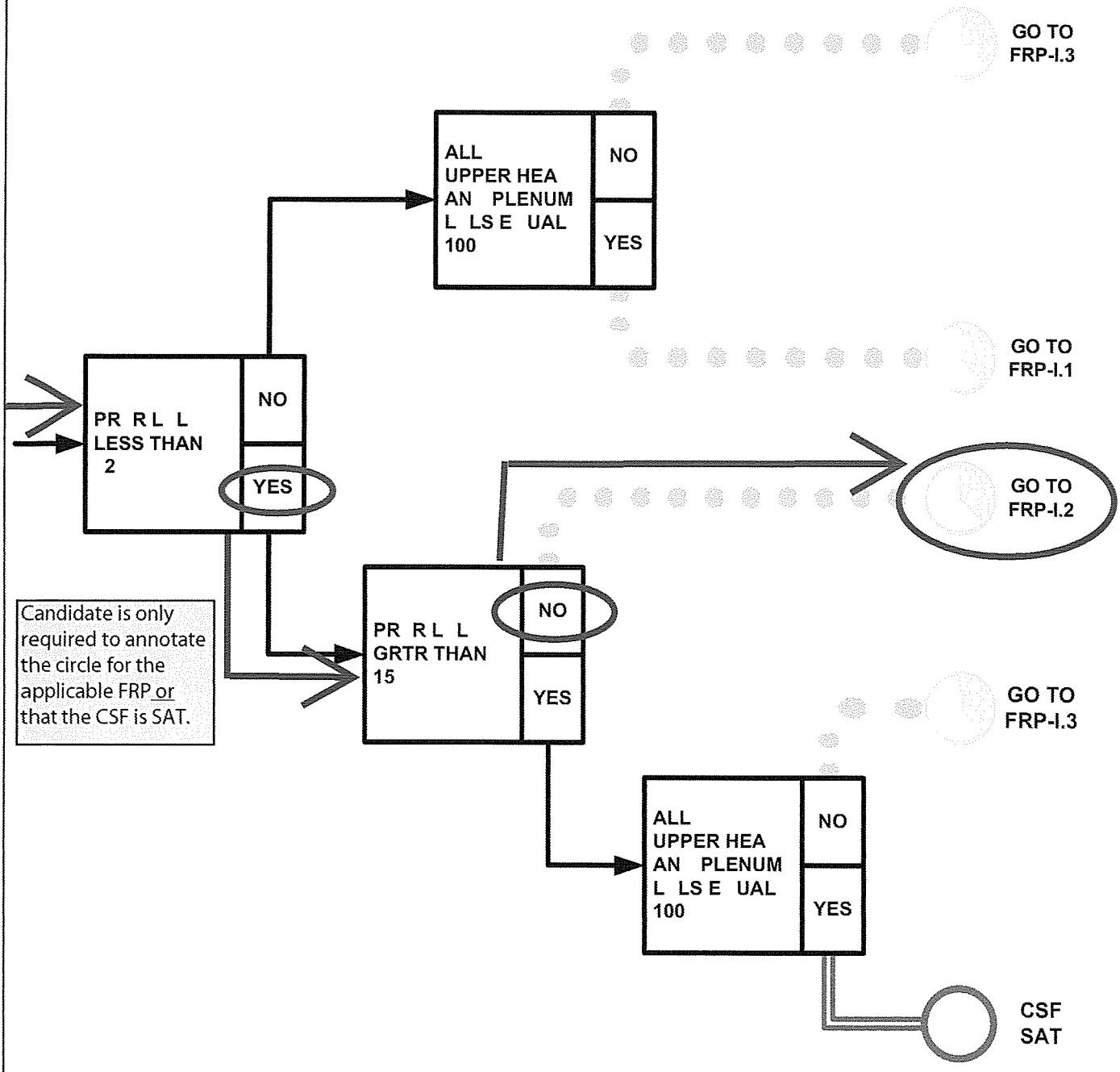
CSF SAT

INTEGRITY

RCS PRESSURE - TEMPERATURE CRITERIA




GO TO FRP- .1
CTMT PRESS LESS THAN 54 PSIG
NO
YES
GO TO FRP- .1
A LEAST ONE CTMT SPRAY PUMP RUNNING FLO 1000 GPM
NO
YES
GO TO FRP- .2
Candidate is only required to annotate the circle for the applicable FRP or that the CSF is SAT.
CTMT SUMP L L LESS THAN 7.6 FT.
NO
YES
CTMT PRESS LESS THAN 27 PSIG
NO
YES
GO TO FRP- .1
GO TO FRP- .2
CTMT SUMP L L LESS THAN 7.6 FT.
NO
YES
GO TO FRP- .3
BOTH CTMT RA LESS THAN 2 R .
NO
YES
CSF SAT


GO TO
FRP-I.3
ALL
UPPER HEA
AN PLENUM
L LS E UAL
100
NO
YES
GO TO
FRP-I.1
PR R L L
LESS THAN
2
NO
YES
GO TO
FRP-I.2
Candidate is only
required to annotate
the circle for the
applicable FRP or
that the CSF is SAT.
PR R L L
GRTR THAN
15
NO
YES
GO TO
FRP-I.3
ALL
UPPER HEA
AN PLENUM
L LS E UAL
100
NO
YES
CSF
SAT

CONDITIONS

When I tell you to begin, you are to MONITOR AND EVALUATE CRITICAL SAFETY FUNCTION STATUS TREES. The conditions under which this task is to be performed are:

a. Unit 1 tripped from 100% power.
b. Plant conditions are given in the attached Table 1.
c. A Safety Injection occurred 30 minutes ago.
d. The crew is performing actions in EEP-1, Loss of Reactor or Secondary Coolant.
e. The SPDS computer is **NOT** available for monitoring Critical Safety Functions.
f. You have been directed to manually monitor the Critical Safety Functions using CSF-0.0, Critical Safety Function Status Trees on Unit 1.
g. Perform the following :
   - Document each CSF evaluation on **FNP-1-CSF-0.0** by circling the final colored ball indicating the CSF status.
   - Report the FRP that is required to be implemented, if any.

Table 1

Parameter	INSTRUMENT			
	Channel I or Train A	Channel II or Train B	Channel III	Channel IV
Power Range NI	0%	0%	0%	0%
Intermediate Range SUR	+0.2 DPM	+0.25 DPM		
Intermediate Range NI	3.0×10^{-8} AMPS	3.2×10^{-8} AMPS		
Source Range SUR	0 DPM	0 DPM		
Source Range NI	0 CPS	0 CPS		
RCS Pressure	1575 psig	1550 psig		
MCB Core Exit T/C Monitor in **TMAX** mode	329°F	325°F		
PRZR level	2%	4%	5%	
CTMT Pressure	0 psig	0 psig	0 psig	0 psig
RCS Subcooling	250°F	250°F		
CTMT Emergency Sump Levels	0 inches	0 inches		
CTMT Radiation	24 mR / Hr	31 mR / Hr		

Parameter	RCS Loop 1	RCS Loop 2	RCS Loop 3
SG NR Level (all channels)	20%	0%	20%
AFW flow	325 GPM	0 GPM	340 GPM
SG Pressure (all channels)	800 psig	25 psig	820 psig
RCS WR Cold Leg Temperature	420°F	240°F	425°F
RCP status	Off	Off	Off

FARLEY NUCLEAR PLANT

CRITICAL SAFETY FUNCTION PROCEDURE

FNP-1-CSF-0

CRITICAL SAFETY FUNCTION STATUS TREES

PROCEDURE USAGE REQUIREMENTS-per FNP-0-AP-6	SECTIONS
Continuous Use	**ALL**
Reference Use	
Information Use	

SAFETY RELATED

Approved:

Jim L. Hunter (for)
Operations Manager

Date Issued: 09/14/07

Table of Contents

A. Purpose

This procedure provides actions required to evaluate the status of the Critical Safety Functions.

B. Symptoms or Entry Conditions

I. This procedure is entered when monitoring of the Critical Safety Functions is required from FNP-1-EEP-0, REACTOR TRIP OR SAFETY INJECTION, step 23.

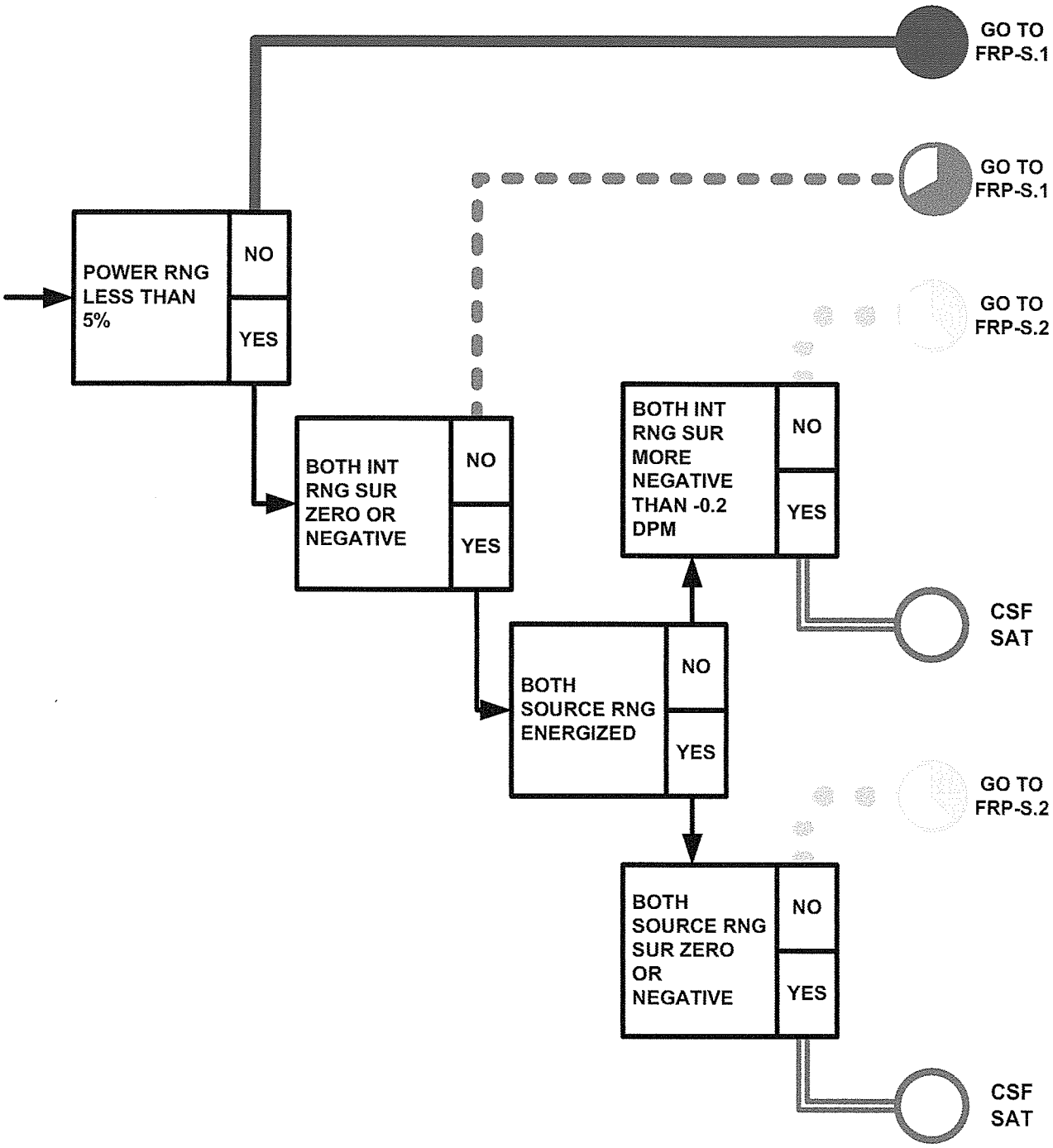
II. This procedure is entered when the operator transfers from the guidance of FNP-1-EEP-0, REACTOR TRIP OR SAFETY INJECTION to any other recovery guideline.

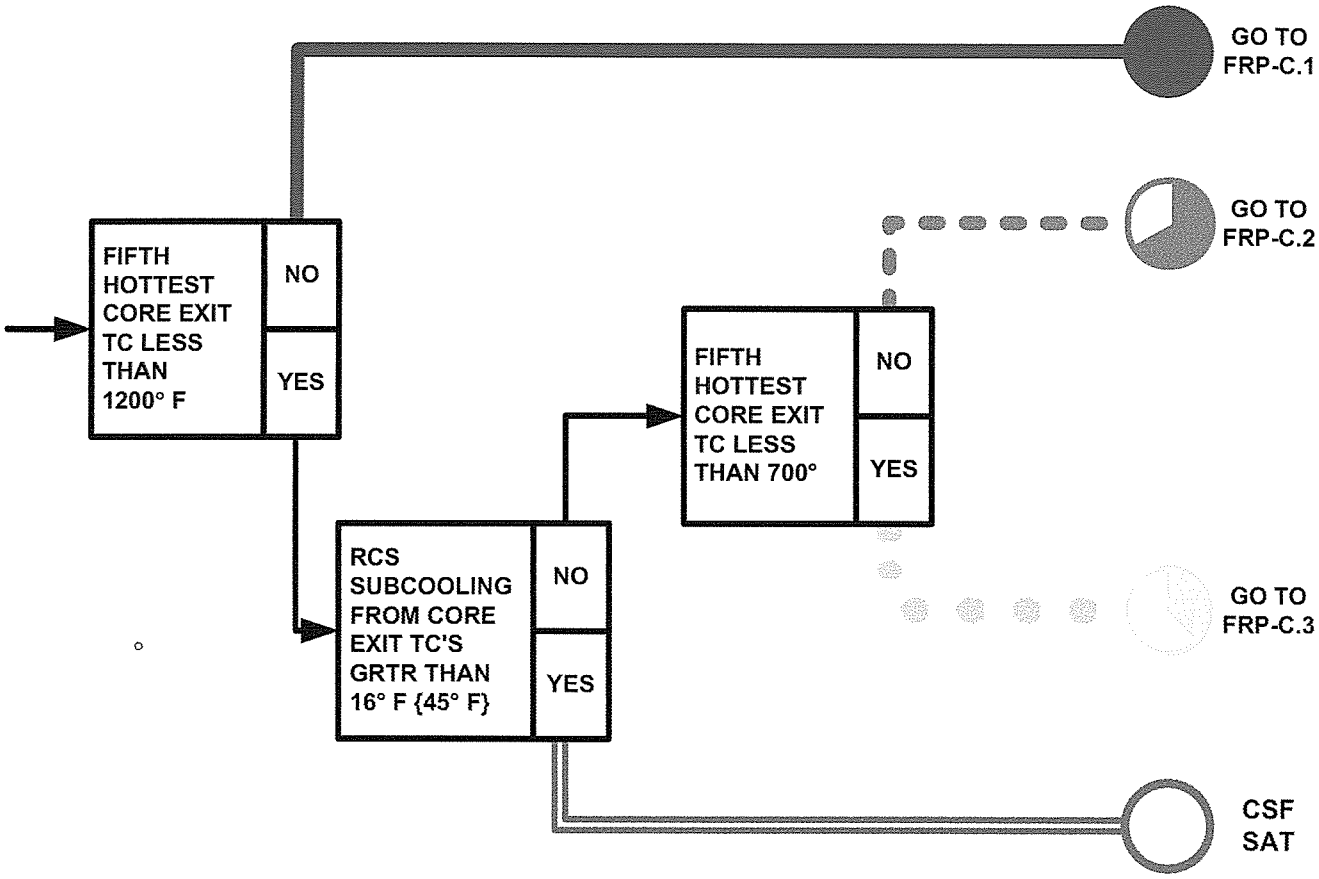
Step	Action/Expected Response	Response NOT Obtained
___ 1	**Check at least one control room IPC SPDS console - Operable.**	
	1.1 Verify no HOST LINK DOWN message on the IPC title bar.	1.1 Proceed to step 3.2.
___ 2	**Check SPDS TOP LEVEL page.**	
	2.1 Click SPDS button on top toolbar.	

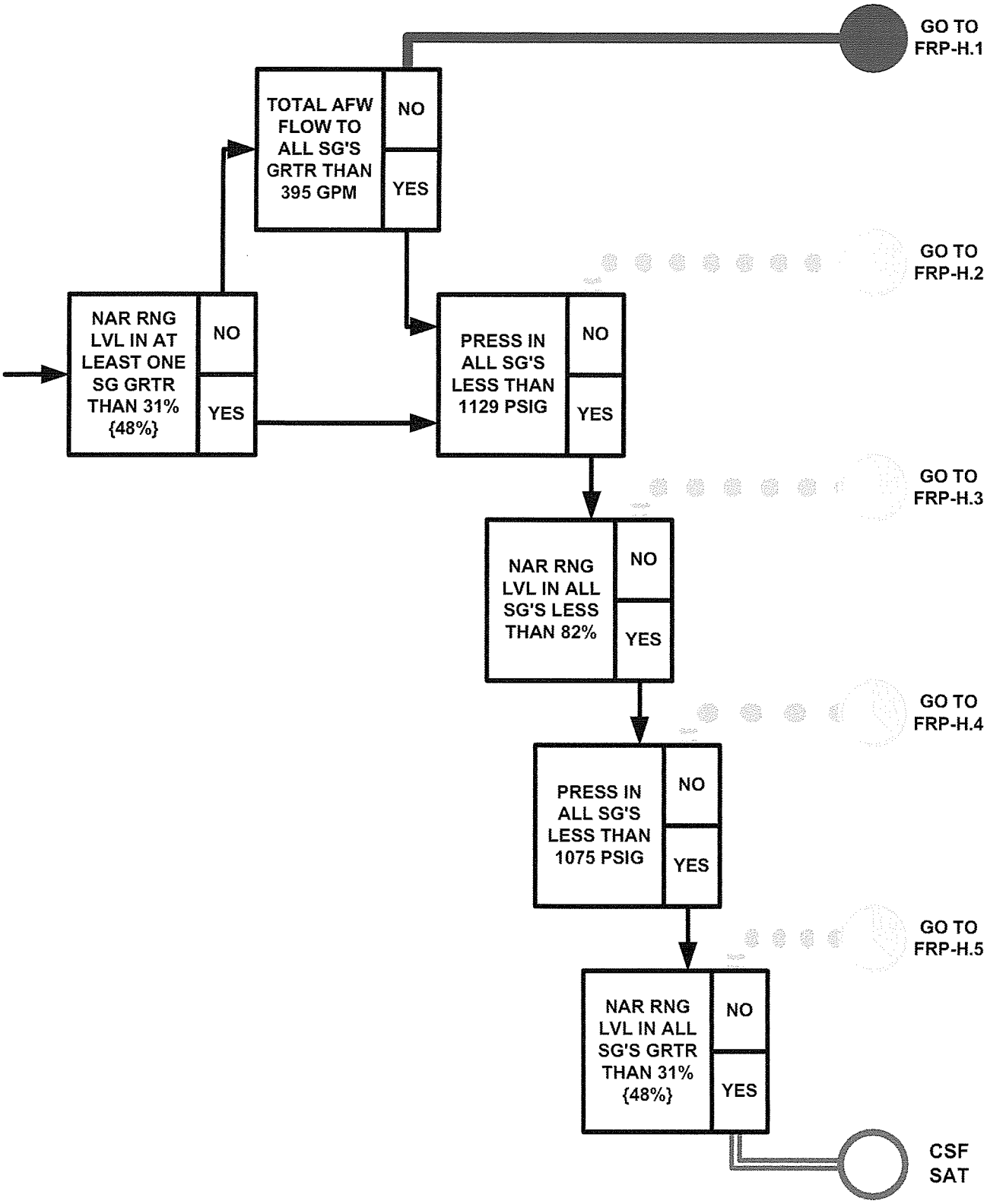
NOTE: Suspect critical safety functions are indicated by the color magenta.

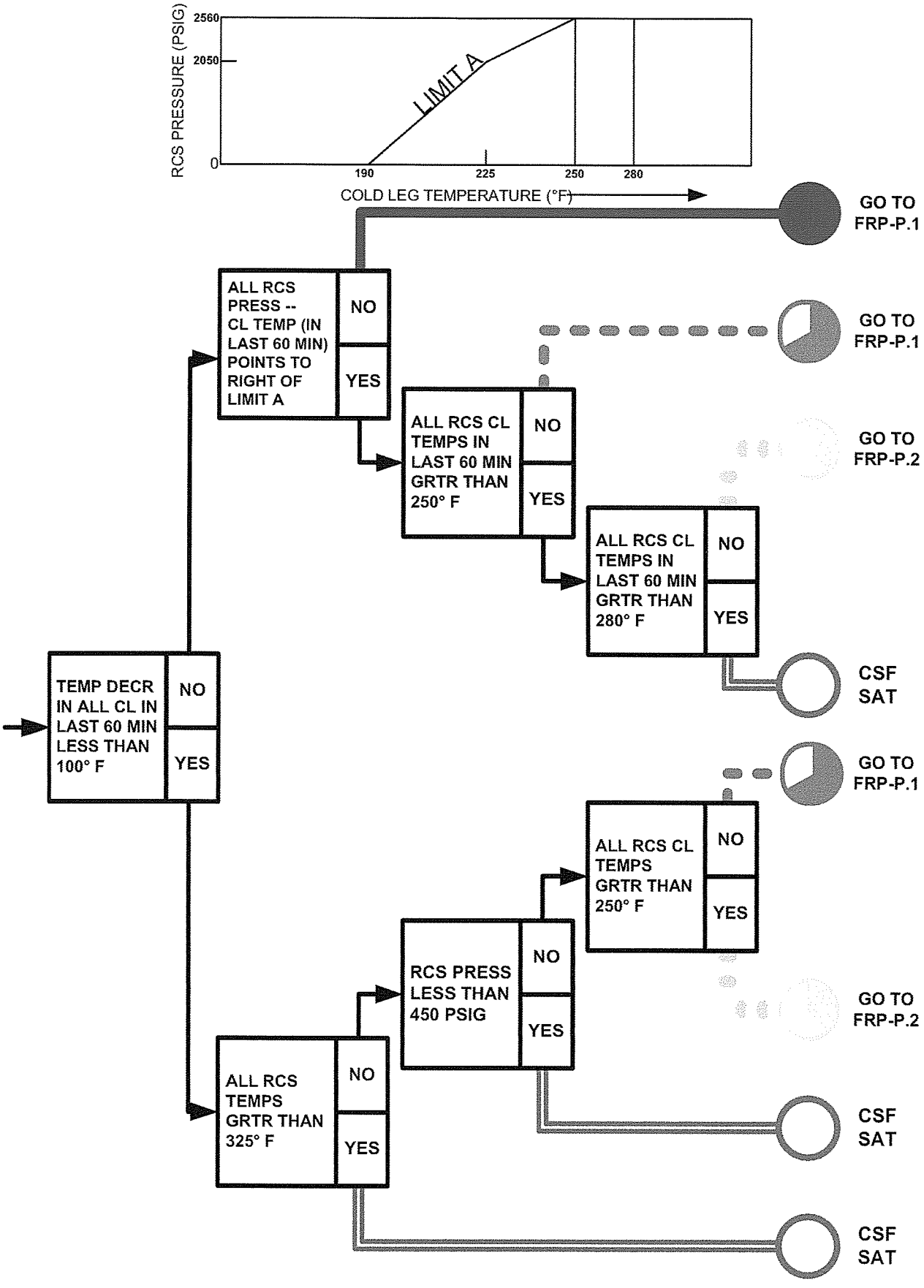
	2.2 Verify no Critical Safety Functions - SUSPECT. [] Subcriticality [] Core Cooling [] Heat Sink [] Integrity [] Containment [] Inventory	2.2 Monitor Critical Safety Function which is SUSPECT using FNP-1-CSF-0.1 through FNP-1-CSF-0.6 as appropriate.
___ 3	**Monitor Critical Safety Functions.**	
	3.1 Monitor Critical Safety Functions with SPDS Application on IPC. OR 3.2 Monitor Critical Safety Functions using FNP-1-CSF-0.1 through FNP-1-CSF-0.6	

-END-


GO TO FRP-S.1
GO TO FRP-S.1
GO TO FRP-S.2
POWER RNG LESS THAN 5%
NO
YES
BOTH INT RNG SUR ZERO OR NEGATIVE
NO
YES
BOTH INT RNG SUR MORE NEGATIVE THAN -0.2 DPM
NO
YES
CSF SAT
BOTH SOURCE RNG ENERGIZED
NO
YES
GO TO FRP-S.2
BOTH SOURCE RNG SUR ZERO OR NEGATIVE
NO
YES
CSF SAT

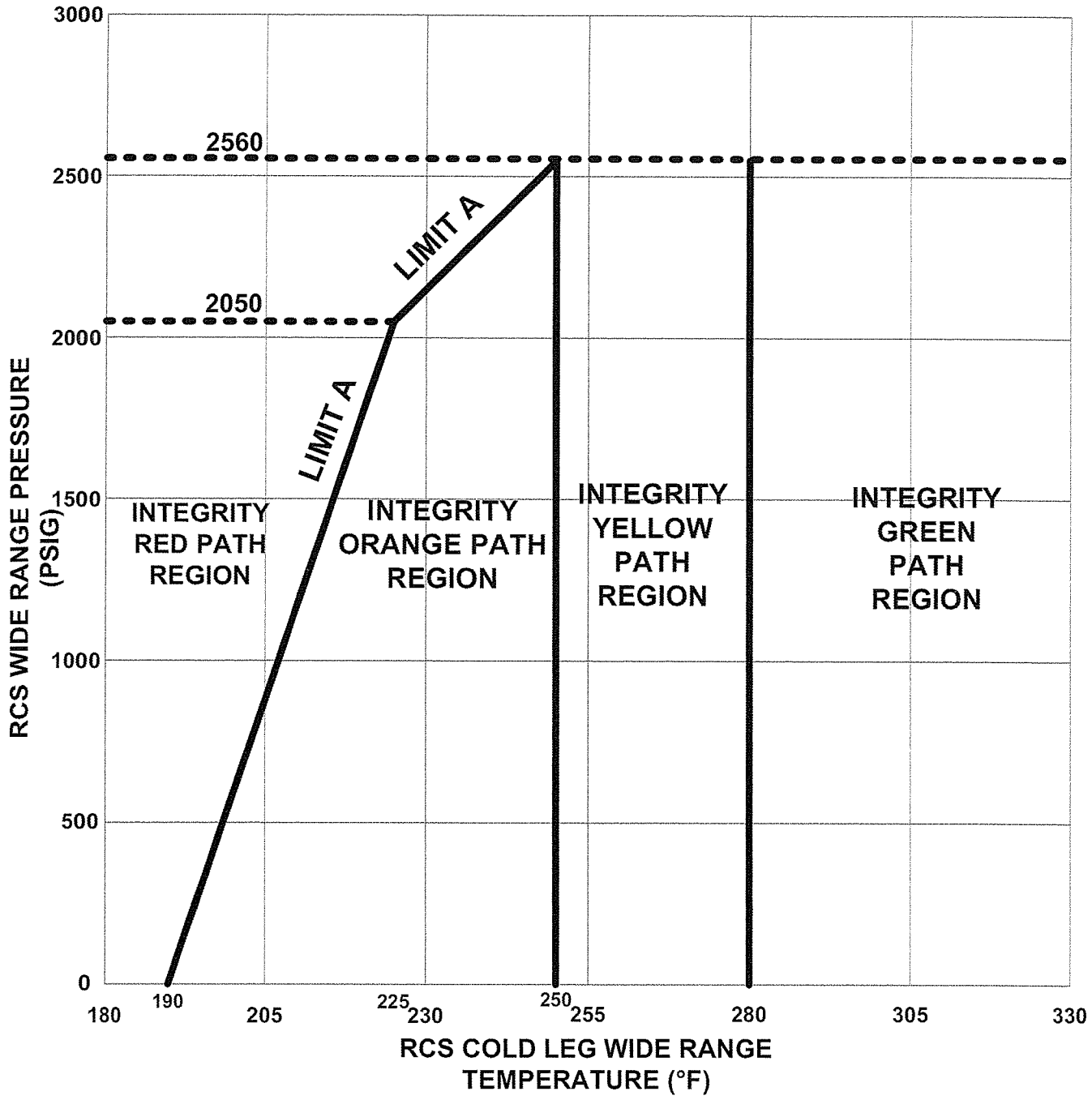

GO TO
FRP-C.1
GO TO
FRP-C.2
FIFTH
HOTTEST
CORE EXIT
TC LESS
THAN
1200° F
NO
YES
FIFTH
HOTTEST
CORE EXIT
TC LESS
THAN 700°
NO
YES
RCS
SUBCOOLING
FROM CORE
EXIT TC'S
GRTR THAN
16° F {45° F}
NO
YES
GO TO
FRP-C.3
CSF
SAT

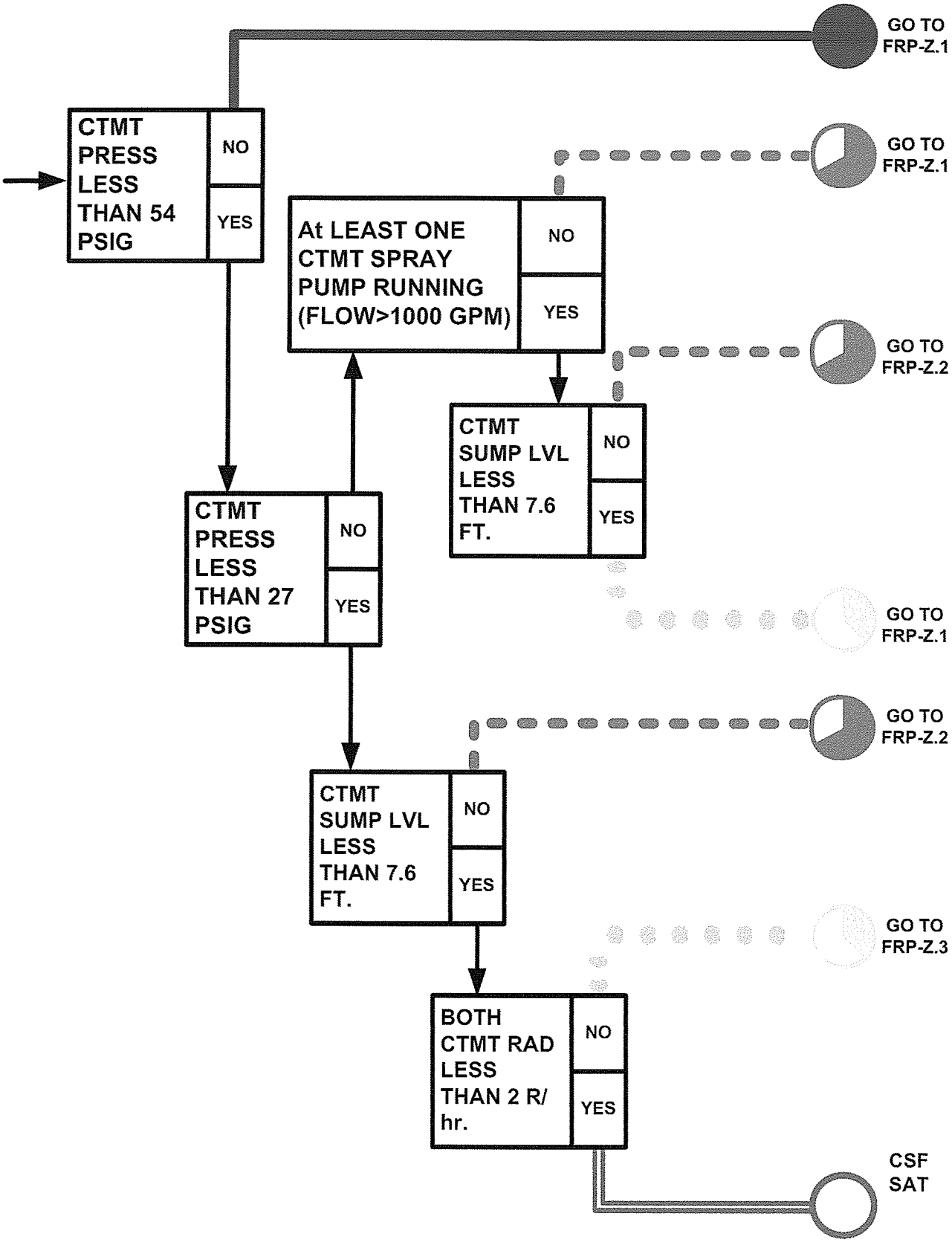

TOTAL AFW FLOW TO ALL SG'S GRTR THAN 395 GPM
NO
YES
GO TO FRP-H.1
NAR RNG LVL IN AT LEAST ONE SG GRTR THAN 31% {48%}
NO
YES
PRESS IN ALL SG'S LESS THAN 1129 PSIG
NO
YES
GO TO FRP-H.2
NAR RNG LVL IN ALL SG'S LESS THAN 82%
NO
YES
GO TO FRP-H.3
PRESS IN ALL SG'S LESS THAN 1075 PSIG
NO
YES
GO TO FRP-H.4
NAR RNG LVL IN ALL SG'S GRTR THAN 31% {48%}
NO
YES
GO TO FRP-H.5
CSF SAT

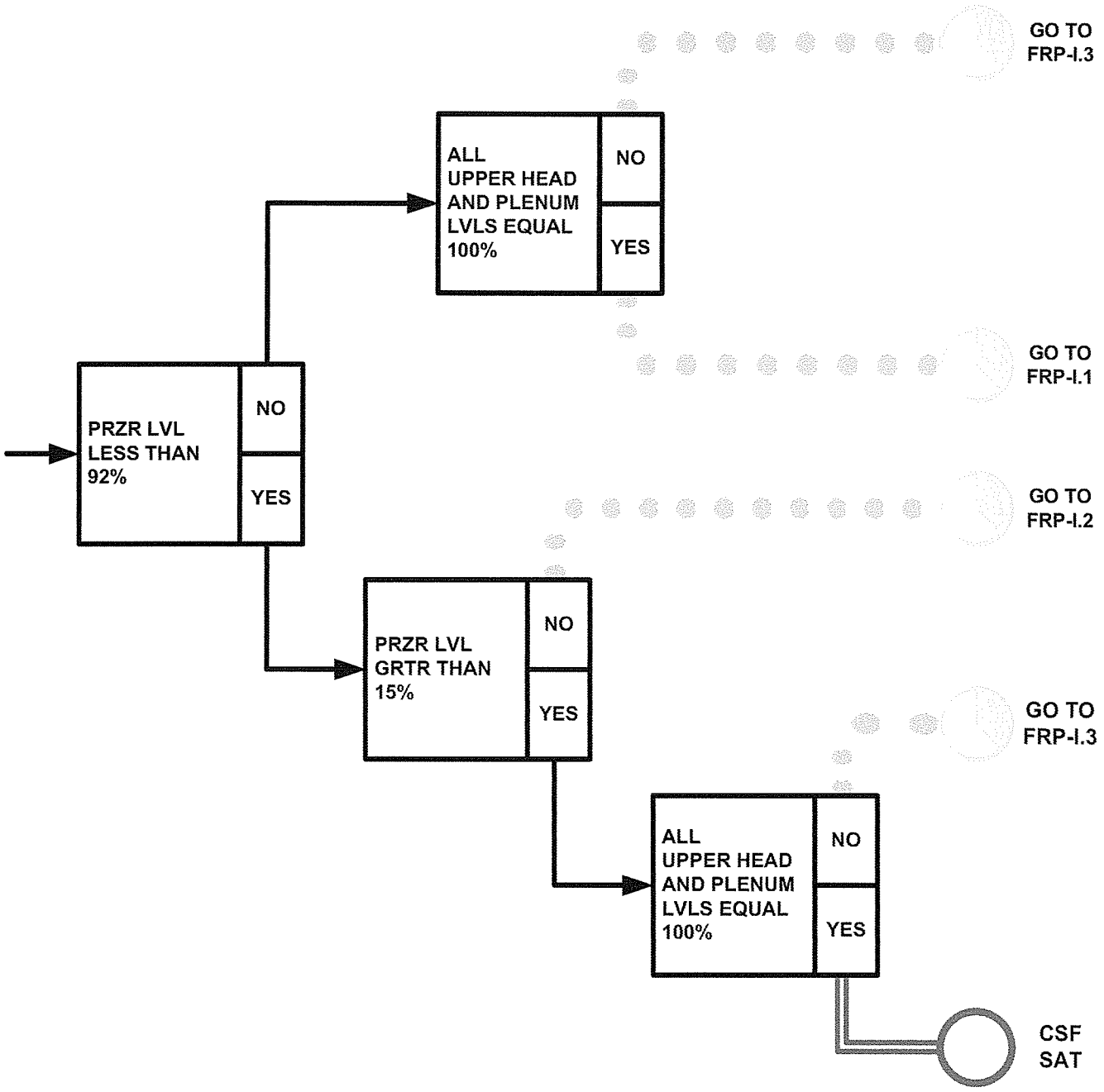

RCS PRESSURE (PSIG)
2560
2050
0
LIMIT A
190
225
250
280
COLD LEG TEMPERATURE (°F)
GO TO FRP-P.1
ALL RCS PRESS -- CL TEMP (IN LAST 60 MIN) POINTS TO RIGHT OF LIMIT A
NO
YES
GO TO FRP-P.1
ALL RCS CL TEMPS IN LAST 60 MIN GRTR THAN 250° F
NO
YES
GO TO FRP-P.2
ALL RCS CL TEMPS IN LAST 60 MIN GRTR THAN 280° F
NO
YES
CSF SAT
TEMP DECR IN ALL CL IN LAST 60 MIN LESS THAN 100° F
NO
YES
GO TO FRP-P.1
ALL RCS CL TEMPS GRTR THAN 250° F
NO
YES
RCS PRESS LESS THAN 450 PSIG
NO
YES
GO TO FRP-P.2
ALL RCS TEMPS GRTR THAN 325° F
NO
YES
CSF SAT
CSF SAT

INTEGRITY

RCS PRESSURE - TEMPERATURE CRITERIA




CTMT PRESS LESS THAN 54 PSIG
NO
YES
GO TO FRP-Z.1
At LEAST ONE CTMT SPRAY PUMP RUNNING (FLOW>1000 GPM)
NO
YES
GO TO FRP-Z.1
GO TO FRP-Z.2
CTMT SUMP LVL LESS THAN 7.6 FT.
NO
YES
GO TO FRP-Z.1
CTMT PRESS LESS THAN 27 PSIG
NO
YES
GO TO FRP-Z.2
CTMT SUMP LVL LESS THAN 7.6 FT.
NO
YES
GO TO FRP-Z.3
BOTH CTMT RAD LESS THAN 2 R/ hr.
NO
YES
CSF SAT


PRZR LVL LESS THAN 92%
NO
YES
ALL UPPER HEAD AND PLENUM LVLS EQUAL 100%
NO
YES
GO TO FRP-I.3
GO TO FRP-I.1
PRZR LVL GRTR THAN 15%
NO
YES
GO TO FRP-I.2
ALL UPPER HEAD AND PLENUM LVLS EQUAL 100%
NO
YES
GO TO FRP-I.3
CSF SAT

A.1.b Admin b SRO only Conduct of Operations ADMIN G2.1.4

TITLE: Determine Active License Status.
EVALUATION LOCATION: ☐ SIMULATOR ☐ CONTROL ROOM ☒ CLASSROOM
PROJECTED TIME: 30 MIN SIMULATOR IC NUMBER: N/A
☐ ALTERNATE PATH ☐ TIME CRITICAL ☐ PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. Requiring the examinee to acquire the required references may or may not be included as part of the JPM.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Correctly assess and determine the Active or Inactive License status of Plant Operators.

Examinee:	
Overall JPM Performance: **Satisfactory** ☐	**Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Billy Thornton	Date: 2/7/2011
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to DETERMINE THE ACTIVE OR INACTIVE STATUS OF LICENSED OPERATORS. The conditions under which this task is to be performed are:

a. An RO is required to fill the OATC position on January 31, 2011.
b. Three off shift RO's are available.
c. All three are current in LOCT (Licensed Operator Continuing Training) and have had a medical exam as required to maintain an active license.
d. None of the three have worked any shifts since December 31, 2010.
e. The three operators' work history is as follows:

- Operator A - License was **active** on October 1, 2010.
  10/02/10 worked 1900-0700 as Unit 2 OATC
  10/04/10 worked 1900-0700 as Unit 1 UO
  10/05/10 worked 1900-0700 as Unit 1 OATC
  11/14/10 worked 0700-1900 as Unit 2 UO
  11/17/10 worked 0700-1900 as Unit 2 UO

- Operator B - License was **active** on October 1, 2010.
  10/28/10 worked 0700-1900 as Unit 1 UO
  11/03/10 worked 0700-1900 as Unit 1 UO
  11/05/10 worked 0700-1900 as an on shift Extra
  11/14/10 worked 1900-0700 as Unit 1 OATC
  12/05/10 worked 0700-1900 as Unit 1 UO

- Operator C - License was **inactive** on October 1, 2010.
  From 10/12/2010 thru 10/16/2010 worked 40 hours under the direction of the Unit 1 OATC and completed all requirements for license reactivation.
  11/15/10 worked 0700-1900 as Unit 2 OATC
  12/04/10 worked 0700-1900 as Unit 2 OATC
  12/16/10 worked 0700-1900 as Unit 1 UO
  12/17/10 worked 0700-1900 as Unit 1 OATC

f. You have been directed to determine the Active or Inactive status of the three off shift RO's on January 31, 2011, in accordance with NMP-TR-406, Active License Maintenance.

INITIATING CUE: IF you have no questions, you may begin.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
____ START TIME		

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 1. Evaluate the status of Operator A.	Operator A is determined to have **ACTIVE** license status based on working at least 5 - 12 hour shifts during the calendar quarter October 1 – December 31, in a position requiring an active license and required by Tech Specs. This operator worked 6 – 12 hour shifts during that quarter. Step 6.5.2.1 of NMP -TR-406.	S / U
* 2. Evaluate the status of Operator B.	Operator B is determined to have **INACTIVE** license status. This operator worked 5 - 12 hour shifts during the calendar quarter October 1 – December 31, but one of those shifts was **NOT** in a position required by Tech Specs (11/05/2010 working as an on shift Extra). Step 6.5.2.1 of NMP -TR-406.	S / U
* 3. Evaluate the status of Operator C.	Operator C is determined to have **ACTIVE** license status. This operator reactivated his license during the calendar quarter of October 1-December 31, 2010. When a license is reactivated, it is considered active for that quarter without working any additional shifts. When a licensed operator has met the requirements for an active license in a quarter he is available and considered active for the next quarter. Step 6.6.1 and 6.6.8 of NMP -TR-406.	S / U

____ STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. NMP-TR-406, VER 1.0
2. NMP-TR-406-F01, VER 1.0
3. NMP-TR-406-F02, VER 1.0
4. NMP-TR-406-F03, VER 1.0
5. KA: G2.1.4 RO 3.3 SRO 3.8

GENERAL TOOLS AND EQUIPMENT:

1. NMP-TR-406, VER 1.0
2. NMP-TR-406-F01, VER 1.0
3. NMP-TR-406-F02, VER 1.0
4. NMP-TR-406-F03, VER 1.0

Critical ELEMENT justification:

STEP	Evaluation
1	**Critical:** Task completion: required to properly evaluate the active or inactive status of Operator A.
2	**Critical:** Task completion: required to properly evaluate the active or inactive status of Operator B.
3	**Critical:** Task completion: required to properly evaluate the active or inactive status of Operator C.

COMMENTS:

The following procedures will be provided to the students:

1. NMP-TR-406, VER 1.0
2. NMP-TR-406-F01, VER 1.0
3. NMP-TR-406-F02, VER 1.0
4. NMP-TR-406-F03, VER 1.0

KEY

Operator A status - ____**ACTIVE**_____. (Active / Inactive)

Operator B status - ____**INACTIVE**_____. (Active / Inactive)

Operator C status - ____**ACTIVE**____. (Active / Inactive)

CONDITIONS

When I tell you to begin, you are to DETERMINE THE ACTIVE OR INACTIVE STATUS OF LICENSED OPERATORS. The conditions under which this task is to be performed are:

a. An RO is required to fill the OATC position on January 31, 2011.
b. Three off shift RO's are available.
c. All three are current in LOCT (Licensed Operator Continuing Training) and have had a medical exam as required to maintain an active license.
d. None of the three have worked any shifts since December 31, 2010.
e. The three operators' work history is as follows:

- Operator A - License was **active** on October 1, 2010.
  10/02/10 worked 1900-0700 as Unit 2 OATC
  10/04/10 worked 1900-0700 as Unit 1 UO
  10/05/10 worked 1900-0700 as Unit 1 OATC
  11/14/10 worked 0700-1900 as Unit 2 UO
  11/17/10 worked 0700-1900 as Unit 2 UO

- Operator B - License was **active** on October 1, 2010.
  10/28/10 worked 0700-1900 as Unit 1 UO
  11/03/10 worked 0700-1900 as Unit 1 UO
  11/05/10 worked 0700-1900 as an on shift Extra
  11/14/10 worked 1900-0700 as Unit 1 OATC
  12/05/10 worked 0700-1900 as Unit 1 UO

- Operator C - License was **inactive** on October 1, 2010.
  From 10/12/2010 thru 10/16/2010 worked 40 hours under the direction of the Unit 1 OATC and completed all requirements for license reactivation.
  11/15/10 worked 0700-1900 as Unit 2 OATC
  12/04/10 worked 0700-1900 as Unit 2 OATC
  12/16/10 worked 0700-1900 as Unit 1 UO
  12/17/10 worked 0700-1900 as Unit 1 OATC

f. You have been directed to determine the Active or Inactive status of the three off shift RO's on January 31, 2011, in accordance with NMP-TR-406, Active License Maintenance.

Operator A status - _____. (Active / Inactive)

Operator B status - _____. (Active / Inactive)

Operator C status - _____. (Active / Inactive)

A.1.b Admin b RO only Conduct of Operations ADMIN 006A1.02

TITLE: Determine Required Volume, Controller Settings And Integrator Settings For A Makeup To The RWST.

EVALUATION LOCATION: ☐ SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 20 MIN SIMULATOR IC NUMBER: N/A

☐ ALTERNATE PATH ☐ TIME CRITICAL ☐ PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. Requiring the examinee to acquire the required references may or may not be included as part of the JPM, however it is recommended to allow access to the TRAINING REFERENCE DISK.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Determine the required Volume to be added to the RWST.
- Determine the settings required for the Boric Acid and Reactor Makeup Water Flow Integrators.
- Determine the setting Boric Acid flow controller potentiometer setting.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are **DETERMINE REQUIRED VOLUME, CONTROLLER SETTINGS AND INTEGRATOR SETTINGS FOR A MAKEUP TO THE RWST.** The conditions under which this task is to be performed are:

a. Unit 1 is at 100% power and stable.
b. RWST Level is at 37.7 feet.
c. RWST Boron concentration is at 2400 ppm.
d. On Service BAT concentration is 7001 ppm.
e. RWST Purification (Recirc) is NOT on-service.
f. The Reactivity Spreadsheet is not available.
g. You have been directed to calculate the values required by SOP-2.3 steps 4.2.3.2 – 4.2.3.8 necessary to maintain current RWST boron concentration and raise level to 39.5 feet.
h. Report the following values and settings on the table below:
    1. The volume required to raise level in the RWST to 39.5 feet.
    2. The necessary integrator settings for both of the following:
        a. FIS 113, BORIC ACID BATCH INTEG
        b. FIS-168, TOTAL FLOW BATCH INTEG
    3. The required potentiometer setting of FK-113, BORIC ACID MKUP FLOW, to **makeup to the RWST at a reduced flow of 60 gpm total flow**.

INITIATING **CUE**: "IF you have no questions, you may begin."

EVALUATION CHECKLIST ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**

____ START TIME

NOTE:	• The candidate may use either curve 31A or Curve 31B to determine Volume added to the RWST. It is unlikely that Curve 31A will be used, however the RANGE is provided in the event it is used.

step 4.2.4.3 NOTE:	• For blended flow **set** the Boric Acid Integrator to the desired amount of acid and **the Total Flow Integrator** to the desired amount of reactor makeup water PLUS the boric acid for **the "total amount".**

* 1. Step 4.2.3.2, "DETERMINE [...] the quantity [...]:
Determines volume needed using RWST Tank curve 31B is 22,378 gallons.
491064-468686 =22378

Calculates total volume and setting of FIS-168. S / U
- **Calculates total volume addition**= 22378 **gals**

If CRV31A used:

$$\frac{\Delta y}{\Delta x}(\Delta x) + y_{intercept}\ \{range\ of\ 40ft\ lvl{:}\ 490K\ to\ 510K\}$$

$$\frac{(500\text{K} - 0)\text{gal}}{(40 - 0)ft}[(39.5\ ft) - (37.7\ ft)]$$

$$= 22.5K\{22.05K\ to\ 22.95K\}$$

Range provided if CRV31A is used instead.
$[RANGE{:}\ \{22050\ to\ 22950\}]$

EVALUATION CHECKLIST ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
2. Step 4.2.3.2,(cont'd) Determine [...] concentration (boric acid, reactor makeup water, or blend) of makeup by one of the following: • Reactivity Briefing Sheet • **Figure 1** • Nomographs	USES **Figure 1, to determine** Boric acid Flow and FK-113 Pot set point for 120 gpm total Flow **Either** Page 1 (41.1 gpm) **Or** Page 3 (41.14 gpm). Boric Acid flow 41.14 gpm {*RANGE*: 41.1 *to* 41.14} FK-113 pot setpoint 10.29 turns.	S / U

step 4.2.4.3 NOTE:	**3rd bullet** • When making up to the **RWST The boric acid flow rate should be such that it will finish first** and the last thing in the line will be reactor makeup water.

Evaluator NOTE:	Due to the procedural guidance requiring the Boric Acid to end prior to the completion of the ADDIITON, then **the FK-113 set point identified SHOULD be set to a HIGHER value than that calculated in element 3 to inject the boron faster.**

*	3. FIGURE 1 NOTE: **NOTES:** • Due to characteristics of the reactor makeup system piping, **the maximum obtainable boric acid flow is less than 40 gpm.** • [...] • **Numbers corresponding to boric acid flow approaching or greater than 40 gpm are useful only for calculating the boric acid flow corresponding to a blended flow of less than 120 gpm.** **Example:** 2500 ppm 42.9 gpm with a pot setting of 10.7 for a blended flow of 120 gpm. **2500 ppm 42.9/2 gpm with a pot setting of 10.7/2 for a blended flow of 120/2 gpm.** 2500 ppm 21.45 gpm with a pot setting of 5.35 for a blended flow of 60 gpm.	Calculate the BORIC ACID **FlOWRATE** for a concentration of 2400 ppm at 60 GPM. $\frac{41.14\ gpm}{(120/60)} = \mathbf{20.57\ gpm}$ {***RANGE*: 20.55 *to* 21 *gpm***} Calculate **FK-113 setpoint** $\frac{10.29\ turns}{(120/60)} = \mathbf{5.145\ turns}*$ {***RANGE*: 5.14 *to* 5.15 *turns***}	S / U

EVALUATION CHECKLIST ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
4. Calculates **the duration** of the blended addition at the given flowrate to fill the RWST the calculated amount: • Calculated **total volume** = 22378 **gals** **[*RANGE*: {22050 *to* 22950}]** • GIVEN Flowrate = 60 gpm	Total duration of addition $\frac{22378\ gal}{60\ gpm} = \mathbf{372.97\ mins}$ **{*RANGE*: 367.5 *to* 382.5}**	S / U

step 4.2.4.3 NOTE:	**2nd bullet** • For blended flow **set the Boric Acid Integrator to the desired amount of acid** and the Total Flow Integrator to the desired amount of reactor makeup water PLUS the boric acid for the "total amount".

*	5. Calculates the TOTAL Boron Volume: FIS-113 setting • Calculated **total time** = **372.97 *mins*** **{*RANGE*: 367.5 *to* 382.5}]** • Calculated the BORIC ACID **FIOWRATE** = **20.57 gpm** **{*RANGE*: 20.55 *to* 21 *gpm*}**	Calculates Total Boron Volume and setting for FIS-113: 372.97 *mins* × 20.57 *gpm* = **7672.0 *gal*** **{*RANGE*: 7552.1 *to* 8032 *gal*}** (see alternate means below) **NOTE:** Resultant RWST concentration at end with given ranges and Δ level= 22378 gal: 7552.1 gal = **2398.32 ppm** 8032 gal = **2405 ppm**	S / U

Alternative calculation:

$$C_{RMUWST}V_{RMUW} + C_{BAT}V_{Boration} + C_{RWST}V_{RWST} = C_{final}V_{final}$$

Since: $C_{RMUWST} = 0.00 \xrightarrow{yields} C_{RMUWST}V_{RMUW} = 0$

ONLY unknown then is $V_{Boration}$

Therefore FIS-113:

$$V_{Boration} = \frac{C_{RWST}(V_{final} - V_{initial})}{C_{BAT}} \xrightarrow{yields} 7671.361\ Gallons\ of\ boron\ \{Range: 7558.92\ to\ 7867.45\}$$

EVALUATION CHECKLIST ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)

____ STOP

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-SOP-2.3, V56.0

2. KA:

G2.1.23	RO	4.3	SRO	4.4
004A4.04	RO	3.2	SRO	3.6
004A4.15	RO	3.6	SRO	3.7
006A1.02	RO	3.0	SRO	3.6
006A1.11	RO	3.1	SRO	3.4

GENERAL TOOLS AND EQUIPMENT:

Calculator
FNP-SOP-2.3
RWST curves CRV31A and CRV31B

** Individual may ask for**
Unit 1 MCB M/A Station Curves

Critical ELEMENT justification:

STEP	Evaluation
1	**Critical:** Task completion, This is the calculation which determines **FIS-168 setting and total volume**, and required for the calculation of all subsequent values.
2	**NOT Critical:** This is an intermediate step to acquire the proper values of subsequent critical elements, and can be acquired using alternative calculations/methods; this is the procedurally directed action.
3	**Critical: FK-113 pot setting is part of the task objective.** • FK-113 pot setting calculated values identified are those that would create a blended flow for the duration of the addition. The selected set point **may be identified to be HIGHER which is desired by the procedure**. A higher value is **NOT** a CRITICAL task failure since **flow (pump capacity) and volume (FIS-113) is limited** to prevent making the RWST inoperable due to HIGH boron concentration. • IF, however, FK-113 value is **excessively LOW,** it is possible to make the RWST inoperable by dilution.
4	**NOT Critical:** This is an intermediate step to acquire the proper values of subsequent critical elements.
5	**Critical: Critical: FIS-113 flow totalizer setting is part of the task objective.** Failure to properly set this could result in the RWST becoming INOPERABLE.

COMMENTS:

KEY

Volume addition required	*	22378 {22050 *to* 22950}	**Gallons**
FIS-168, TOTAL FLOW BATCH INTEG, **setting**	*	22378 {22050 *to* 22950}	**Gallons**
FIS-113, BORIC ACID BATCH INTEG, **setting**	*	7672 {*RANGE*: 7552.1 *to* 8032.0 *gal*}	**Gallons**
FK-113, BORIC ACID MKUP FLOW, **controller setpoint**	*	5.145 {*RANGE*: 5.14 *to* 5.4[NOTE 1] *turns*}	**TURNS**

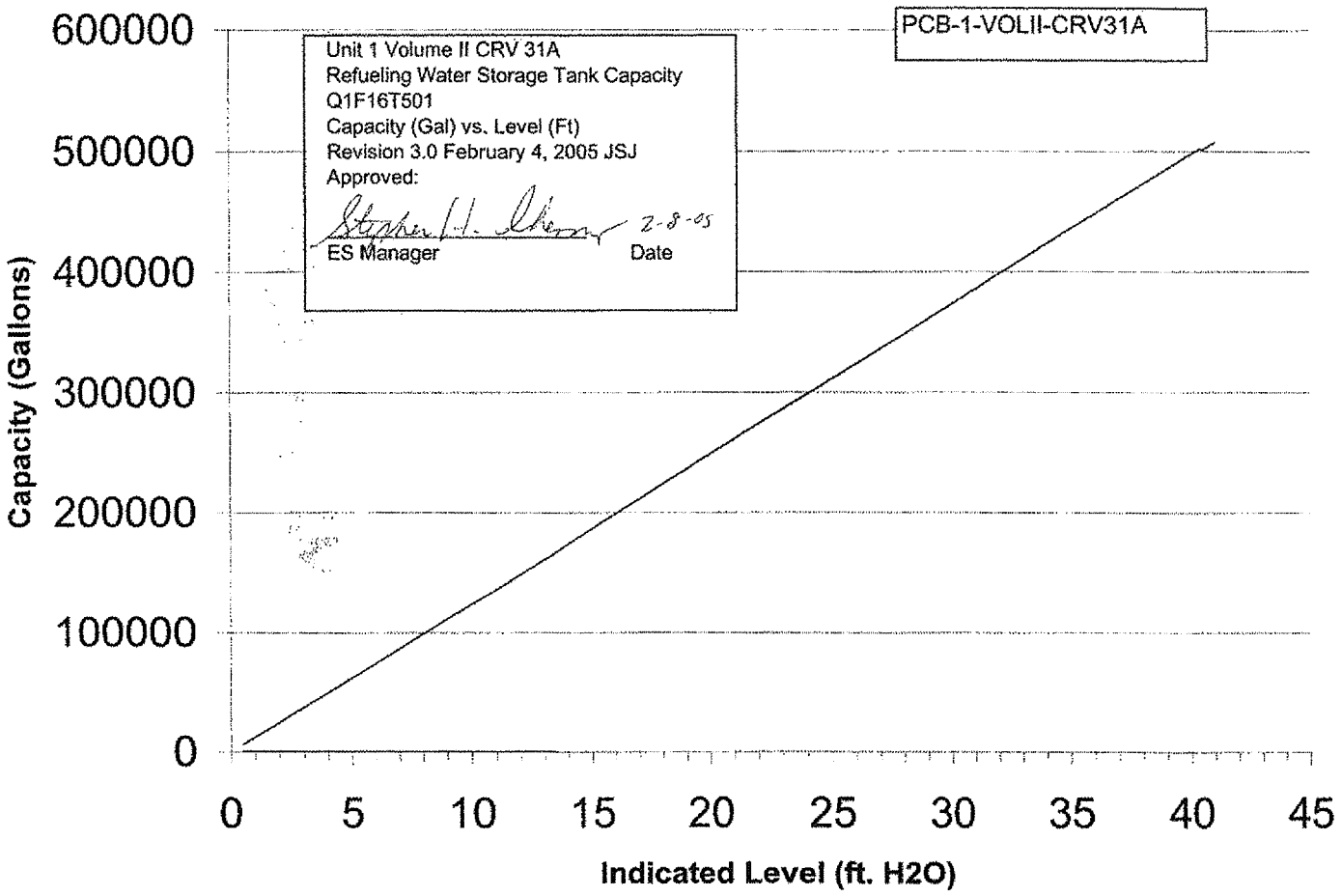
NOTE 1: FK-113 pot setting calculated values {range: 5.14 to 5.15} identified are those that would create a blended flow for the duration of the addition. **The selected set point may be HIGHER which is desired by the procedure.**

CONDITIONS

When I tell you to begin, you are **DETERMINE REQUIRED VOLUME, CONTROLLER SETTINGS AND INTEGRATOR SETTINGS FOR A MAKEUP TO THE RWST.** The conditions under which this task is to be performed are:

a. Unit 1 is at 100% power and stable.
b. RWST Level is at 37.7 feet.
c. RWST Boron concentration is at 2400 ppm.
d. On Service BAT concentration is 7001 ppm.
e. RWST Purification (Recirc) is NOT on-service.
f. The Reactivity Spreadsheet is not available.
g. You have been directed to calculate the values required by SOP-2.3 steps 4.2.3.2 – 4.2.3.8 necessary to maintain current RWST boron concentration and raise level to 39.5 feet.
h. Report the following values and settings on the table below:
    1. The volume required to raise level in the RWST to 39.5 feet.
    2. The necessary integrator settings for both of the following:
        c. FIS 113, BORIC ACID BATCH INTEG
        d. FIS-168, TOTAL FLOW BATCH INTEG
    3. The required potentiometer setting of FK-113, BORIC ACID MKUP FLOW, to **makeup to the RWST at a reduced flow of 60 gpm total flow**.

1. Volume addition required	**Gallons**
2. **a. FIS-168,** TOTAL FLOW BATCH INTEG, **setting**	**Gallons**
b. FIS-113, BORIC ACID BATCH INTEG, **setting**	**Gallons**
3. **FK-113,** BORIC ACID MKUP FLOW, **controller setpoint**	**TURNS**


PCB-1-VOLII-CRV31A
Unit 1 Volume II CRV 31A
Refueling Water Storage Tank Capacity
Q1F16T501
Capacity (Gal) vs. Level (Ft)
Revision 3.0 February 4, 2005 JSJ
Approved:
2-8-05
ES Manager
Date
Capacity (Gallons)
600000
500000
400000
300000
200000
100000
0
0
5
10
15
20
25
30
35
40
45
Indicated Level (ft. H2O)

Unit 1 Volume II Curve 31B
Refueling Water Storage Tank Capacity
Q1F16T501
Level (ft. H_2O) vs. Capacity (Gallons)
Revision 4.0 February 4, 2005
Approved:

2-8-05

ES Manager Date

PCB-1-VOLII-CRV31B

Level (ft. H_2O)	Inventory Gallons
0.5	6186
1.0	12372
1.5	18559
2.0	24745
2.5	30931
3.0	37117
3.5	43303
4.0	49489
4.5	55676
5.0	61862
5.5	68048
6.0	74234
6.5	80420
7.0	86607
7.5	92793
8.0	98979
8.5	105165
9.0	111351
9.5	117537
10.0	123724
10.5	129910
11.0	136096
11.5	142282
12.0	148468
12.5	154655
13.0	160841
13.5	167027
14.0	174048
14.5	180264

Level (ft. H_2O)	Inventory Gallons
15.0	186480
15.5	192696
16.0	198912
16.5	205128
17.0	211344
17.5	217560
18.0	223776
18.5	229992
19.0	236208
19.5	242424
20.0	248640
20.5	254856
21.0	261072
21.5	267288
22.0	273504
22.5	279720
23.0	285936
23.5	292152
24.0	298368
24.5	304584
25.0	310800
25.5	317016
26.0	323232
26.5	329448
27.0	335664
27.5	341880
28.0	348096
28.5	354312
29.0	360528

Level (ft. H_2O)	Inventory Gallons
29.5	366744
30.0	372960
30.5	379176
31.0	385392
31.5	391608
32.0	397824
32.5	404040
33.0	410256
33.5	416472
34.0	422688
34.5	428904
35.0	435120
35.5	441336
36.0	447552
36.5	453768
37.0	459984
37.1	461227
37.2	462470
37.3	463714
37.4	464957
37.5	466200
37.6	467443
37.7	468686
37.8	469930
37.9	471173
38.0	472416
38.1	473659
38.2	474902
38.3	476146

Level (ft. H_2O)	Inventory Gallons
38.4	477389
38.5	478632
38.6	479875
38.7	481118
38.8	482362
38.9	483605
39.0	484848
39.1	486091
39.2	487334
39.3	488578
39.4	489821
39.5	491064
39.6	492307
39.7	493550
39.8	494794
39.9	496037
40.0	497280
40.1	498523
40.2	499766
40.3	501010
40.4	502253
40.5	501081
40.6	502318
40.7	503555
40.8	504793
40.9	506030
41.0	507267
41.2	509712

Total volume in gallons = 509712
Technical Specification SR 3.5.4.2 requires a minimum contained borated water volume of 471,000 gallons.

NOTE: The following two steps are not required if operation in a mode other than automatic is required.

4.2.2.22 Position the MKUP MODE SEL SWITCH to AUTO.

4.2.2.23 Position the MKUP MODE CONT SWITCH to START.

CAUTION: Avoid operations that could result in RCS volume changes. Makeup to the VCT from the blender will not be available while making up to the RWST.

NOTE:

- **Due to system interconnections, the RWST Purification Loop (Recirculation) should not be in operation using the Refueling Water Purification Pump while making up to the RWST. However, it is permissible to makeup while BARS is in operation.**
- **IF makeup to the RWST is due to BARS operation, THEN to minimize dilution of the RWST, boron concentration of the blended flow should be greater than or equal to the BARS reject flow concentration.**
- **IF desired to flush the line of acid following makeup, THEN remember to perform step 4.2.3.20 at an appropriate time prior to reaching the Total Flow Integrator setpoint.**

4.2.3 Makeup to Refueling Water Storage Tank (RWST)

4.2.3.1 Verify the RWST capable of receiving makeup.

4.2.3.2 Determine both the quantity and concentration (boric acid, reactor makeup water, or blend) of makeup by one of the following:

- Reactivity Briefing Sheet
- Figure 1
- Nomographs

4.2.3.3 IF the final boron concentration in the RWST is going to differ from the initial, THEN use the following formulas or the reactivity briefing sheets to determine the amount of water or acid to be added.

To dilute the RWST: $$VA = \frac{CI - CF}{CF}(VI)$$

To borate the RWST: $$VA = \frac{CI - CF}{CF - CA}(VI)$$

To determine final boron concentration:

$$CF = \frac{[CI \times VI] + [CA \times VA]}{VF}$$

Where:

VA	=	Volume of water or acid added to the RWST
VI	=	Initial water volume in RWST
VF	=	Final water volume in RWST
CI	=	Initial boron concentration in RWST
CF	=	Final boron concentration in RWST
CA	=	Boron concentration added to RWST

4.2.3.4 IF the RWST Purification (Recirc) is On-Service, THEN secure the Refueling Water Purification Pump.

NOTE:

- **When blended flow concentration of 2000 PPM is required, the makeup system may not be able to deliver boric acid flow for 120 gpm total flow. IF necessary, THEN the Total Flow may be set for < 120 gpm and the Boric Acid Flow rate adjusted proportionally to Total Flow.**
- **For blended flow set the Boric Acid Integrator to the desired amount of acid and the Total Flow Integrator to the desired amount of reactor makeup water PLUS the boric acid for the "total amount".**
- **When making up to the RWST The boric acid flow rate should be such that it will finish first and the last thing in the line will be reactor makeup water.**
- **The Boric Acid and/or Total Flow Batch Integrators ONLY need to be verified when changed. This should be documented with an Autolog Entry.**
- **Flow rates greater than 60 gpm may cause BARS to trip due to high permeates pressure.**

4.2.3.5 IF auto operation is desired THEN set FK-113 to the calculated flow rate obtained in step 4.2.3.2 or 4.2.3.3.

4.2.3.6 Set the boric acid batch integrator to the calculated quantity value obtained in step 4.2.3.2 or 4.2.3.3.

- For boric acid only set the boric acid integrator to the desired value and RMW TO BLENDER Q1E21FCV114B (Q1E21V345) should be taken to close to ensure that only acid flow is obtained.
- For reactor makeup water only set the boric acid integrator to 1.

4.2.3.7 IF auto operation is desired THEN set FK-168 to the calculated flow rate obtained in step 4.2.3.2 or 4.2.3.3.

4.2.3.8 Set the total flow batch integrator to the calculated quantity value obtained in step 4.2.3.2 or 4.2.3.3.

- For boric acid only set the total flow integrator to 1 and RMW TO BLENDER Q1E21FCV114B (Q1E21V345) should be taken to close to ensure that only acid flow is obtained.
- For reactor makeup water only set the boric acid integrator to 1 and the total flow integrator to the desired value.

4.2.3.9 Position the MKUP MODE CONT SWITCH to STOP.

4.2.3.10 Position the MKUP MODE SEL SWITCH to MAN.

4.2.3.11 Open blender discharge to RWST valve 1-CVC-V-8434 (N1E21V238).

4.2.3.12 Open blender miscellaneous discharge isolation valve 1-CVC-V-8432 (Q1E21V237).

4.2.3.13 Place MKUP TO CHG PUMP SUCTION HDR Q1E21FCV113B (Q1E21V337) in the CLOSED position.

4.2.3.14 Place MKUP TO VCT Q1E21FCV114A (Q1E21V339) in the CLOSED position.

4.2.3.15 IF making up to the RWST is due to the depletion of boron by the BARS system and it is desired to make-up with boric acid only, THEN close RMW TO BLENDER valve Q1E21FCV114B (Q1E21V345).

NOTE: Makeup may be stopped at any time by positioning the MKUP MODE CONT SWITCH to STOP.

4.2.3.16 Position the MKUP MODE CONT SWITCH to START.

4.2.3.17 IF 1B RMW PUMP is running and not required for current plant operations, THEN position the 1B RMW PUMP switch in STOP.

NOTE: Steps 4.2.3.18 and 4.2.3.19 may be performed in either order and as required throughout the makeup evolution.

4.2.3.18 Adjust FK-168 in manual as required to deliver the desired total flow as indicated on FI-168 or FT0168 on IPC.

4.2.3.19 Adjust FK-113 in auto or manual as required to deliver the desired boric acid flow as indicated on FI-113 or FT0113 on IPC.

4.2.3.20 IF desired to flush the acid from the line, THEN at the appropriate time to conclude the makeup with RMW only:

4.2.3.20.1 Verify RMW TO BLENDER valve Q1E21FCV114B (Q1E21V345) open.

4.2.3.20.2 Close BORIC ACID TO BLENDER valve Q1E21FCV113A (Q1E21V354)

TABLE 1

NOMOGRAPH CORRECTION FACTORS

Plant Conditions			Correction Factor (K) (See Note)
Pressure (psig)	T (AVG) (°F)	Pressurizer Level	
2235	547-570	Normal Operating	1.00
1600	500	No-Load	1.05
1200	450	No-Load	1.10
800	400	No-Load	1.16
400	350	No-Load	1.18
400	300	No-Load	1.20
400	300	Solid Water	1.35
400	200	No-Load	1.28
400	200	Solid Water	1.40
400	100	Solid Water	1.47

NOTE: CORRECTION FACTORS ARE APPLIED AS FOLLOWS:

(a) Boron Addition and Dilution Total Volume Nomographs

$V_{(Corrected)} = K \times V_{(Nomograph)}$

(b) Boron Addition and Dilution Rate Nomographs

$$\frac{dc}{dt}(\text{Corrected}) = \frac{1}{K} \times \frac{dc}{dt}(\text{Nomograph})$$

FIGURE 1

RCS BORON CONCENTRATION (PPM)	4% BORIC ACID FLOW (GPM)
0	0.0
100	1.71
200	3.4
300	5.1
400	6.9
500	8.6
600	10.3
700	12.0
800	13.7
900	15.4
1000	17.1
1100	18.9
1200	20.6
1300	22.3
1400	24.0
1500	25.7
1600	27.4
1700	29.1
1800	30.9
1900	32.6
2000	34.3
2100	36.0
2200	37.7
2300	39.4
2400	41.1
2500	42.9

BLENDED FLOW BASED ON 120 GPM AUTO MAKEUP

FIGURE 1

Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point	Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point	Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point
10	0.17	0.04	510	8.74	2.19	1010	17.31	4.33
20	0.34	0.09	520	8.91	2.23	1020	17.49	4.37
30	0.51	0.13	530	9.09	2.27	1030	17.66	4.41
40	0.69	0.17	540	9.26	2.31	1040	17.83	4.46
50	0.86	0.21	550	9.43	2.36	1050	18.00	4.50
60	1.03	0.26	560	9.60	2.40	1060	18.17	4.54
70	1.20	0.30	570	9.77	2.44	1070	18.34	4.59
80	1.37	0.34	580	9.94	2.49	1080	18.51	4.63
90	1.54	0.39	590	10.11	2.53	1090	18.69	4.67
100	1.71	0.43	600	10.29	2.57	1100	18.86	4.71
110	1.89	0.47	610	10.46	2.61	1110	19.03	4.76
120	2.06	0.51	620	10.63	2.66	1120	19.20	4.80
130	2.23	0.56	630	10.80	2.70	1130	19.37	4.84
140	2.40	0.60	640	10.97	2.74	1140	19.54	4.89
150	2.57	0.64	650	11.14	2.79	1150	19.71	4.93
160	2.74	0.69	660	11.31	2.83	1160	19.89	4.97
170	2.91	0.73	670	11.49	2.87	1170	20.06	5.01
180	3.09	0.77	680	11.66	2.91	1180	20.23	5.06
190	3.26	0.81	690	11.83	2.96	1190	20.40	5.10
200	3.43	0.86	700	12.00	3.00	1200	20.57	5.14
210	3.60	0.90	710	12.17	3.04	1210	20.74	5.19
220	3.77	0.94	720	12.34	3.09	1220	20.91	5.23
230	3.94	0.99	730	12.51	3.13	1230	21.09	5.27
240	4.11	1.03	740	12.69	3.17	1240	21.26	5.31
250	4.29	1.07	750	12.86	3.21	1250	21.43	5.36
260	4.46	1.11	760	13.03	3.26	1260	21.60	5.40
270	4.63	1.16	770	13.20	3.30	1270	21.77	5.44
280	4.80	1.20	780	13.37	3.34	1280	21.94	5.49
290	4.97	1.24	790	13.54	3.39	1290	22.11	5.53
300	5.14	1.29	800	13.71	3.43	1300	22.29	5.57
310	5.31	1.33	810	13.89	3.47	1310	22.46	5.61
320	5.49	1.37	820	14.06	3.51	1320	22.63	5.66
330	5.66	1.41	830	14.23	3.56	1330	22.80	5.70
340	5.83	1.46	840	14.40	3.60	1340	22.97	5.74
350	6.00	1.50	850	14.57	3.64	1350	23.14	5.79
360	6.17	1.54	860	14.74	3.69	1360	23.31	5.83
370	6.34	1.59	870	14.91	3.73	1370	23.49	5.87
380	6.51	1.63	880	15.09	3.77	1380	23.66	5.91
390	6.69	1.67	890	15.26	3.81	1390	23.83	5.96
400	6.86	1.71	900	15.43	3.86	1400	24.00	6.00
410	7.03	1.76	910	15.60	3.90	1410	24.17	6.04
420	7.20	1.80	920	15.77	3.94	1420	24.34	6.09
430	7.37	1.84	930	15.94	3.99	1430	24.51	6.13
440	7.54	1.89	940	16.11	4.03	1440	24.69	6.17
450	7.71	1.93	950	16.29	4.07	1450	24.86	6.21
460	7.89	1.97	960	16.46	4.11	1460	25.03	6.26
470	8.06	2.01	970	16.63	4.16	1470	25.20	6.30
480	8.23	2.06	980	16.80	4.20	1480	25.37	6.34
490	8.40	2.10	990	16.97	4.24	1490	25.54	6.39
500	8.57	2.14	1000	17.14	4.29	1500	25.71	6.43

BLENDED FLOW BASED ON 120 GPM AUTO MAKEUP

FIGURE 1

Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point	Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point	Coolant Boron Conc (ppm)	4 wt. % / 7000 ppm Boric acid flow (gpm)	FK-113 Pot Set Point
1510	25.89	6.47	1840	31.54	7.89	2170	37.20	9.30
1520	26.06	6.51	1850	31.71	7.93	2180	37.37	9.34
1530	26.23	6.56	1860	31.89	7.97	2190	37.54	9.39
1540	26.40	6.60	1870	32.06	8.01	2200	37.71	9.43
1550	26.57	6.64	1880	32.23	8.06	2210	37.89	9.47
1560	26.74	6.69	1890	32.40	8.10	2220	38.06	9.51
1570	26.91	6.73	1900	32.57	8.14	2230	38.23	9.56
1580	27.09	6.77	1910	32.74	8.19	2240	38.40	9.60
1590	27.26	6.81	1920	32.91	8.23	2250	38.57	9.64
1600	27.43	6.86	1930	33.09	8.27	2260	38.74	9.69
1610	27.60	6.90	1940	33.26	8.31	2270	38.91	9.73
1620	27.77	6.94	1950	33.43	8.36	2280	39.09	9.77
1630	27.94	6.99	1960	33.60	8.40	2290	39.26	9.81
1640	28.11	7.03	1970	33.77	8.44	2300	39.43	9.86
1650	28.29	7.07	1980	33.94	8.49	2310	39.60	9.90
1660	28.46	7.11	1990	34.11	8.53	2320	39.77	9.94
1670	28.63	7.16	2000	34.29	8.57	2330	39.94	9.99
1680	28.80	7.20	2010	34.46	8.61	2340	40.11	10.03
1690	28.97	7.24	2020	34.63	8.66	2350	40.29	10.07
1700	29.14	7.29	2030	34.80	8.70	2360	40.46	10.11
1710	29.31	7.33	2040	34.97	8.74	2370	40.63	10.16
1720	29.49	7.37	2050	35.14	8.79	2380	40.80	10.20
1730	29.66	7.41	2060	35.31	8.83	2390	40.97	10.24
1740	29.83	7.46	2070	35.49	8.87	2400	41.14	10.29
1750	30.00	7.50	2080	35.66	8.91	2410	41.31	10.33
1760	30.17	7.54	2090	35.83	8.96	2420	41.49	10.37
1770	30.34	7.59	2100	36.00	9.00	2430	41.66	10.41
1780	30.51	7.63	2110	36.17	9.04	2440	41.83	10.46
1790	30.69	7.67	2120	36.34	9.09	2450	42.00	10.50
1800	30.86	7.71	2130	36.51	9.13	2460	42.17	10.54
1810	31.03	7.76	2140	36.69	9.17	2470	42.34	10.59
1820	31.20	7.80	2150	36.86	9.21	2480	42.51	10.63
1830	31.37	7.84	2160	37.03	9.26	2490	42.69	10.67
						2500	42.86	10.71

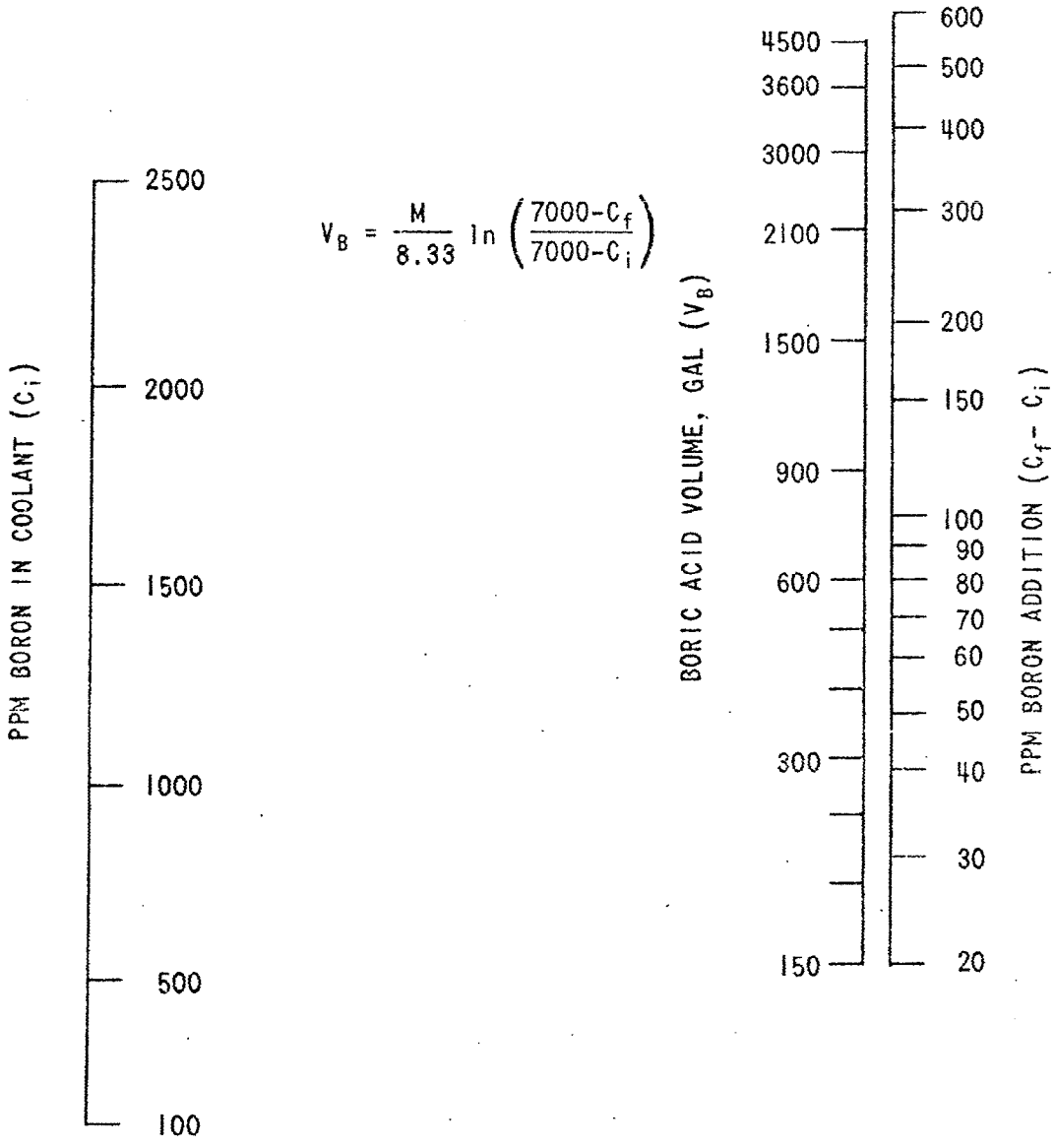
NOTES:

- Due to characteristics of the reactor makeup system piping, the maximum obtainable boric acid flow is less than 40 gpm.
- The boric acid flow controller FK-113 should be set at no less than 4 gpm. Operation below this limit will result in unstable operation. Ref. step 3.15.
- Numbers corresponding to boric acid flow approaching or greater than 40 gpm are useful only for calculating the boric acid flow corresponding to a blended flow of less than 120 gpm.

Example: 2500 ppm 42.9 gpm with a pot setting of 10.7 for a blended flow of 120 gpm.
2500 ppm 42.9/2 gpm with a pot setting of 10.7/2 for a blended flow of 120/2 gpm.
2500 ppm 21.45 gpm with a pot setting of 5.35 for a blended flow of 60 gpm.

BLENDED FLOW BASED ON 120 GPM AUTO MAKEUP

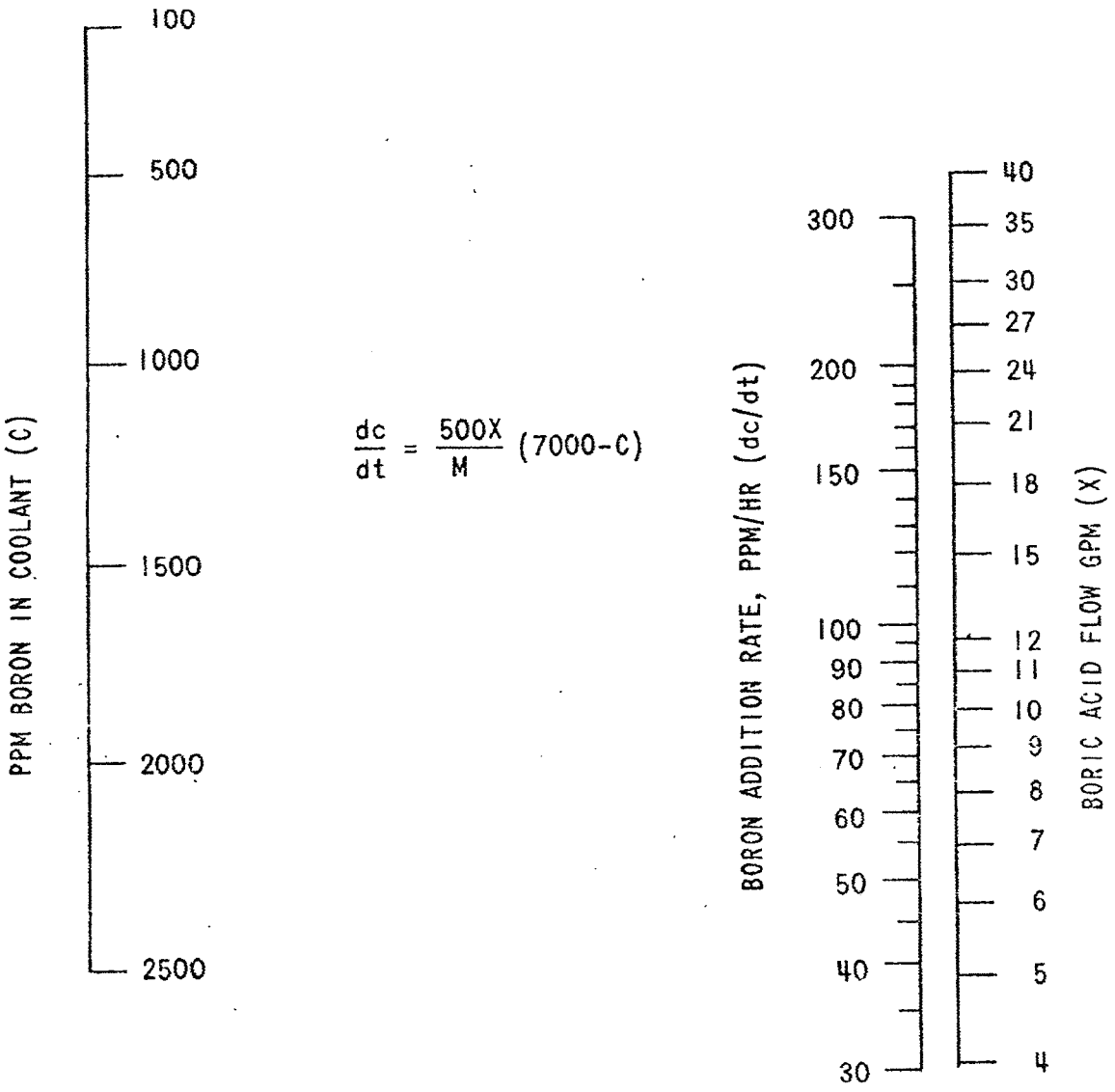
FIGURE 2



The mass, M, for the above formula can be obtained from the Boron/Dilution table for the appropriate RCS temp.

Figure 2. Boron Addition - Refer to Table 1 for Correction Factors

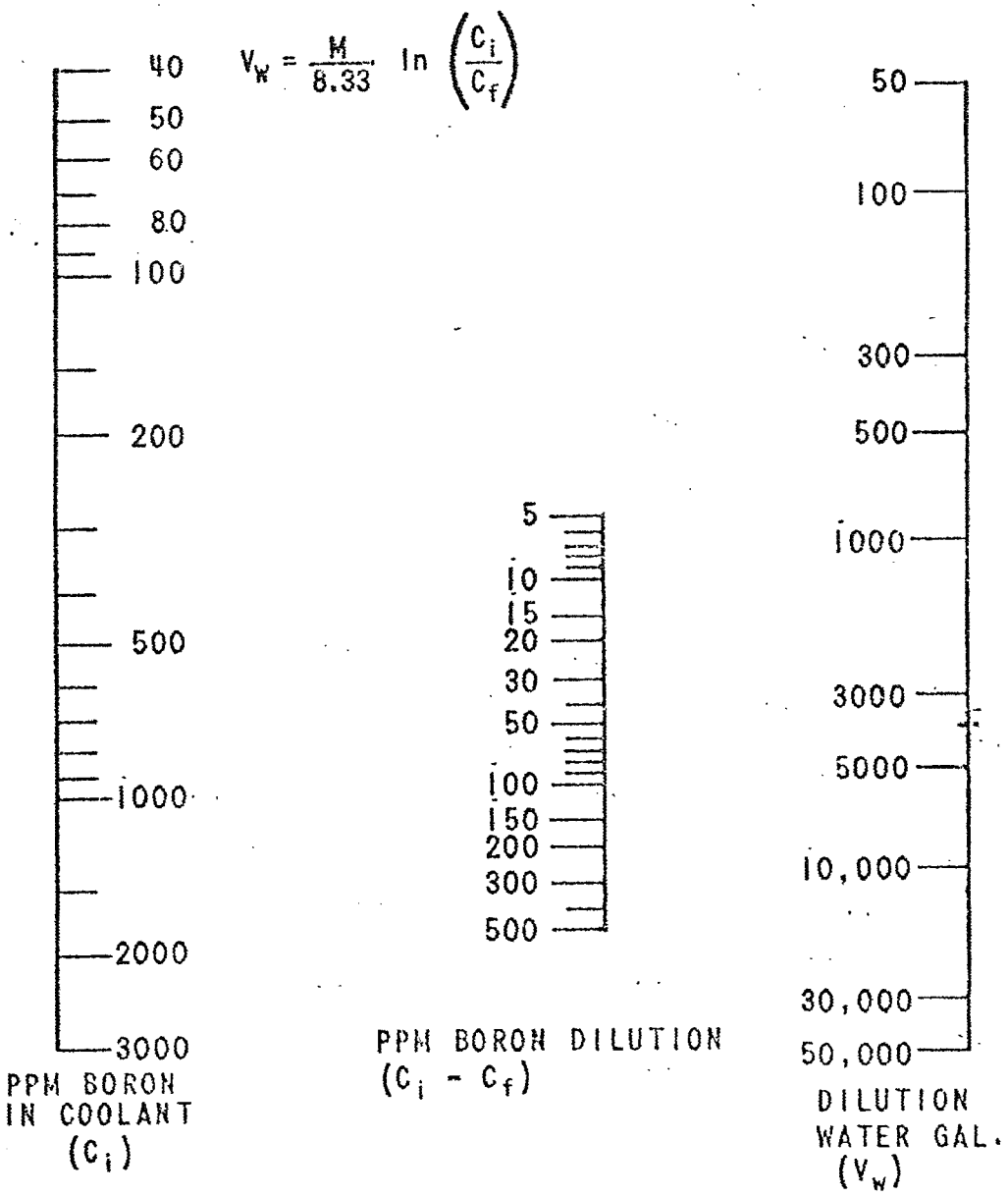
FIGURE 3



The mass, M, for the above formula can be obtained from the Boron/Dilution table for the appropriate RCS temp.

Figure 3. Boron Addition Rate - Refer to Table 1 for Correction Factors

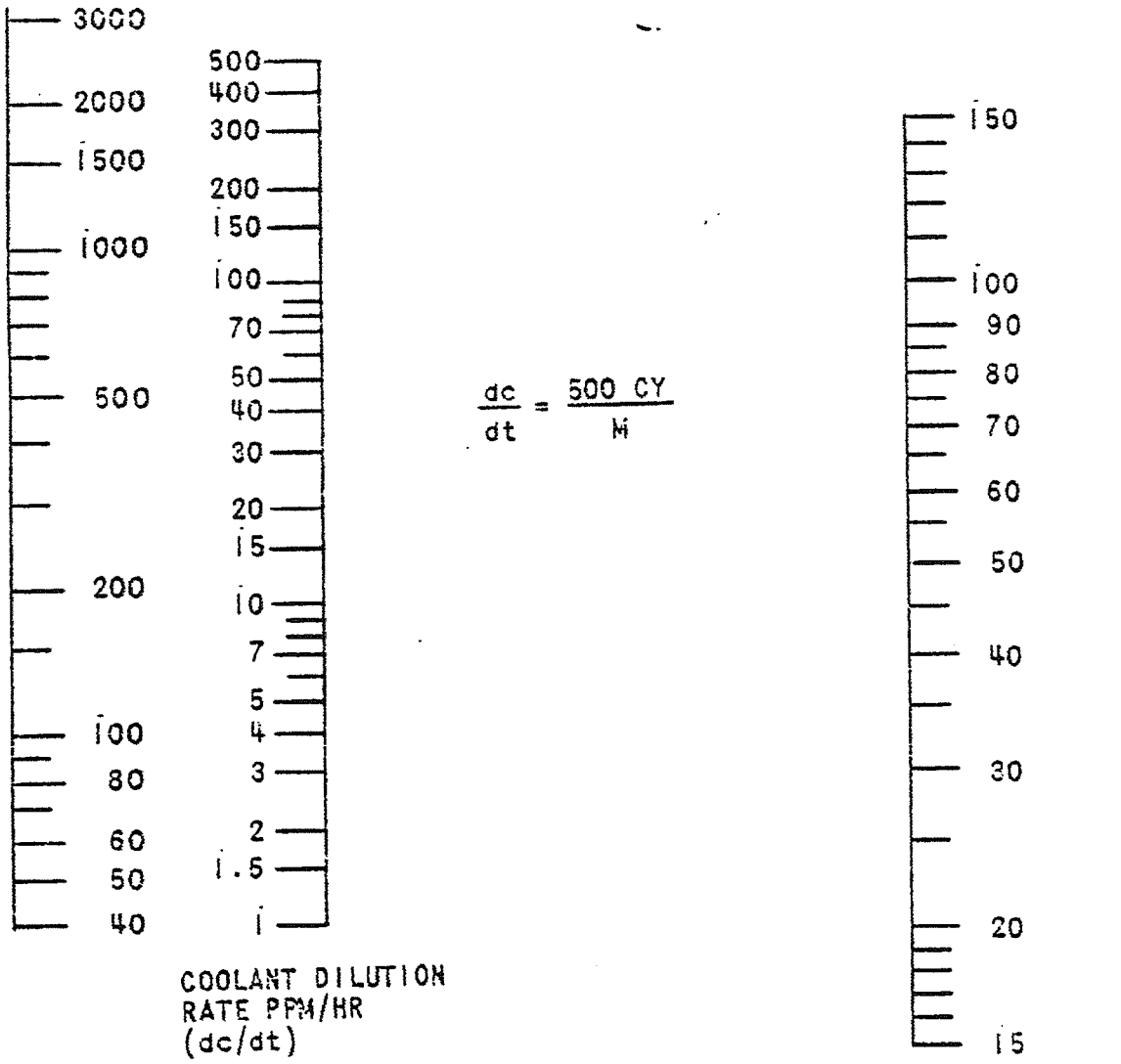
FIGURE 4



The mass, M, for the above formula can be obtained from the Boron/Dilution table for the appropriate RCS temp.

Figure 4 Boron Dilution - Refer to Table 1 for Correction Factors

FIGURE 5



The mass, M, for the above formula can be obtained from the Boron/Dilution table for the appropriate RCS temp.

Figure 5. Boron Dilution Rate - Refer to Table 1 for Correction Factors

A.2 Admin c SRO only Equipment Control ADMIN G2.2.41

TITLE: Determine Isolation Boundaries for a CCW Pump Check Valve.

EVALUATION LOCATION: ☐SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 30 MIN SIMULATOR IC NUMBER: N/A

☐ALTERNATE PATH ☐ TIME CRITICAL ☐PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. The SRO-only portion of this task is designed to be performed after completion of the RO portion of this TASK. All conditions are given in the handout. The candidate should complete the Tagout listing first, then perform the Tech Spec evaluation. Both portions should be completed for the examinee to have completed this task.
3. Requiring the examinee to acquire the required materials may or may not be included as part of the JPM.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Identify the components and positions required to isolate, vent, and drain a section of piping in preparation for maintenance on a CCW discharge check valve.
- Identify the proper sequence of isolation.
- SRO-only: Identify the applicable LCO Action Statements, Required Actions and Completion Times required by the given conditions.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Billy Thornton	Date: 2/8/2011
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to DETERMINE ISOLATION BOUNDARIES FOR A CCW PUMP CHECK VALVE. The conditions under which this task is to be performed are:

a. Unit 1 is in Mode 4.
b. 1B CCW pump is aligned to B Train.
c. 1C CCW pump was shut down due to a large leak on Q1P17V001C, CCW PUMP 1C DISCHARGE CHECK VALVE.
d. The 1C CCW pump has been Tagged Out electrically.
e. The eSOMS Tagging computer program is not available.
f. You have been directed to manually prepare a Tag Out Listing for isolation of the check valve and draining of the system for repair of the check valve.
g. The Tag Out Listing should identify the **proper components to be operated, correct positioning action, and correct sequence of operation.**

When the above actions are completed, evaluate Tech Spec and TRM requirements using the following additional information:

a. All RCP's are secured.
b. All Steam Generator Wide Range Levels are 70% and decreasing with draining in progress.
c. 1B RHR pump is running.

Based on these conditions, evaluate Tech Spec and TRM requirements and perform the following:

List all **TECH SPEC and TRM CONDITIONS, REQUIRED ACTIONS, and COMPLETION TIMES for LCO's** not met, if any.

INITIATING **CUE**: IF you have no questions, you may begin.

EVALUATION CHECKLIST

ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
____ START TIME		
* 1. Determines that 1C CCW PUMP DISCH ISO, V002C is required to be closed first to isolate the high pressure portion from the lower pressure portions of the system.	**V002C – CLOSED** (See Tag Out sheet)	S / U
* 2. Determines that the three other isolation flowpaths should be closed next.	**V278C – CLOSED** **V109C – CLOSED** **V144C – CLOSED** (Sequence of isolation of these valves does not matter. See Tag Out sheet)	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
Note to Evaluator: Steps 3 through 5 may be performed in any order.		
* 3. Determines that V281C is required to be open to drain the section between discharge check valve (QV001C) and isolation valve (QV002C).	**V281C –OPEN** (See Tag Out sheet)	S / U
* 4. Determines that at least one drain valve is opened to drain the pump section of piping. (All drain valves may be opened to facilitate draining, but at least one drain is required to satisfy the Critical portion of this step.)	**V157F – OPEN** **V157E – OPEN** (Either of these valves or both of these valves may be opened, but at least one is required.) (Sequence of opening these valves does not matter. See Tag Out sheet)	S / U
* 5. Determines that at least one vent valve is opened to vent the system. (All vent valves may be opened to facilitate venting, but at least one vent is required to satisfy the Critical portion of this step.)	**V279C –OPEN** **V156F – OPEN** **V156C – OPEN** (Any one of these valves or all of these valves may be opened, but at least one is required.) (Sequence of opening these valves does not matter. See Tag Out sheet)	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
SRO PORTION BELOW		
* 6. Evaluates Tech Specs 3.7.7 Component Cooling Water (CCW) System	Determines that an LCO exists for: CONDITION A – One CCW train inoperable. REQUIRED ACTION – A.1 Restore CCW train to OPERABLE status in 72 hours. In addition, per a note in REQUIRED ACTION A.1 – --- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for Residual heat removal loops made inoperable by CCW. --- (LCO 3.4.6 may be evaluated before 3.7.7. This is acceptable as long as both are evaluated.)	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 7. Evaluates Tech Specs 3.4.6 RCS Loops—MODE 4	Determines that an LCO exists for: CONDITION B – One required RHR loop inoperable. AND Two required RCS loops inoperable. REQUIRED ACTION – B.1 Be in Mode 5 in 24 hours. (LCO 3.4.6 may be evaluated before 3.7.7. This is acceptable as long as both are evaluated.)	S / U

____ STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-SOP-23.0A, VER 10.0
2. D175002 SHEET 1
3. NMP-AD-003, VER 13.0
4. NMP-AD-003-001, VER 2.0
5. NMP-AD-003-002, VER 6.0
6. NMP-AD-003-F02, VER 1.0
7. KA: G2.2.41 RO 3.5 SRO 3.9
   G2.2.40 SRO 4.7

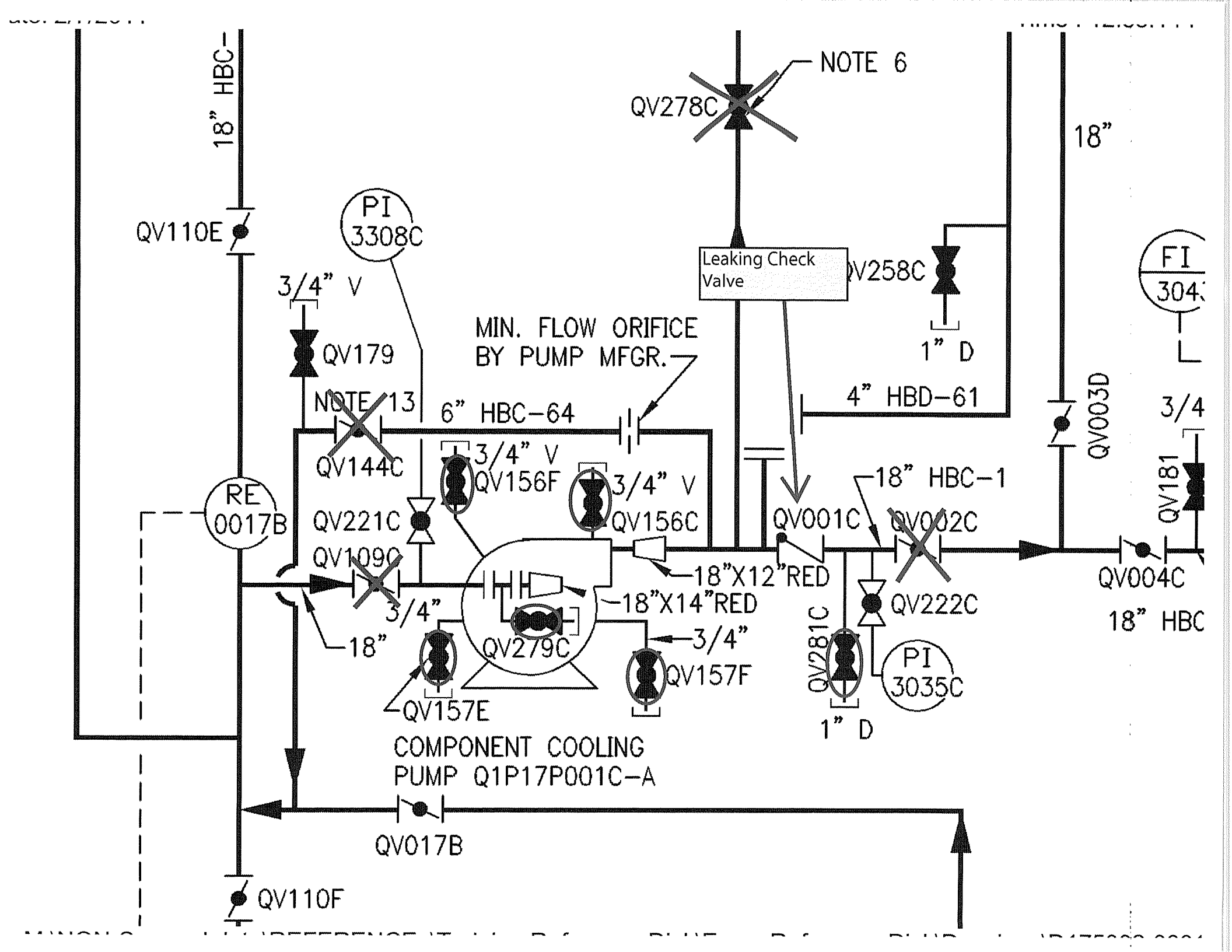
GENERAL TOOLS AND EQUIPMENT:

1. FNP-1-SOP-23.0A, VER 10.0
2. D175002 SHEET 1
3. NMP-AD-003, VER 13.0
4. NMP-AD-003-001, VER 2.0
5. NMP-AD-003-002, VER 6.0
6. NMP-AD-003-F02, VER 1.0
7. Handout TO for 1C CCW pump electrical
8. Handout for Candidate NMP-AD-003-F02 Tagout Listing
9. Technical Specifications, Bases, TRM, and TRM bases

Critical ELEMENT justification:

STEP	Evaluation
1	**Critical:** Task completion: required to determine that the discharge valve should be closed first to isolate the high pressure portion of the system.
2	**Critical:** Task completion: required to determine that all other isolation valves that would isolate the discharge check valve from the rest of the CCW system are to be closed next, prior to opening vents and drains.
3	**Critical:** Task completion: required to open drain valve QV281C to prevent pressurization of piping in case of leakby of the discharge isolation valve.
4	**Critical:** Task completion: required to determine that at least one drain valve in the pump section of piping is to be opened to allow proper drainage for maintenance.
5	**Critical:** Task completion: required to determine that at least one vent valve is to be opened to vent the system to allow proper drainage for maintenance.
6	**Critical:** Task completion: required to determine Tech Spec entry and application for conditions.
7	**Critical:** Task completion: required to determine Tech Spec entry and application for conditions.

COMMENTS:


18" HBC-
QV110E
PI
3308C
3/4" V
QV179
NOTE 13
QV144C
6" HBC-64
MIN. FLOW ORIFICE
BY PUMP MFGR.
NOTE 6
QV278C
Leaking Check
Valve
QV258C
1" D
4" HBD-61
18"
QV003D
FI
304
3/4
QV181
3/4" V
QV156F
3/4" V
QV156C
RE
0017B
QV221C
QV109C
3/4"
18"
18"X12"RED
18"X14"RED
QV279C
3/4"
QV157F
QV157E
QV001C
18" HBC-1
QV002C
QV004C
18" HBC
QV222C
QV281C
PI
3035C
1" D
COMPONENT COOLING
PUMP Q1P17P001C-A
QV017B
QV110F

Southern Nuclear Operating Company			
SOUTHERN COMPANY *Energy to Serve Your World*	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

KEY

Tag		Equipment	Placement					Restoration				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif
		1C CCW PUMP DISCH ISO Q1P17V002C		1	CLOSED							
		1C CCW PUMP CHEM MIXING ISO Q1P17V278C		2	CLOSED							
		1C CCW PUMP SUCT ISO Q1P17V109C		3	CLOSED							
		1C CCW PUMP MINI-FLOW Q1P17V144C		4	CLOSED							
		1C CCW PUMP DISCH HDR DRN Q1P17V281C		5	OPEN							
		1C CCW PUMP DRN Q1P17V157F		6	OPEN							
		1C CCW PUMP DRN Q1P17V157E		7	OPEN							
		1C CCW PUMP SUCT LINE VT Q1P17V279C		8	OPEN							
		1C CCW PUMP VT Q1P17V156F		9	OPEN							
		1C CCW PUMP VT Q1P17V156C		10	OPEN							

CONDITIONS

When I tell you to begin, you are to DETERMINE ISOLATION BOUNDARIES FOR A CCW PUMP CHECK VALVE. The conditions under which this task is to be performed are:

a. Unit 1 is in Mode 4.
b. 1B CCW pump is aligned to B Train.
c. 1C CCW pump was shut down due to a large leak on Q1P17V001C, CCW PUMP 1C DISCHARGE CHECK VALVE.
d. The 1C CCW pump has been Tagged Out electrically.
e. The eSOMS Tagging computer program is not available.
f. You have been directed to manually prepare a Tag Out Listing for isolation of the check valve and draining of the system for repair of the check valve.
g. The Tag Out Listing should identify the **proper components to be operated, correct positioning action, and correct sequence of operation**.

When the above actions are completed, evaluate Tech Spec and TRM requirements using the following additional information:

a. All RCP's are secured.
b. All Steam Generator Wide Range Levels are 70% and decreasing with draining in progress.
c. 1B RHR pump is running.

Based on these conditions, evaluate Tech Spec and TRM requirements and perform the following:

List all **TECH SPEC and TRM CONDITIONS, REQUIRED ACTIONS, and COMPLETION TIMES for LCO's** not met, if any.

Southern Nuclear Operating Company			
SOUTHERN COMPANY *Energy to Serve Your World*	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

Tag		Equipment	Placement					Restoration				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif
1-DT-11-30,000	DT	1C CCW MCB handswitch Q1P17HS3307CA-A	CV	1	STOP/AUTO	*BT*	*HF*					
1-DT-11-30,001	DT	1C CCW Hot Shutdown Panel Local/Remote Switch Q1P17HS3307CC-A	CV	2	REMOTE	*BT*	*HF*					
1-DT-11-30,002	DT	1C CCW Pump 4160V breaker Q1R15BKRDF04	CV	3	RACKED OUT	*BT*	*HF*					

Southern Nuclear Operating Company			
SOUTHERN COMPANY *Energy to Serve Your World*	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

Tag		**Equipment**	**Placement**					**Restoration**				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif

COMP COOLING SURGE TANK Q1P17T001
COMPONENT COOLING PUMP Q1P17P001A-B
COMPONENT COOLING PUMP Q1P17P001B-AB
COMPONENT COOLING PUMP Q1P17P001C-A
COMPONENT COOLING HEAT EXCHANGER Q1P17H001A-B
COMPONENT COOLING HEAT EXCHANGER Q1P17H001B-AB
COMPONENT COOLING HEAT EXCHANGER Q1P17H001C-A
RHR PUMP NO. 1B Q1E11P001B-B (SEAL COOLER)
RHR PUMP NO. 1A Q1E11P001A-A (SEAL COOLER)
RESIDUAL HEAT EXCHANGER NO.1B Q1E11H001B-B
RESIDUAL HEAT EXCHANGER NO.1A Q1E11H001A-A
SPENT FUEL POOL HEAT EXCHANGER Q1G31H001B-A
SPENT FUEL POOL HEAT EXCHANGER Q1G31H001A-B
SURGE TANK RELIEF VALVE D5H.(A-3)
FLOOR DRAIN TANK (WPS)
VENT TO ATMOS.
ROUTED TO EQUIPMENT DRN.
REACTOR MAKE-UP WATER D-175036(J-5)
DEMINERALIZED WATER D-175047(G-4)
HOSE CONNECTION IN CCW SURGE TANK ROOM.
MIN. FLOW ORIFICE BY PUMP MFGR.
PLUGGED VENT
NOTES:
1. VALVE IS INSTALLED WITH FLOW TO CLOSE.
2. VALVE MUST REMAIN OPEN WHEN RHR NOT IN USE.
3. THIS VALVE FURNISHED WITH PACKAGE UNIT.
4. FOR P&ID LEGEND SEE DWG. D-175016 SHEETS 1&2.
5. FOR PROCESS FLOW SEE DWG. D-175023
6. LOCATE VALVES IN CCW PUMP ROOM.
7. RELIEF VALVE MUST BE LOCATED AT LEAST 6" ABOVE THE TOP OF THE LOOP SEAL. BOTTOM OF LOOP SEAL MUST EXTEND AT LEAST 6" BELOW THE CONNECTION TO THE MAIN PIPE.
8. FOR COMPLETE INSTRUMENT NUMBERS, REFER TO INSTRUMENT INDEX B-175003.
9. LINE NUMBERS FOR VENT, DRAIN AND INSTRUMENT LINES ON EQUIPMENT, UP TO AND INCLUDING THE ROOT VALVES: FOR PUMPS-SAME AS PUMP DISCHARGE LINE NUMBER FOR HEAT EXCHANGERS-SAME AS HEAT EXCHANGER OUTLET LINE NUMBER.
10. FOR PIPING DOWNSTREAM OF VENT AND DRAIN ROOT VALVES, SEE SPEC. SS-1109-2, PAR. 11.5.1 (b).
11. ALL DRAINS ARE PUMPED BY THE PORTABLE COMPONENT COOLING SYSTEM DRAIN PUMP (N1P17P002-N) TO THE SURGE TANK.
12. ALL LINE AND VALVE NUMBERS ARE PREFIXED BY Q1P17 OR N1P17.
13. CCW PUMP MINIMUM FLOW LINE MAY BE ISOLATED PROVIDED THE LINE-UP FOR THE ON-SERVICE, STAND-BY AND OFF-SERVICE TRAINS WILL RESULT IN A CCW PUMP FLOW-RATE GREATER THAN 2100 GPM TO DWG FLOW PATHS.
4R-0 14. VALVE IS THROTTLED TO 65-75 GPM AND SEALED. S/S PERMISSION NEEDED PRIOR TO CHANGING THE POSITION OF THIS SEAL WIRED VALVE.
CAD D175021.DWG
ACAD2002 CYN - 02
Southern Company Services, INC. for
ALABAMA POWER COMPANY
PROJECT J. M. FARLEY NUCLEAR PLANT - UNIT 1
SUBJECT P&ID - COMPONENT COOLING WATER SYSTEM
SCALE NONE DWN N/A
SHEET 1 OF - SHEETS
SUPERSEDES
D-175002
DRAWING CLASS
CYN RKF FML
VER. NO. 49.0 DATE 04/09/09
REVISED PER ABN-FD1274, VER. 2.0
FOR SIGNATURES
SEE MICROFILM
COPY

A.2 Admin c RO only - Equipment Control ADMIN G2.2.41

TITLE: Determine Isolation Boundaries for a CCW Pump Check Valve.

EVALUATION LOCATION: ☐SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 30 MIN SIMULATOR IC NUMBER: N/A

☐ALTERNATE PATH ☐ TIME CRITICAL ☐PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. Requiring the examinee to acquire the required materials may or may not be included as part of the JPM.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Identify the components and positions required to isolate, vent, and drain a section of piping in preparation for maintenance on a CCW discharge check valve.
- Identify the proper sequence of isolation.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Billy Thornton	Date: 2/8/2011
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to DETERMINE ISOLATION BOUNDARIES FOR A CCW PUMP CHECK VALVE. The conditions under which this task is to be performed are:

a. Unit 1 is in Mode 4.
b. 1B CCW pump is aligned to B Train.
c. 1C CCW pump was shut down due to a large leak on Q1P17V001C, CCW PUMP 1C DISCHARGE CHECK VALVE.
d. The 1C CCW pump has been Tagged Out electrically.
e. The eSOMS Tagging computer program is not available.
f. You have been directed to manually prepare a Tag Out Listing for isolation of the check valve and draining of the system for repair of the check valve.
g. The Tag Out Listing should identify the **proper components to be operated, correct positioning action, and correct sequence of operation**.

INITIATING **CUE**: IF you have no questions, you may begin.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
____ START TIME		
* 1. Determines that 1C CCW PUMP DISCH ISO, V002C is required to be closed first to isolate the high pressure portion from the lower pressure portions of the system.	**V002C – CLOSED** (See Tag Out sheet)	S / U
* 2. Determines that the three other isolation flowpaths should be closed next.	**V278C – CLOSED** **V109C – CLOSED** **V144C – CLOSED** (Sequence of isolation of these valves does not matter. See Tag Out sheet)	S / U
Note to Evaluator: Steps 3 through 5 may be performed in any order.		
* 3. Determines that V281C is required to be open to drain the section between discharge check valve (QV001C) and isolation valve (QV002C).	**V281C –OPEN** (See Tag Out sheet)	S / U

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*	4. Determines that at least one drain valve is opened to drain the pump section of piping. (All drain valves may be opened to facilitate draining, but at least one drain is required to satisfy the Critical portion of this step.)	**V157F – OPEN** **V157E – OPEN** (Either of these valves or both of these valves may be opened, but at least one is required.) (Sequence of opening these valves does not matter. See Tag Out sheet)	S / U
*	5. Determines that at least one vent valve is opened to vent the system. (All vent valves may be opened to facilitate venting, but at least one vent is required to satisfy the Critical portion of this step.)	**V279C –OPEN** **V156F – OPEN** **V156C – OPEN** (Any one of these valves or all of these valves may be opened, but at least one is required.) (Sequence of opening these valves does not matter. See Tag Out sheet)	S / U

____ STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-SOP-23.0A, VER 10.0
2. D175002 SHEET 1
3. NMP-AD-003, VER 13.0
4. NMP-AD-003-001, VER 2.0
5. NMP-AD-003-002, VER 6.0
6. NMP-AD-003-F02, VER 1.0
7. KA: G2.2.41 RO 3.5 SRO 3.9

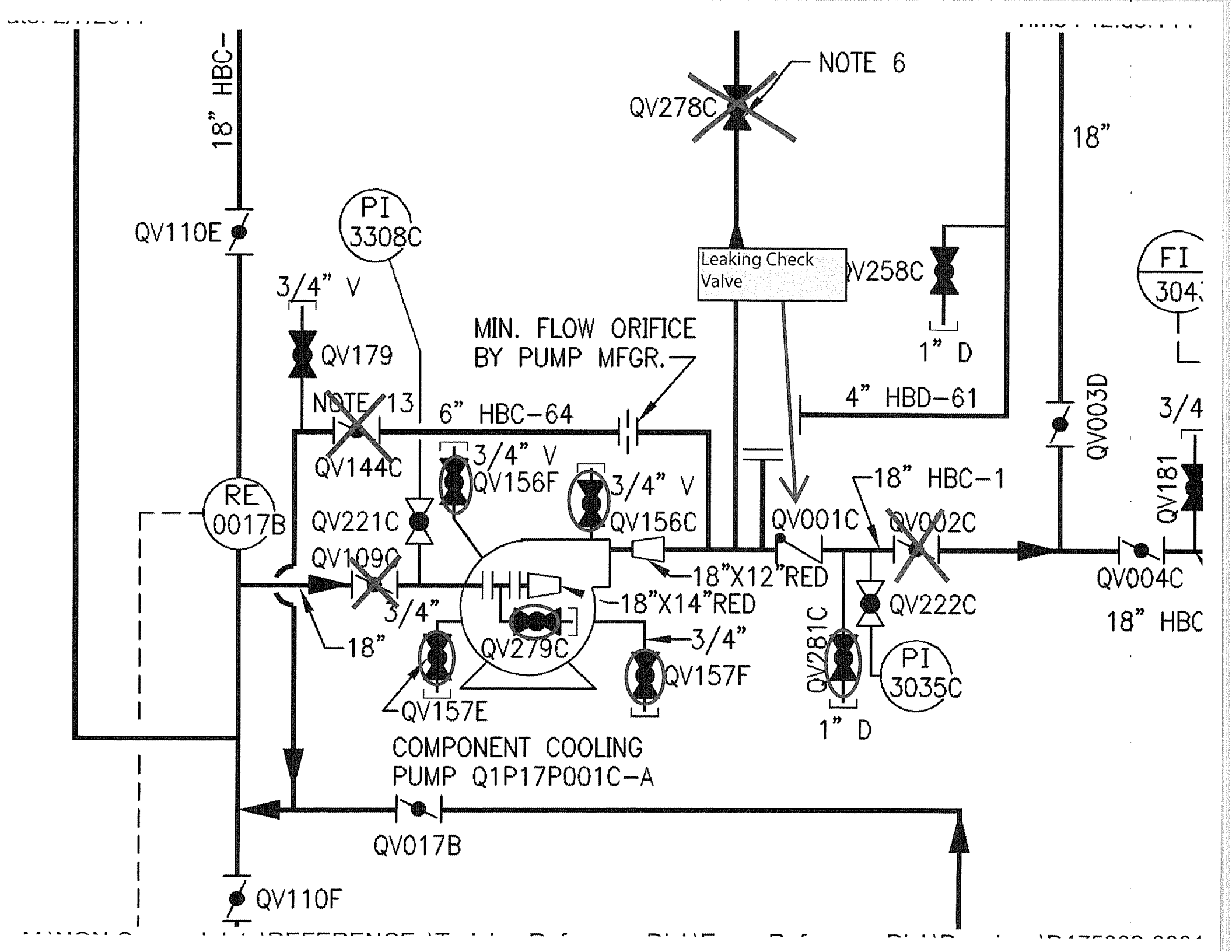
GENERAL TOOLS AND EQUIPMENT:

1. FNP-1-SOP-23.0A, VER 10.0
2. D175002 SHEET 1
3. NMP-AD-003, VER 13.0
4. NMP-AD-003-001, VER 2.0
5. NMP-AD-003-002, VER 6.0
6. NMP-AD-003-F02, VER 1.0
7. Handout TO for 1C CCW pump electrical
8. Handout for Candidate NMP-AD-003-F02 Tagout Listing

Critical ELEMENT justification:

STEP	Evaluation
1	**Critical:** Task completion: required to determine that the discharge valve should be closed first to isolate the high pressure portion of the system.
2	**Critical:** Task completion: required to determine that all other isolation valves that would isolate the discharge check valve from the rest of the CCW system are to be closed next, prior to opening vents and drains.
3	**Critical:** Task completion: required to open drain valve QV281C to prevent pressurization of piping in case of leakby of the discharge isolation valve.
4	**Critical:** Task completion: required to determine that at least one drain valve in the pump section of piping is to be opened to allow proper drainage for maintenance.
5	**Critical:** Task completion: required to determine that at least one vent valve is to be opened to vent the system to allow proper drainage for maintenance.

COMMENTS:


18" HBC-
QV110E
PI
3308C
3/4" V
QV179
NOTE 13
QV144C
6" HBC-64
MIN. FLOW ORIFICE
BY PUMP MFGR.
NOTE 6
QV278C
Leaking Check
Valve
QV258C
1" D
4" HBD-61
18"
QV003D
FI
304
3/4
QV181
RE
0017B
QV221C
3/4" V
QV156F
3/4" V
QV156C
QV001C
18" HBC-1
QV002C
QV109C
3/4"
18"
18"X12"RED
18"X14"RED
QV279C
3/4"
QV157F
QV157E
QV222C
QV281C
PI
3035C
1" D
QV004C
18" HBC
COMPONENT COOLING
PUMP Q1P17P001C-A
QV017B
QV110F

Southern Nuclear Operating Company			
SOUTHERN COMPANY Energy to Serve Your World®	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

KEY

Tag		Equipment	Placement					Restoration				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif
		1C CCW PUMP DISCH ISO Q1P17V002C		1	CLOSED							
		1C CCW PUMP CHEM MIXING ISO Q1P17V278C		2	CLOSED							
		1C CCW PUMP SUCT ISO Q1P17V109C		3	CLOSED							
		1C CCW PUMP MINI-FLOW Q1P17V144C		4	CLOSED							
		1C CCW PUMP DISCH HDR DRN Q1P17V281C		5	OPEN							
		1C CCW PUMP DRN Q1P17V157F		6	OPEN							
		1C CCW PUMP DRN Q1P17V157E		7	OPEN							
		1C CCW PUMP SUCT LINE VT Q1P17V279C		8	OPEN							
		1C CCW PUMP VT Q1P17V156F		9	OPEN							
		1C CCW PUMP VT Q1P17V156C		10	OPEN							

CONDITIONS

When I tell you to begin, you are to DETERMINE ISOLATION BOUNDARIES FOR A CCW PUMP CHECK VALVE. The conditions under which this task is to be performed are:

a. Unit 1 is in Mode 4.
b. 1B CCW pump is aligned to B Train.
c. 1C CCW pump was shut down due to a large leak on Q1P17V001C, CCW PUMP 1C DISCHARGE CHECK VALVE.
d. The 1C CCW pump has been Tagged Out electrically.
e. The eSOMS Tagging computer program is not available.
f. You have been directed to manually prepare a Tag Out Listing for isolation of the check valve and draining of the system for repair of the check valve.
g. The Tag Out Listing should identify the **proper components to be operated, correct positioning action, and correct sequence of operation**.

Southern Nuclear Operating Company			
SOUTHERN COMPANY *Energy to Serve Your World®*	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

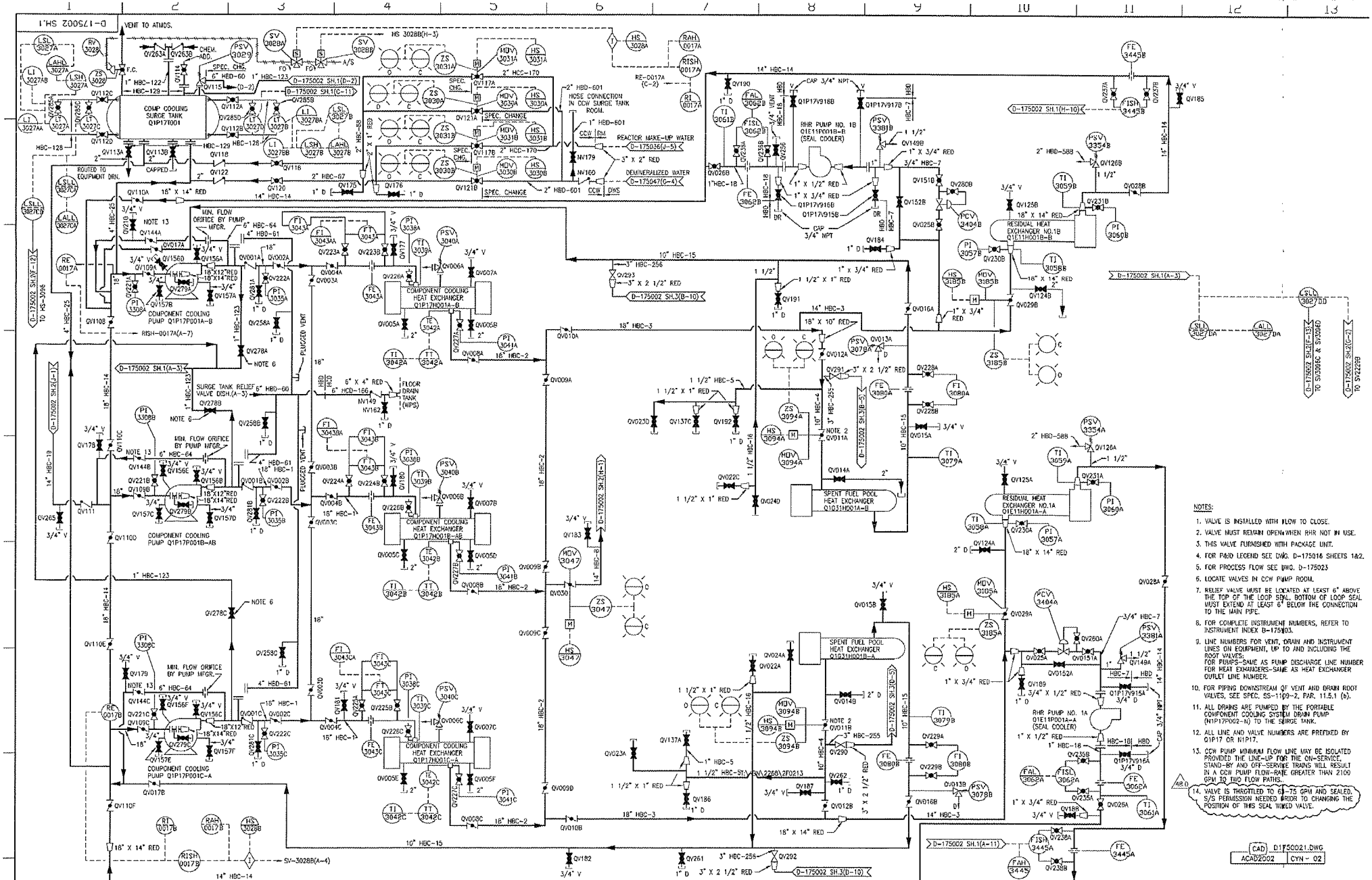
Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

Tag		Equipment	Placement					Restoration				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif
1-DT-11-30,000	DT	1C CCW MCB handswitch Q1P17HS3307CA-A	CV	1	STOP/AUTO	*BT*	*HF*					
1-DT-11-30,001	DT	1C CCW Hot Shutdown Panel Local/Remote Switch Q1P17HS3307CC-A	CV	2	REMOTE	*BT*	*HF*					
1-DT-11-30,002	DT	1C CCW Pump 4160V breaker Q1R15BKRDF04	CV	3	RACKED OUT	*BT*	*HF*					

Southern Nuclear Operating Company			
SOUTHERN COMPANY *Energy to Serve Your World*	Nuclear Management Form	Tagout Tag Listing	NMP-AD-003-F02 Version 1.0 Page 1 of 1

Clearance: # :	FOR TRAINING USE ONLY
Tagout: #:	HLT-34 NRC EXAM

Tag		Equipment	Placement					Restoration				
Num	Type	Equipment ID Description/Location	Verif	Seq	Configuration Notes	1st Verif	2nd Verif	Verif	Seq	Configuration Notes	1st Verif	2nd Verif


COMP COOLING SURGE TANK Q1P17T001
COMPONENT COOLING PUMP Q1P17P001A-B
COMPONENT COOLING PUMP Q1P17P001B-AB
COMPONENT COOLING PUMP Q1P17P001C-A
COMPONENT COOLING HEAT EXCHANGER Q1P17H001A-B
COMPONENT COOLING HEAT EXCHANGER Q1P17H001B-AB
COMPONENT COOLING HEAT EXCHANGER Q1P17H001C-A
RESIDUAL HEAT EXCHANGER NO.1B Q1E11H001B-B
RESIDUAL HEAT EXCHANGER NO.1A Q1E11H001A-A
SPENT FUEL POOL HEAT EXCHANGER Q1R31H001A-B
SPENT FUEL POOL HEAT EXCHANGER Q1R31H001B-A
RHR PUMP NO. 1B Q1E11P001B-B (SEAL COOLER)
RHR PUMP NO. 1A Q1E11P001A-A (SEAL COOLER)
SURGE TANK RELIEF VALVE DISH.(A-3)
FLOOR DRAIN TANK (WPS)
REACTOR MAKE-UP WATER
DEMINERALIZED WATER
VENT TO ATMOS.
CHEM. ADD.
HOSE CONNECTION IN CCW SURGE TANK ROOM.
ROUTED TO EQUIPMENT DRN.
MIN. FLOW ORIFICE BY PUMP MFGR.
SPEC. CHG.
SPEC. CHANGE
CAPPED
PLUGGED VENT
TO FO
TO A/S
NOTES:
1. VALVE IS INSTALLED WITH FLOW TO CLOSE.
2. VALVE MUST REMAIN OPEN WHEN RHR NOT IN USE.
3. THIS VALVE FURNISHED WITH PACKAGE UNIT.
4. FOR P&ID LEGEND SEE DWG. D-175016 SHEETS 1&2.
5. FOR PROCESS FLOW SEE DWG. D-175023
6. LOCATE VALVES IN CCW PUMP ROOM.
7. RELIEF VALVE MUST BE LOCATED AT LEAST 6" ABOVE THE TOP OF THE LOOP SEAL. BOTTOM OF LOOP SEAL MUST EXTEND AT LEAST 6" BELOW THE CONNECTION TO THE MAIN PIPE.
8. FOR COMPLETE INSTRUMENT NUMBERS, REFER TO INSTRUMENT INDEX D-175103.
9. LINE NUMBERS FOR VENT, DRAIN AND INSTRUMENT LINES ON EQUIPMENT, UP TO AND INCLUDING THE ROOT VALVES: FOR PUMPS-SAME AS PUMP DISCHARGE LINE NUMBER FOR HEAT EXCHANGERS-SAME AS HEAT EXCHANGER OUTLET LINE NUMBER.
10. FOR PIPING DOWNSTREAM OF VENT AND DRAIN ROOT VALVES, SEE SPEC. SS-1109-2, PAR. 11.5.1 (b).
11. ALL DRAINS ARE PUMPED BY THE PORTABLE COMPONENT COOLING SYSTEM DRAIN PUMP (N1P17P002-N) TO THE SURGE TANK.
12. ALL LINE AND VALVE NUMBERS ARE PREFIXED BY Q1P17 OR N1P17.
13. CCW PUMP MINIMUM FLOW LINE MAY BE ISOLATED PROVIDED THE LINE-UP FOR THE ON-SERVICE, STAND-BY AND OFF-SERVICE TRAINS WILL RESULT IN A CCW PUMP FLOW-RATE GREATER THAN 2100 GPM TO TWO FLOW PATHS.
48.0 14. VALVE IS THROTTLED TO 60-75 GPM AND SEALED. S/S PERMISSION NEEDED PRIOR TO CHANGING THE POSITION OF THIS SEAL WIRED VALVE.
CAD D175021.DWG
ACAD2002 CYN - 02
Southern Company Services, INC. for
ALABAMA POWER COMPANY
J. M. FARLEY NUCLEAR PLANT - UNIT 1
P&ID - COMPONENT COOLING WATER SYSTEM
SCALE NONE
DWG. N/A
SHEET 1 OF — SHEETS
SUPERSEDES
D-175002
DRAWING OF DISTIC
This document contains proprietary, confidential, and/or trade secret information of the subsidiaries of The Southern Company or of third parties. It is intended for use only by employees of, authorized contractors of, the subsidiaries of The Southern Company. Unauthorized possession, use, distribution, copying, transmission or disclosure of any portion hereof is prohibited.
DRAWN CHECKED DESIGNED
APPROVED FOR SIGNATURES DATE
APPROVED SEE MICROFILM DATE
APPROVED COPY DATE
CYN RKF FML
VER. NO. 48.0 DATE 02/09/09
REVISED PER ABN-F01274, VER. 2.0

A.3 Admin d RO/SRO Radiation Control ADMIN G2.3.4

TITLE: **DETERMINE DRESSOUT REQUIREMENTS, TOTAL PROJECTED DOSE AND DETERMINE IF AN RCP OIL ADDITION CAN BE PERFORMED WITHOUT EXCEEDING ANY RADIOLOGICAL LIMITS.**

EVALUATION LOCATION: ☐ SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 20 MIN SIMULATOR IC NUMBER: N/A

☐ ALTERNATE PATH ☐ TIME CRITICAL ☐ PRA

JPM DIRECTIONS:

1. Initiation of task may be in group setting, evaluation performed individually upon completion.
2. Requiring the examinee to acquire the required materials may or may not be included as part of the JPM.

TASK STANDARD: Upon successful completion of this JPM, the examinee will review an RWP, Radiological Survey Map and perform the following for adding oil to the 2A RCP:

- Identify the Protective Clothing requirements.
- Total projected dose for a job.
- Determination if the task can or cannot be performed without exceeding any radiological limits on a single entry, and if NOT then state the reason.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Billy Thornton	Date: 2/9/2011
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **DETERMINE DRESSOUT REQUIREMENTS, TOTAL PROJECTED DOSE AND DETERMINE IF AN RCP OIL ADDITION CAN BE PERFORMED WITHOUT EXCEEDING ANY RADIOLOGICAL LIMITS**. The conditions under which this task is to be performed are:

1. Rx Power is 10%.
2. You will be adding oil to the 2A RCP.
3. All needed tools, oil, and equipment have been staged at 2A RCP.
4. All necessary permissions to access the area and perform the task have been acquired.
5. Your accumulated dose for this year to date is 1650 mRem.
6. Based on previous actions to stage the materials for the job, the TOTAL round-trip TRANSIT dose will be 10 mRem.
7. The TOTAL time at the JOB site will be 30 minutes.
8. The job will be completed by one team on one entry.
9. ASSUME NEUTRON DOSE Exposure NEGLIGIBLE.
10. Using RWP 11-9490 and the Survey Map of the 2A RCP work area provided, you are to determine and document your conclusions on the table below:
    a. Your Protective Clothing requirements.
    b. Total projected dose from gamma.
    c. If you can or cannot perform the task without exceeding any limits, if not, then state the reason.

INITIATING CUE: **"IF you have no questions, you may begin."**

EVALUATION CHECKLIST

ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
____ **START TIME**		

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 1. Determines dressout requirements.	References the RWP and determines dressout is dependent upon the contamination levels. Reviews the survey map and **identifies that the contamination levels are <50,000 dpm/100cm2** **Documents** the following dressout requirements: **"Single coveralls or equivalent, booties, one set rubber shoe-covers, and one set of gloves."**	S / U
* 2. Calculates total projected dose.	Reviews the survey map and **identifies that the General Area dose rate for the job site is 390 mR/hr.** Calculates dose received while performing the job**, and adds the dose received during transit** to and from the job. **Documents the total of 205 mRem**	S / U

Total dose calculation: **Dose at jobsite + Dose in transit = Total dose**

30 minutes * 390 mRem/ hr * 1 hr/60 minutes = **195 mRem (dose at jobsite) {no range}**

Dose during transit is given in the Conditions = **10 mRem total {no range}**

195 mRem (dose at jobsite) + 10 mRem (dose during transit) = **205 mRem Total dose {no range}**

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 3. Determine if any dose limits will be exceeded by performing the task.	Determines if allowable dose limits will be exceed: — Admin dose limit o 1855 mR < 2000 mR. — **RWP Task dose limit** o **205 mR > 200 mR** — RWP Task dose rate limit o 390 mR/hr < 500 mR/hr **Documents** that the job can **NOT** be performed.	S / U

ANNUAL limit (2000 mR annually): 1650 accumulated) + 205 = 1855 mR {no range}

205 mR – 200mr from RWP = 5 mR **over the RWP accumulated dose limit. {no range}**

* 4. States the reason for the task as NOT permitted	IDENTIFIES that the **RWP Task dose limit is exceeded.** ***RWP task Dose limit 200 mR is exceeded by 5 mR***	S / U

____ STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-0-M-001, VER 18.0
2. KA: G2.3.4 RO 3.2 SRO 3.7
   G2.3.7 RO 3.5 SRO 3.6

GENERAL TOOLS AND EQUIPMENT:

Calculator
Containment Survey Maps – 1 maps (2A RCP cubicle)
Containment RWP 11-9490 (For Training USE ONLY)
Health Physics Manual, FNP-0-M-001, Version 18.0.

Critical ELEMENT justification:

STEP	Evaluation
1.	**Critical:** Task completion: required to determine dress out requirements for performing work in Containment, from the Radiation Work Permit.
2.	**Critical:** Task completion: required to determine dose rates from HP survey map and required to perform calculation to determine the total projected dose.
3.	**Critical:** Task completion: required to determine if any dose limits will be exceeded and finds out the task can NOT be done within limits.
4.	**Critical:** Task completion: required to identify which limit is exceeded. This is an evaluation mechanism to objectively asses the REASON for NOT permitting task completion.

KEY

HIGEST Dose Rates encountered at the work location	
Dressout requirements:	*Standard Coveralls: **Single coveralls or equivalent, hood, booties, one set rubber shoe-covers, and one set of gloves.**
Total projected dose from gamma	***205 mRem {no range}**
Can you complete this task without exceeding any limits?	**(CIRCLE ONE)** YES *NO (circled)
REASON, if applicable:	*RWP task Dose limit 200 mR

CONDITIONS

When I tell you to begin, you are to **DETERMINE DRESSOUT REQUIREMENTS, TOTAL PROJECTED DOSE AND DETERMINE IF AN RCP OIL ADDITION CAN BE PERFORMED WITHOUT EXCEEDING ANY RADIOLOGICAL LIMITS.** The conditions under which this task is to be performed are:

1. Rx Power is 10%.
2. You will be adding oil to the 2A RCP.
3. All needed tools, oil, and equipment have been staged at 2A RCP.
4. All necessary permissions to access the area and perform the task have been acquired.
5. Your accumulated dose for this year to date is 1650 mRem.
6. Based on previous actions to stage the materials for the job, the TOTAL round-trip TRANSIT dose will be 10 mRem.
7. The TOTAL time at the JOB site will be 30 minutes.
8. The job will be completed by one team on one entry.
9. ASSUME NEUTRON DOSE Exposure NEGLIGIBLE.
10. Using RWP 11-9490 and the Survey Map of the 2A RCP work area provided, you are to determine and document your conclusions on the table below:
    a. Your Protective Clothing requirements.
    b. Total projected dose from gamma.
    c. If you can or cannot perform the task without exceeding any limits, if not, then state the reason.

HIGEST Dose Rates encountered at the work location	
Dressout requirements:	
Total projected dose from gamma	
Can you complete this task without exceeding any limits?	**(CIRCLE ONE)** YES NO
REASON, if applicable:	

Radiation Work Permit	Plant Farley 11-9490 FOR TRAINING USE ONLY	Rev 1	UNIT 2

Job Description	Activities by Operations in support of the U2 EMERGENT CONTAINMENT ENTRY to include work in High Radiation Areas and other work classified as "Medium Risk" INSIDE THE BIOWALL. CAUTION: This RWP cannot be used for entries into Alpha Level 3 Areas.
Location	U2 CONTAINMENT

HP Coverage	Authorization	Briefing
CONTINUOUS	INDIVIDUAL	INDIVIDUAL

Start Date	5/1/2011 12:00 AM	End Date	6/1/2011 11:59 PM
Job Supv.	G. Ohmstede	EXT	4758

Radiological Conditions

AIRBORNE LEVELS: LESS THAN 4 DAC HOURS PER ENTRY

CONTAMINATION: < 500,000 DPM/100CM2 BETA GAMMA, LESS THAN ALPHA LEVEL 3

RAD LEVELS: LESS < 1.0 REM/HR

Dosimetry

TLD and DAD

Protective Clothing Requirements

AS NOTED IN INSTRUCTIONS BELOW

Respirators

NOT REQUIRED/NOT ALLOWED

TASKS

Description	DAD Alarms Dose (mr)	DAD Alarms Rate(mr/h)
CTMT ACTIVITIES (NON HIGH RAD AREAS)	50	100
CTMT ACTIVITIES (HIGH RAD AREAS)	200	500

INSTRUCTIONS

This RWP involves work identified as Radiologically Risk Significant activities.

No entries allowed inside the 105' Missile Barrier >15% Power. Entry inside the 105' Missile Barrier following Rx Trip and/or at a Power levels of 15% or less requires the prior approval of both the ED and the Health Physics Supervisor.

All workers must receive an Initial RWP Briefing prior to using this RWP for the FIRST time.

Prior to commencing work, individuals will receive a High Rad briefing for every posted High Radiation Area to be entered.

DAD alarm values may be adjusted by a SNC HP ANSI 3.1 or higher qualified individual based on expected conditions but can not exceed the limits listed for this RWP, and requires Health Physics Supervisor's permission.

When exposure on this RWP is expected to be <5 Rem/hr Whole Body and/or <500 mRem/Worker/entry, then Stay time Calculation Sheets are not required. Stay times will be controlled by DADs and Neutron exposure limits.

The HP Technician providing job coverage shall ensure Neutron calculation worksheets (DOS form 933) are completed for entries made in a Neutron Radiation area.

Prior to entry ensure each worker has an adequate exposure margin. Account for any accumulated Neutron Exposure.

Prior to exceeding the Accumulated Dose Alarm, worker(s) shall exit the RCA. Upon receipt of the Dose Rate Alarm, back out of the area until the alarm clears & contact Health Physics.

The HP Technician is responsible for monitoring Neutron Dose rates and exposure. The HP Technician shall periodically inform the workers of their Neutron exposure and have the group exit the area prior to reaching 90 mRem Neutron. Maximum Neutron Dose Rate is 450 mrem/hour.

Dressout requirements for areas > 50,000 dpm/100cm2 beta/gamma: Double coveralls or equivalent, hood, booties,two sets rubber shoecovers, and two sets of gloves.

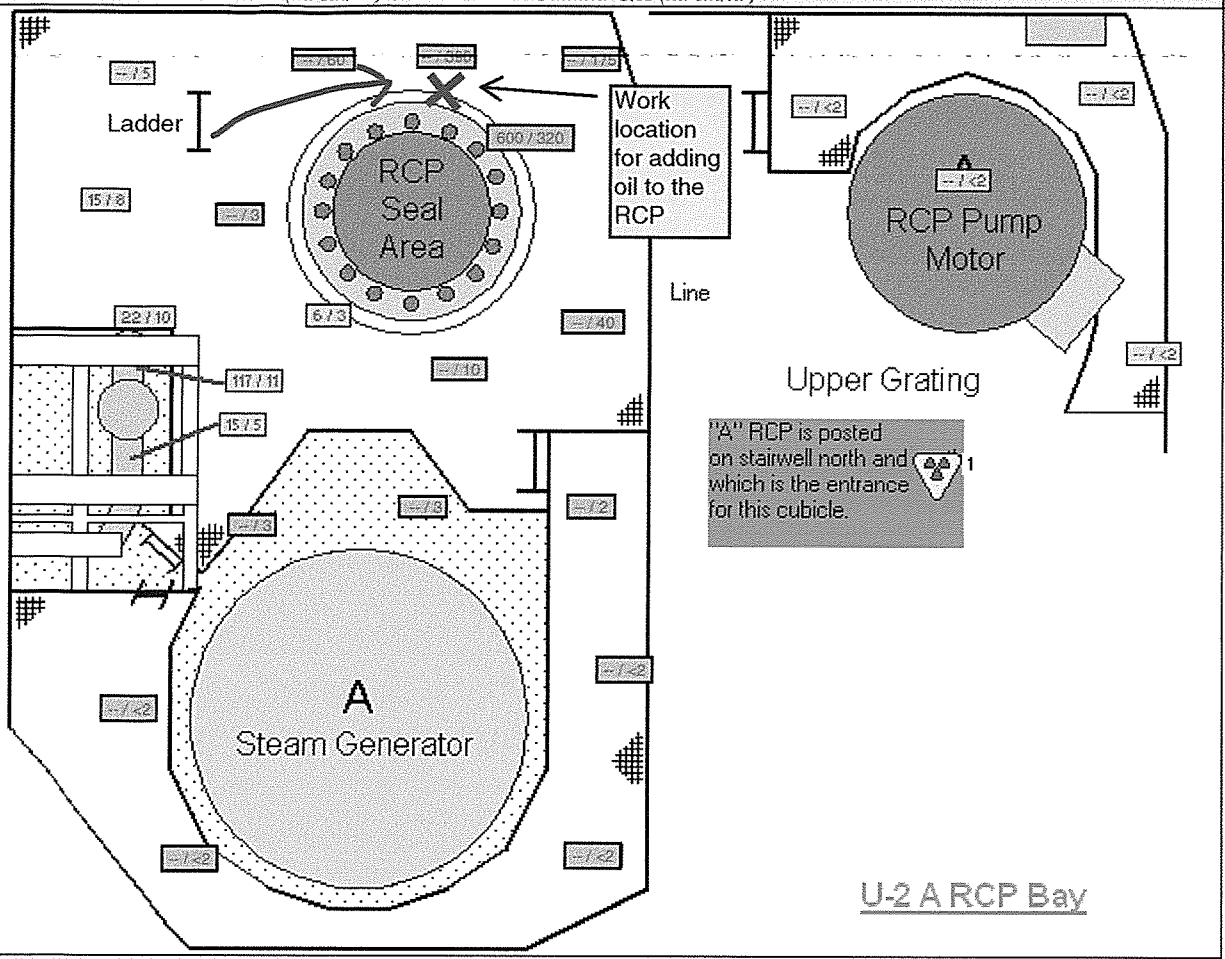
Dressout requirements for areas ≤ 50,000 dpm/100cm2 beta/gamma: Single coveralls or equivalent, hood, booties, one set rubber shoecovers, and one set of gloves.

FOR TRAINING USE ONLY

Prepared	NRC EXAM TEAM	APPROVED	5/1/2011 12:00:00 AM **by NRC EXAM WRITER**

U2 A rcp bay (2CB129) Survey #HLT-30 - 10/01/2006 20:34 - Farley

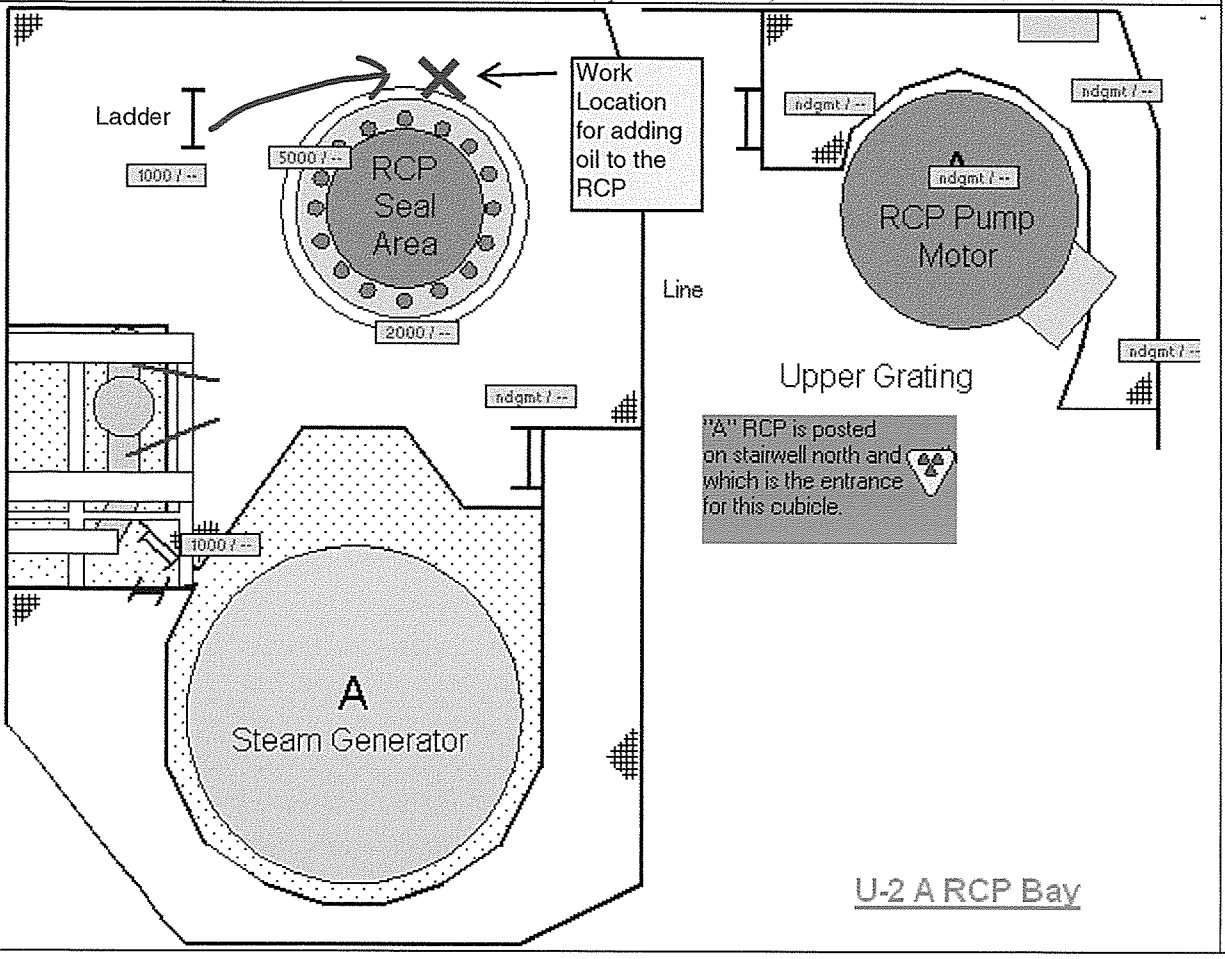
Dose Rate - Gamma Contact (mrem/hr) / Dose Rate - Gamma G/A (mrem/hr)



Posting Info

1)
-RWP required for entry
-HP Escort Required OR Alarming Dosimeter Req'd
-Danger - High Radiation Area

Contamination - B/G (dpm/100 cm2) / Contamination - B/G (dpm/Gross Smear)



A.4 Admin e SRO only - Emergency Plan ADMIN G2.4.44

TITLE: Provide an updated Protective Action Recommendation (PAR).

EVALUATION LOCATION: ☐ SIMULATOR ☐CONTROL ROOM ☒CLASSROOM

PROJECTED TIME: 15 MIN SIMULATOR IC NUMBER: N/A

- ALTERNATE PATH ☒ TIME CRITICAL ☐ PRA

JPM DIRECTIONS:

1. This task can be conducted individually or in a group setting in which all the necessary references are available.
2. Provide the candidate the HANDOUT page and a copy of Message Number 001 to allow for familiarization with the task for the event in progress. Since this is a Time Critical task, allow the candidate time to review and understand the task.
3. When the candidate understands his task, provide the candidate a copy of the partially prepared Message Number 002 (partially prepared requiring the candidate to complete line 5) and the procedure NMP-EP-112, and allow him to begin. This starts the time critical time.
4. Ensure a clock is in the room in which this task will be conducted.
5. This task is TIME CRITICAL.

CAUTION: A KEY is included and precedes the student handout. CARE must be taken when providing the Student HANDOUT as to not also include the KEY.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Correctly assess the necessary changes in the PARs.
- Complete the ENN FORM LINE 5, providing a PAR recommendation to the ED within 15 minutes from beginning of task.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **PROVIDE AN UPDATED PROTECTIVE ACTION RECOMMENDATION (PAR).** The conditions under which this task is to be performed are:

a. Unit 1 has declared a General Emergency based on EAL# FG1;
   FG1: Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier.
b. A radioactive release is occurring from the 1A SG, which has a tube rupture and is faulted outside of Containment.
c. FRP-H.1, Loss of Heat Sink, is in progress.
d. Dose Assessment is provided that dose at site boundary will be:
   - < 1 R TEDE at site boundary and
   - < 5 R Thyroid CDE
e. The IPC function "EP WEATHER" is not available.
f. Wind direction and speed has changed.
g. The current MET Tower data is as follows:
   - Wind Direction from _045_ degrees.
   - Wind Speed _4.5_ mph*.
   - Precipitation _none._
   - ΔT value is _-0.25°F._
h. The ENN Form has been manually completed by another operator with the exception of LINE 5.
i. You are required to develop the PARS per NMP-EP-112, Attachment 1, INITIAL ACTIONS, **AND** complete the following documentation:
   - NMP-EP-112, Attachment 5, PAR Worksheet.
   - Line 5 of the Emergency Notification Form message #002.
j. This task has **TIME CRITICAL** elements.

INITIATING **CUE**: "IF you have no questions, you may begin."

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
____ CRITICAL TIME START		
1. Attachment 1 step A.1 & A.2, And ATTACHMENT 5 step 1. Review conditions and Attachment 1 Flowchart to determine PAR 2 remains in effect. Documents on Attachment 5	**Determines PAR 2** is applicable. Documents ATTACHMENT 5 PAR 2 Check box.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
2. Attachment 5 step 2: Records the 15 minute average "wind direction from" for the selected PAR.	Records "045" in the PAR 2 section for Wind direction.	S / U
3. Attachment 1 step A.3: And ATTACHMENT 5 Step 3. Utilizes ATTACHMENT 2 Table 1 to determine affected Zones for the new wind direction of 045 degrees.	**Identifies** zones **A, B5, C5 and D5** are the affected ZONES for the NEW wind direction.	S / U
4. Attachment 1 step A.4: And ATTACHMENT 5 step 3 & CAUTION Utilizes ATTACHMENT 5 to document previously affected ZONES and currently affected zones. IDENTIFIES on ATTACHMENT 5 the following ZONES are affected: A B5 C5 **D5** J5 K5	**DOCUMENTS** on ATTACHMENT 5 zones **A, B5, C5, D5, J5 and K5** are the ZONES to be **evacuated.** **NOTE**: the same zones from message #001 are included **in addition to the ones identified for the current wind direction (J5 & K5).**	S / U
* 5. Attachment 1 step A.5: And ATTACHMENT 5 On the ENN Form for the selected PAR: • Select block 5.B and record the "Evacuate" zones OR select block 5.C and record the "Shelter" zones" • Select block 5.D • IF PAR 4 is selected, THEN additionally select block 5.E "Other" and provide "Affected Sectors" and "To Miles"	DOCUMENTS ON LINE 5 of ENN Form message #002 **Select block 5.B and records on line 5B: zones A, B5, C5, D5, J5 and K5.** **Select block 5.D.**	S / U

____ CRITICAL TIME STOP

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. NMP-EP-112, V 1.0
2. NMP-EP-110, V1.0

2. KA: G2.4.44 SRO (4.4)

GENERAL TOOLS AND EQUIPMENT:

NMP-EP-112
INITIAL NOTIFICATION message #001.
Partially completed INITIAL NOTIFICATION message #002.

Critical ELEMENT justification:

STEP	Evaluation
1	Not critical: this task will be performed during evaluation of PARs, but student is not required to state that PAR 2 is required.
2	Not critical: this task will be performed to document wind direction on a PAR WORKSHEET, but the critical actions of this task will be to use the information to properly evaluate PARS.
3	Not critical: this task will be performed to properly assess the new PAR evacuation zones, and will be documented on a PAR WORKSHEET, but the critical actions of this task will be to use this information to properly complete the Emergency Notification Form.
4	Not critical: this task will be performed to properly assess and document the new PAR evacuation zones along with the previous evacuation zones, and will be documented on a PAR WORKSHEET, but the critical actions of this task will be to use this information to properly complete the Emergency Notification Form
5	**Critical:** Task completion, Required to properly document the PAR's on line 5 of the Emergency Notification Form. This form would be transmitted to the EMA's of Alabama and Georgia, and is the official document. All other documents are worksheets used to determine the information to be provided to the EMA's.

COMMENTS:

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

ANSWER KEY

1. [A] DRILL [B] ACTUAL EVENT — MESSAGE # 2
2. [A] INITIAL [B] FOLLOW-UP NOTIFICATION: TIME _____ DATE ____ / ____ / ____ AUTHENTICATION # _____
3. SITE: Farley Nuclear Plant — Confirmation Phone # (334) 814-4662

4. **EMERGENCY CLASSIFICATION:** [A] UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY

BASED ON EAL# FG1 EAL DESCRIPTION:

Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier

5. **PROTECTIVE ACTION RECOMMENDATIONS:** [A] NONE

[X] EVACUATE A, B5, C5, D5, K5, J5

[C] SHELTER

[X] Advise Remainder of EPZ to Monitor Local Radio/TV Stations/Tone Alert Radios for Additional Information and Consider the use of KI (potassium iodide) in accordance with State plans and policy.

[E] OTHER

6. **EMERGENCY RELEASE:** [A] None [B] Is Occurring [C] Has Occurred

7. RELEASE SIGNIFICANCE: [A] Not applicable [B] Within normal operating limits [C] Above normal operating limits [D] Under Evaluation

8. EVENT PROGNOSIS: [A] Improving [B] Stable [C] Degrading

9. METEOROLOGICAL DATA: Wind Direction from 45 degrees* Wind Speed 4.5 mph*

(* May not be available for Initial Notifications) Precipitation NONE * Stability Class* [A] [B] [C] [D] [E] [F] [G]

10. [A] DECLARATION [B] TERMINATION Time _____ Date ____ / ____ / ____

11. AFFECTED UNIT(S): [1] [2] [All]

12. Unit Status: (Unaffected Unit(s) Status Not Required for Initial Notifications)

[A] U1 0 % Power Shutdown at: Time 90 mins ago Date 5 / today / 11

[B] U2 100 % Power Shutdown at: Time _____ Date ____ / ____ / ____

13. REMARKS:

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)

EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [A] Elevated [B] Mixed [C] Ground UNITS: [A] Ci [B] Ci/sec [C] µCi/sec

MAGNITUDE: Noble Gases: _____ Iodines: _____ Particulates: _____ Other: _____

FORM: [A] Airborne Start Time: _____ Date: ____ / ____ / ____ Stop Time: _____ Date ____ / ____ / ____

[B] Liquid Start Time: _____ Date: ____ / ____ / ____ Stop Time: _____ Date ____ / ____ / ____

15. PROJECTION PARAMETERS: Projection Period: _____ Hours Estimated Release Duration: _____ Hours

Projection performed: Time _____ Date ____ / ____ / ____

16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: _____ Title: _____ Time: Date: ____ / ____ / ____

NOTIFIED BY: _____

RECEIVED BY: _____ Time: _____ Date: ____ / ____ / ____

(To be completed by receiving organizaiton)

CONDITIONS

When I tell you to begin, you are to **PROVIDE AN UPDATED PROTECTIVE ACTION RECOMMENDATION (PAR).** The conditions under which this task is to be performed are:

a. Unit 1 has declared a General Emergency based on EAL# FG1;
   FG1: Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier.
b. A radioactive release is occurring from the 1A SG, which has a tube rupture and is faulted outside of Containment.
c. FRP-H.1, Loss of Heat Sink, is in progress.
d. Dose Assessment is provided that dose at site boundary will be:
   - < 1 R TEDE at site boundary and
   - < 5 R Thyroid CDE
e. The IPC function "EP WEATHER" is not available.
f. Wind direction and speed has changed.
g. The current MET Tower data is as follows:
   - Wind Direction from 045 degrees.
   - Wind Speed 4.5 mph*.
   - Precipitation none.
   - ΔT value is -0.25°F.
h. The ENN Form has been manually completed by another operator with the exception of LINE 5.
i. You are required to develop the PARS per NMP-EP-112, Attachment 1, INITIAL ACTIONS, **AND** complete the following documentation:
   - NMP-EP-112, Attachment 5, PAR Worksheet.
   - Line 5 of the Emergency Notification Form message #002.
j. This task has **TIME CRITICAL** elements.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

1. [ ] A DRILL [X] B ACTUAL EVENT — MESSAGE # 1

2. [X] A INITIAL [ ] B FOLLOW-UP NOTIFICATION: TIME 20 mins ago DATE 5 / today / 11 — AUTHENTICATION # ____

3. SITE: Farley Nuclear Plant — Confirmation Phone # (334) 814-4662

4. **EMERGENCY CLASSIFICATION:** [ ] A UNUSUAL EVENT [ ] B ALERT [ ] C SITE AREA EMERGENCY [X] D GENERAL EMERGENCY

BASED ON EAL# FG1 EAL DESCRIPTION:

Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier

5. **PROTECTIVE ACTION RECOMMENDATIONS:** [ ] A NONE

[X] B EVACUATE A, B5, C5, J5, K5

[ ] C SHELTER

[X] D Advise Remainder of EPZ to Monitor Local Radio/TV Stations/Tone Alert Radios for Additional Information and Consider the use of KI (potassium iodide) in accordance with State plans and policy.

[ ] E OTHER

6. **EMERGENCY RELEASE:** [ ] A None [X] B Is Occurring [ ] C Has Occurred

7. RELEASE SIGNIFICANCE: [ ] A Not applicable [ ] B Within normal operating limits [X] C Above normal operating limits [ ] D Under Evaluation

8. EVENT PROGNOSIS: [ ] A Improving [X] B Stable [ ] C Degrading

9. METEOROLOGICAL DATA: Wind Direction from 335 degrees* Wind Speed 3.4 mph*

(* May not be available for Initial Notifications) Precipitation NONE * Stability Class* [ ] A [ ] B [ ] C [ ] D [X] E [ ] F [ ] G

10. [X] A DECLARATION [ ] B TERMINATION Time 30 mins ago Date 5 / today / 11

11. AFFECTED UNIT(S): [X] 1 [ ] 2 [ ] All

12. Unit Status: (Unaffected Unit(s) Status Not Required for Initial Notifications)

[X] A U1 0 % Power Shutdown at: Time 60 mins ago Date 5 / today / 11

[ ] B U2 ____ % Power Shutdown at: Time ____ Date ____ / ____ / ____

13. REMARKS:

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)

EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [ ] A Elevated [ ] B Mixed [ ] C Ground UNITS: [ ] A Ci [ ] B Ci/sec [ ] C µCi/sec

MAGNITUDE: Noble Gases: ____ Iodines: ____ Particulates: ____ Other: ____

FORM: [ ] A Airborne Start Time: ____ Date: ____ / ____ / ____ Stop Time: ____ Date ____ / ____ / ____

[ ] B Liquid Start Time: ____ Date: ____ / ____ / ____ Stop Time: ____ Date ____ / ____ / ____

15. PROJECTION PARAMETERS: Projection Period: ____ Hours Estimated Release Duration: ____ Hours

Projection performed: Time ____ Date ____ / ____ / ____

16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: W. T. Door Title: Emergency Director Time: 25 mins ago Date: 5 / today / 11

NOTIFIED BY: J. T. Kelso

RECEIVED BY: ____ Time: ____ Date: ____ / ____ / ____

(To be completed by receiving organizaiton)

Attachment 5
Figure 1

PAR WORKSHEET

INSTRUCTIONS:

1. Check the box for the applicable PAR (1, 2, 3, or 4).
2. Record the 15 minute average "wind direction from" for the selected PAR.
   Use met instrumentation corresponding to primary release point(s) (BWR) OR ground level release (PWR).
3. Use the applicable "**Site Specific**" PAR table (Table 1 or 2) to determine the affected zones.

CAUTION:	PAR Revisions must include previous PARs.

On the ENN Form for the selected PAR:

- Select block 5.B and record the "Evacuate" zones OR select block 5.C and record the "Shelter" zones"
- Select block 5.D
- IF PAR 4 is selected, THEN additionally select block 5.E "Other" and provide "Affected Sectors" and "To Miles"

☐ **PAR 1**	**Wind direction from**	
	ENN Line 5 [C] Shelter Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ **PAR 2**	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ **PAR 3**	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ **PAR 4**	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations/ Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy
	ENN Line 5 [E] OTHER	Evacuate Affected Sectors _____ to _____miles

Approval: _____ / _____

Emergency Director **Date/Time**

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

1. [ ] A DRILL [X] B ACTUAL EVENT — MESSAGE # 2

2. [X] A INITIAL [ ] B FOLLOW-UP NOTIFICATION: TIME _____ DATE ____ / ____ / ____ AUTHENTICATION # _____

3. SITE: Farley Nuclear Plant — Confirmation Phone # (334) 814-4662

4. **EMERGENCY CLASSIFICATION:** [ ] A UNUSUAL EVENT [ ] B ALERT [ ] C SITE AREA EMERGENCY [X] D GENERAL EMERGENCY

BASED ON EAL# **FG1** EAL DESCRIPTION:

Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier

5. **PROTECTIVE ACTION RECOMMENDATIONS:** [X] A NONE

[ ] B EVACUATE

[ ] C SHELTER

[ ] D Advise Remainder of EPZ to Monitor Local Radio/TV Stations/Tone Alert Radios for Additional Information and Consider the use of KI (potassium iodide) in accordance with State plans and policy.

[ ] E OTHER

6. **EMERGENCY RELEASE:** [X] A None [ ] B Is Occurring [ ] C Has Occurred

7. RELEASE SIGNIFICANCE: [X] A Not applicable [ ] B Within normal operating limits [ ] C Above normal operating limits [ ] D Under Evaluation

8. EVENT PROGNOSIS: [X] A Improving [ ] B Stable [ ] C Degrading

9. METEOROLOGICAL DATA: Wind Direction from **45** degrees* Wind Speed **4.5** mph*

(* May not be available for Initial Notifications) Precipitation **NONE** * Stability Class* [ ] A [ ] B [ ] C [ ] D [X] E [ ] F [ ] G

10. [X] A DECLARATION [ ] B TERMINATION Time _____ Date ____ / ____ / ____

11. AFFECTED UNIT(S): [X] 1 [ ] 2 [ ] All

12. Unit Status: (Unaffected Unit(s) Status Not Required for Initial Notifications)

[X] A U1 0 % Power Shutdown at: Time 90 mins ago Date 5 / today / 11

[ ] B U2 100 % Power Shutdown at: Time _____ Date ____ / ____ / ____

13. REMARKS: _____

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)

EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [ ] A Elevated [ ] B Mixed [ ] C Ground UNITS: [ ] A Ci [ ] B Ci/sec [ ] C µCi/sec

MAGNITUDE: Noble Gases: _____ Iodines: _____ Particulates: _____ Other: _____

FORM: [ ] A Airborne Start Time: _____ Date: ____ / ____ / ____ Stop Time: _____ Date ____ / ____ / ____

[ ] B Liquid Start Time: _____ Date: ____ / ____ / ____ Stop Time: _____ Date ____ / ____ / ____

15. PROJECTION PARAMETERS: Projection Period: _____ Hours Estimated Release Duration: _____ Hours

Projection performed: Time _____ Date ____ / ____ / ____

16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: _____ Title: _____ Time: Date: ____ / ____ / ____

NOTIFIED BY: _____

RECEIVED BY: _____ Time: _____ Date: ____ / ____ / ____

(To be completed by receiving organizaiton)

Procedure Owner: Chris Boone / Fleet Emergency Preparedness Manager / Corporate
(Print: Name / Title / Site)

Approved By: Original signed by Christopher E. Boone on 09/24/2010
(Peer Team Champion/Procedure Owner's Signature / Date)

Effective Dates:

09/27/2010	09/27/2010	11/08/2010	09/27/2010
Corporate	FNP	HNP	VEGP

The individuals listed below are the members of the Peer Team responsible for writing and maintaining this procedure.

Corporate	J. D. Grant
Plant Farley	S. M. Odom
Plant Hatch	R. W. Ott
Plant Vogtle	L. E. Mayo

PROCEDURE USAGE REQUIREMENTS		SECTIONS
Continuous Use:	Procedure must be open and readily available at the work location. Follow procedure step by step unless otherwise directed by the procedure.	
Reference Use:	Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	**ALL**
Information Use:	Available on site for reference as needed.	

Revision Description

Version Number	Revision Description
1.0	This procedure supersedes NMP-EP-109, Protective Actions Recommendations. This procedure has been developed to facilitate the implementation of a fleet approach for the performance of initial emergency actions (e.g., classifications, notification and PARS). No technical changes have been made to the procedure. The procedure has been re-issued with a different procedure number to be consistent with the fleet approach for the performance of activities in response to an event.

TABLE OF CONTENTS

1.0 PURPOSE

This procedure provides guidelines for determining Protective Action Recommendations (PARs) which will be communicated to offsite authorities during a General Emergency. PARs are provided as an input to the protective action decision making process for the development of protective action orders. Protective action orders are communicated to the general public by offsite authorities to avoid or reduce the exposure incurred from an accident condition that results in a significant radiological effluent release or has the potential for a release based on degraded plant conditions.

2.0 APPLICABILITY

Protective actions are recommended to offsite authorities to avoid or reduce the radiological exposure that may be incurred by the public from an accident condition that results in a significant radiological effluent release or has the potential for a release based on degraded plant conditions.

This procedure is performed, as required, during drills, exercises, and declared emergencies following declaration of a General Emergency. Attachments 2, 3, and 4 are site–specific. Non-applicable site attachments may be removed and discarded to ensure usage of the correct site-specific attachment.

3.0 REFERENCES

3.1 NRC IN 83-28, Protective Actions Based on Plant Conditions

3.2 EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, October, 1991

3.3 NRC IN 91-72, "Issuance of a Revision to the EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents"

3.4 NRC IN 92-08, "Revised Protective Action Guidance for Nuclear Incidents"

3.5 NRC RIS 2003-12, "Clarification of NRC Guidance for Modifying Protective Actions"

3.6 NUREG-0654/FEMA REP 1, Supplement 3

3.7 NRC RIS 2004-13, "Consideration of Sheltering in Licensee's Range of Protective Action Recommendations", August 2, 2004

3.8 NRC RIS 2004-13, Supplement 1, "Consideration of Sheltering in Licensee's Range of Protective Action Recommendations, Dated Aug. 2004", March 10, 2005

3.9 NRC RIS 2005-08, Endorsement of NEI Guidance "Range of Protective Actions for Nuclear Power Plant Incidents", June 6, 2005

4.0 DEFINITIONS

4.1 EPA PROTECTIVE ACTION GUIDELINE (PAG) - exposure levels determined by the Environmental Protection Agency for the evacuation of the offsite public following a release of radioactive materials. These levels have been established at one (1) Rem TEDE or five (5) Rem CDE Thyroid.

4.2 PROTECTIVE ACTION RECOMMENDATIONS (PARs) – shelter, evacuation, monitor, and/or KI recommendations made by SNC to appropriate state agencies. PARs are made by SNC personnel based on the Attachment 1 Flowchart whenever a General Emergency is declared. Additionally, if in the opinion of the ED, conditions warrant the issuance of PARs, a General Emergency will be declared (SNC will not issue PARs for any accident classified below a General Emergency).

4.3 UNCONTROLLED RELEASE - is a radiological effluent release that cannot be immediately stopped via positive control action (Example: Vent stack release from a known or unknown Containment leakage pathway which is not under the control of the shift and requires time to terminate.)

4.4 CONTROLLED RELEASE - is a planned radiological effluent release that can be immediately terminated by the licensee (Example: closure of the Post LOCA CTMT vent valves that were manually opened to lower Containment pressure.).

4.5 PUFF RELEASE - A controlled release that is projected to exceed the PAGs and will be terminated in less than an hour or an uncontrolled release that was projected to exceed the PAGs and has been terminated.

4.6 TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE) - The sum of the deep dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

4.7 COMMITTED DOSE EQUIVALENT (CDE) - The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

4.8 TONE ALERT RADIO (TAR) – Radio used to provide emergency information to the public living in the 10 mile emergency planning zone around the sites.

5.0 RESPONSIBILITIES

5.1 The Emergency Director (ED) has the non-delegable responsibility for approving PARs .

5.1.1 The EOF Manager may sign approval for the ED after receiving verbal approval from the ED.

5.2 Once the TSC is operational, the TSC has responsibility for developing and communicating offsite PARs until relieved of that responsibility by the EOF.

5.3 Approved PARs may be communicated to applicable offsite authorities by the staff in either the Control Room, TSC or EOF as directed by the ED.

6.0 PRECAUTIONS AND LIMITIATIONS

6.1 Evacuation and Shelter Recommendations

6.1.1 PARs are only applicable when entering a General Emergency.

6.1.2 Evacuation is the preferred action unless conditions impose a greater risk from the evacuation than from the dose received.

6.1.3 Shelter is a preferred action when a 'Puff' type release has occurred.

6.1.4 A plant condition based PAR to shelter a 2-mile radius and 5 miles downwind may be issued when a Puff Release has occurred.

6.1.5 If onsite plant events are underway which would make evacuation dangerous (such as known hostile action) then sheltering should be considered over evacuation recommendations.

6.1.6 When prior knowledge of offsite impediments to evacuation exist (such as flooding, bridge/road closings, or other travel restrictions), then sheltering should be considered over evacuation recommendations.

6.1.7 A recommendation to evacuate or shelter a partial zone is not allowed.

6.1.8 Once an evacuation recommendation for an area has been given, it should not be reduced to a shelter recommendation.

6.2 ED Judgment

6.2.1 The ED may elect to modify PARs based on judgment, if conditions warrant.

6.2.2 The ED shall upgrade to a General Emergency if PARs are determined to be needed and not already in a General Emergency.

6.2.3 Protective action guidelines shall not imply an acceptable dose.

6.2.4 PARs are inherently conservative such that expanding the evacuation zone as an added precaution would result in a greater risk from the evacuation than from the radiological consequences of a release. It also would dilute the effectiveness of the offsite resources used to accommodate the evacuation.

6.3 Recommendations Beyond the 10 mile EPZ

6.3.1 Many assumptions exist in dose assessment calculations, involving both source term and meteorological factors, which make computer predictions over long distances less reliable. The ED should use the recommendation of the dose assessment staff when making recommendations beyond 10 miles.

6.3.2 While evaluating the need to develop PAR 4 recommendations, issuance of appropriate PAR 1, 2, or 3 recommendations should not be delayed.

6.4 Ingestion Pathway and Relocation Responsibilities

6.4.1 Protective actions taken in areas affected by plume deposition following the release are determined and controlled by offsite governmental agencies. SNC is not expected to develop offsite recommendations involving ingestion or relocation issues following plume passage.

6.4.2 SNC may be requested to provide resources to support the determination of post plume protective actions.

6.5 Continuing Assessment

6.5.1 Weather should not normally influence SNC protective action recommendations for the public except for changes in plume trajectory. The States and Counties are the most knowledgeable concerning current weather conditions and weather forecast information. The States and Counties may incorporate existing or forecast weather in their decisions regarding implementation of recommended protective actions.

6.5.2 Only the MUTUALY AGREED UPON protective action recommendations specified in Attachment 1 should be recommended unless there are obvious relevant factors (e.g., severe natural phenomena like hurricanes) that probably were not anticipated when the PARs were developed and that would make the standard PAR recommendations impractical or obviously non-conservative. In such events, the ED should use judgment as appropriate.

6.5.3 Actual field readings from Field Monitoring Teams should be compared to dose assessment results and used as a dose projection method to validate calculated PARs and to determine whether the plant or dose based protective actions are adequate.

6.5.4 When available, actual sample data from monitored or unmonitored release points should be utilized in conjunction with other dose assessment and projection methods to validate calculated PARs and to determine whether the plant based protective actions are adequate.

6.5.5 VEGP and FNP off-site dose rates may be significantly higher (up to 10 times) due to volatilization of iodine if a steam generator (SG) water level falls below the break point during a SG tube rupture

7.0 PROCESS DESCRIPTION

Guidance is provided in the form of attachments. Attachment 1, Action Checklist for Off-Site PAR Development", Attachment 2, "Farley Site Specific Data Sheets", Attachment 3, "Hatch Site Specific Data Sheets", Attachment 4 "Vogtle Site Specific Data Sheets", and Attachment 5 "PAR Worksheet" direct the initial and supplemental actions.

8.0 RECORDS

Records generated during actual emergencies will be maintained as QA records in accordance with applicable administrative procedure.

9.0 COMMITMENTS

Farley – None
Hatch - 1989301429, 1990303261, 1990303410
Vogtle – 1985304693, 1985304906, 1986309134

Attachment 1
(Page 1 of 3)

* Continuing Activity

Action Checklist for PAR Development

NOTE: ONLY THE MUTUALY AGREED UPON PROTECTIVE ACTIONS SPECIFIED BELOW SHOULD BE RECOMMENDED UNLESS THERE ARE OBVIOUS RELEVANT FACTORS (E.G., SEVERE NATURAL PHENOMENA LIKE HURICANES) THAT PROBABLY WERE NOT ANTICIPATED WHEN THE PARS WERE DEVELOPED AND THAT WOULD MAKE THE STANDARD PAR RECOMMENDATIONS IMPRACTICAL OR OBVIOUSLY NON-CONSERVATIVE. IN SUCH EVENTS, THE ED SHOULD USE JUDGMENT AS APPROPRIATE.

A. INITIAL ACTIONS — Please Check

1. * Precautions and Limitations are applicable in development of Protective Action Recommendations (PARs) in subsequent steps. Attachment 5, Figure 1, "PAR WORKSHEET", may be used to record affected zones or sectors. ☐

2. * Determine General Emergency PARs using the Attachment 1 Flowchart. ☐
   - PAR 1 – Shelter to 2 miles and 5 mile downwind zones
   - PAR 2 – Evacuate to 2 miles and 5 mile downwind zones
   - PAR 3 – Evacuate to 5 miles and 10 mile downwind zones
   - PAR 4 – Guidance for PARs Beyond the 10 Mile EPZ

CAUTION - PAR Revisions must include previous PARs

3. For PAR 1, 2, and 3, determine the affected zones using Site specific Table 1. An electronic program may also be used. ☐

NOTE: Once conditions requiring a PAR change are available, PARs should be developed as soon as possible. (The expectation for development is 15 minutes after the change in conditions.)

4. Communicate developed PARs to the ED for review and approval. ☐

NOTE: Once PARs are developed they should be communicated to appropriate agencies as soon as possible. (The expectation for communication is 15 minutes after development, as directed by position specific instructions.)

5. Communicate ED approved PARs to offsite agencies using appropriate procedural guidance. On the ENN Form ensure that the following PAR information is selected: ☐
   - Select block 5.B and record the "Evacuate" zones OR select block 5.C and record the "Shelter" zones
   - Select block 5.D
   - IF PAR 4 selected THEN additionally select block 5.E "Other" and provide "Affected Sectors" and "To Miles".

* Continuing Activity

Action Checklist for PAR Development (Cont)

B. SUPPLEMENTAL ACTIONS — Please Check

1. * Continue assessment actions applying applicable Precautions & limitations. ☐

2. * IF a release is in progress THEN it is appropriate to dispatch Field Monitoring Teams (FMT) to downwind and adjacent areas as soon as possible. FMT data should be used to validate calculated exposure rates by comparison with actual field exposure rates to ensure issued PARs remain conservative. ☐

3. * For PAR 4, determine the affected sectors using Site specific Table 2. The following considerations apply when developing PARs beyond 10 miles: ☐
   - IF a release is in progress and dose assessment calculations indicate a possible need to issue PARs beyond 10 miles, THEN it is appropriate to re-perform dose assessment calculations to verify calculation assumptions and accuracy prior to issuing PARs beyond 10 miles.
   - Use any available FMT readings, IF available, to validate accuracy of the projection model prior to issuing PARs beyond 10 miles.
   - IF dose assessment calculations indicate the need to recommend actions beyond 10 miles, THEN consult with affected State agency(s) to compare/ validate model assumptions prior to issuing PARs beyond 10 miles.

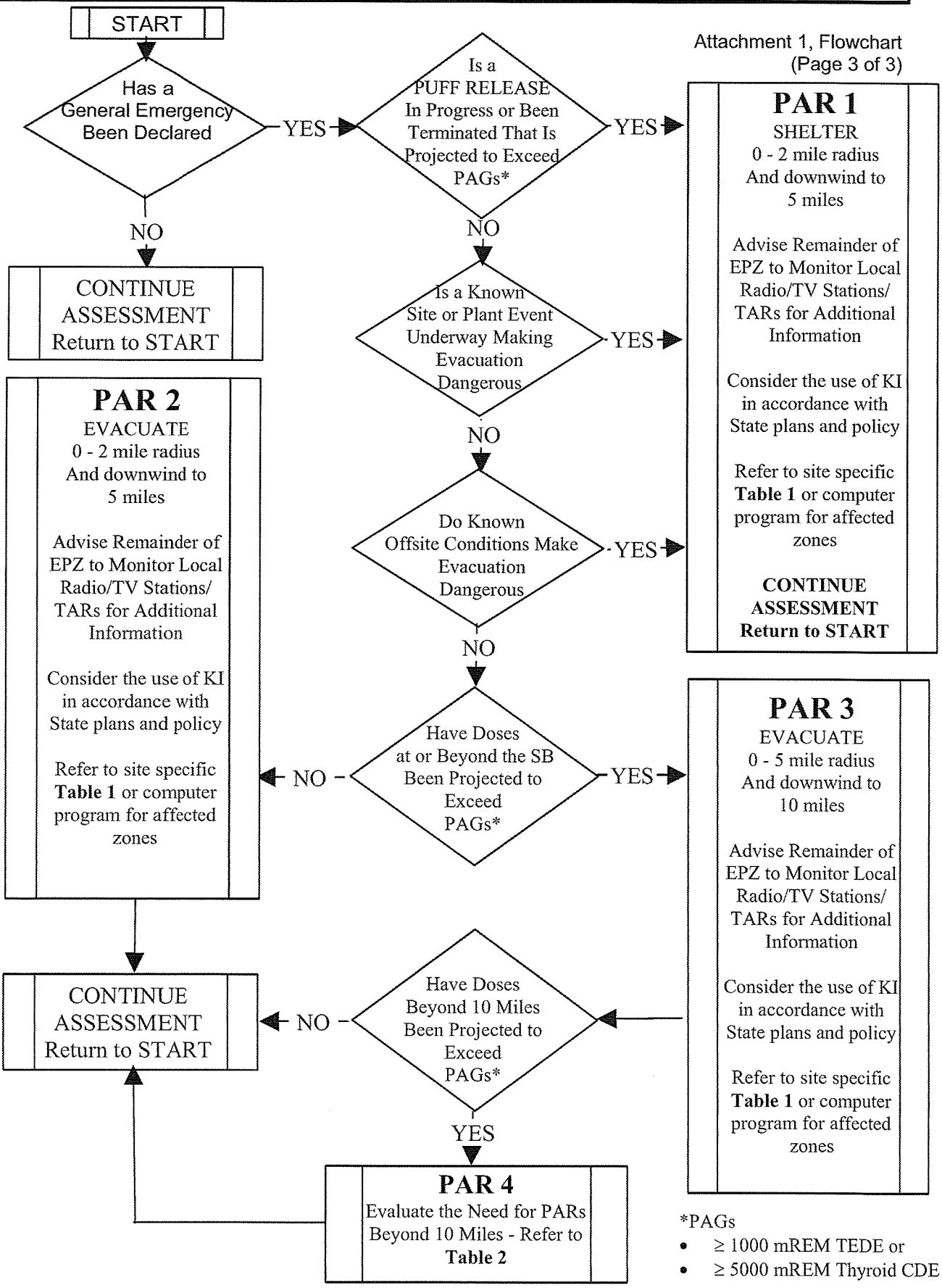
4. * IF conditions requiring PAR 1 entry are eliminated or dose projections change such that additional PARs are required THEN return to the Initial Actions section. Once conditions requiring PAR change are available, PARs should be developed as soon as possible. (The expectation for development is 15 minutes after the change in conditions.) Once PARs are developed they should be communicated to appropriate agencies as soon as possible. (The expectation for communication is 15 minutes after development, as directed by position specific instructions.) ☐

5. * Apply dose projection results in continuing assessment activities. Dose assessment results should be used to refine (but not reduce) protective action recommendations after adequate data becomes available. ☐

6. Utilize real time meteorological and effluent radiation monitor readings in continuing assessment activities. IF radiation monitor readings provide sufficient data for assessment, THEN, it is NOT appropriate to wait for field monitoring data to become available to confirm or expand a PAR within the 10-mile EPZ. ☐

7. Dose projections are NOT required to support the decision process in development of the plant condition based PARs utilizing the PAR flowchart if no release is in progress. It is expected that a dose projection will be performed as soon as practicable at a General Emergency with a release in progress to determine if PAR change is needed. ☐

Attachment 1, Flowchart
(Page 3 of 3)



*PAGs

- ≥ 1000 mREM TEDE or
- ≥ 5000 mREM Thyroid CDE

Attachment 2
Table 1

PLANT FARLEY
AFFECTED ZONES FOR PROTECTIVE ACTION RECOMMENDATIONS

	PAR 1 and 2	PAR 3
WIND DIRECTION FROM (degrees)	AFFECTED ZONES	AFFECTED ZONES
N, > 349 - 11	A, B5, C5, J5, K5	A, B5, C5, D5, E5, F5, I5, J5, K5, B10, C10, K10
NNE, >11 – 34	A, B5, C5, D5, K5	A, B5, C5, D5, E5, F5, I5, J5, K5, B10, C10, D10
NE, >34 – 56	A, B5, C5, D5	A, B5, C5, D5, E5, F5, I5, J5, K5, B10, C10, D10
ENE, >56 – 79	A, C5, D5, E5	A, B5, C5, D5, E5, F5, I5, J5, K5, C10, D10, E10
E, >79-101	A, D5, E5, F5	A, B5, C5, D5, E5, F5, I5, J5, K5, C10, D10, E10
ESE, >101 – 124	A, D5, E5, F5	A, B5, C5, D5, E5, F5, I5, J5, K5, D10, E10, F10
SE, >124-146	A, E5, F5	A, B5, C5, D5, E5, F5, I5, J5, K5, E10, F10
SSE, >146 - 169	A, E5, F5, I5	A, B5, C5, D5, E5, F5, I5, J5, K5, E10, F10, G10
S, >169 - 191	A, E5, F5, I5	A, B5, C5, D5, E5, F5, I5, J5, K5, F10, G10, H10
SSW, >191 - 214	A, F5, I5	A, B5, C5, D5, E5, F5, I5, J5, K5, F10, G10, H10, I10
SW, >214-236	A, F5, I5, J5	A, B5, C5, D5, E5, F5, I5, J5, K5, F10, G10, H10, I10, J10
WSW, >236-259	A, I5, J5	A, B5, C5, D5, E5, F5, I5, J5, K5, G10, H10, I10, J10
W, >259 – 281	A, I5, J5	A, B5, C5, D5, E5, F5, I5, J5, K5, H10, I10, J10, K10
WNW, >281 – 304	A, I5, J5, K5	A, B5, C5, D5, E5, F5, I5, J5, K5, I10, J10, K10
NW, >304 - 326	A, B5, J5, K5	A, B5, C5, D5, E5, F5, I5, J5, K5, B10, J10, K10
NNW, >326 - 349	A, B5, C5, J5, K5	A, B5, C5, D5, E5, F5, I5, J5, K5, B10, K10

Attachment 2
Table 2

PLANT FARLEY
GUIDANCE FOR PARS BEYOND THE 10 MILE EPZ

1. Calculate the Evacuation Distance by determining the maximum Projected Distance where MIDAS dose projections exceed PAGs and adding 5 miles to the projected distance.
   _____ **Projected Distance (miles) + 5 miles =** _____ **Evacuation Distance (miles)**

2. Determine the affected sectors for the current 15 minute average (From) wind direction
   _____ **Affected Sectors**

3. Recommend Evacuation from 10 miles to the Evacuation Distance (calculated in step 1) for the Affected Sectors (determined in step 2).

4. Check Line 5, Item E – Other on the Emergency Notification Form and record the recommended sectors and distance range in miles for Evacuation. (Note: Refer to 50 mile IPZ map as necessary)

PAR 4

WIND DIRECTION FROM (degrees)	AFFECTED SECTORS
N, > 349 - 11	H, J, K
NNE, >11 – 34	J, K, L
NE, >34 – 56	K, L, M
ENE, >56 – 79	L, M, N
E, >79-101	M, N, P
ESE, >101 – 124	N, P, Q
SE, >124-146	P, Q, R
SSE, >146 - 169	Q, R, A
S, >169 - 191	R, A, B
SSW, >191 - 214	A, B, C
SW, >214-236	B, C, D
WSW, >236-259	C, D, E
W, >259 – 281	D, E, F
WNW, >281 – 304	E, F, G
NW, >304 - 326	F, G, H
NNW, >326 - 349	G, H, J

Attachment 3
Table 1

PLANT HATCH
AFFECTED ZONES FOR PROTECTIVE ACTION RECOMMENDATIONS

	PAR 1 and 2	PAR 3
WIND DIRECTION FROM (degrees)	AFFECTED ZONES	AFFECTED ZONES
N, > 349 - 11	A, B5, C5	A, B5, C5, D5, E5, C10, D10, E10
NNE, >11 – 34	A, B5, C5	A, B5, C5, D5, E5, D10, E10, F10
NE, >34 – 56	A, B5, C5	A, B5, C5, D5, E5, E10, F10, G10
ENE, >56 – 79	A, C5	A, B5, C5, D5, E5, E10, F10, G10
E, >79-101	A, C5, D5	A, B5, C5, D5, E5, F10, G10, H10
ESE, >101 – 124	A, C5, D5	A, B5, C5, D5, E5, G10, H10, I10
SE, >124-146	A, C5, D5, E5	A, B5, C5, D5, E5, G10, H10, I10
SSE, >146 - 169	A, C5, D5, E5	A, B5, C5, D5, E5, H10, I10, J10
S, >169 - 191	A, D5, E5	A, B5, C5, D5, E5, I10, J10
SSW, >191 - 214	A, D5, E5	A, B5, C5, D5, E5, I10, J10
SW, >214-236	A, E5	A, B5, C5, D5, E5, J10, K10, L10
WSW, >236-259	A, B5, E5	A, B5, C5, D5, E5, J10, K10, L10
W, >259 – 281	A, B5, E5	A, B5, C5, D5, E5, B10, K10, L10
WNW, >281 – 304	A, B5, E5	A, B5, C5, D5, E5, B10, C10, D10, K10, L10
NW, >304 - 326	A, B5	A, B5, C5, D5, E5, B10, C10, D10
NNW, >326 - 349	A, B5, C5	A, B5, C5, D5, E5, B10, C10, D10, E10

Attachment 3
Table 2

PLANT HATCH
GUIDANCE FOR PARS BEYOND THE 10 MILE EPZ

1. Calculate the Evacuation Distance by determining the maximum Projected Distance where MIDAS dose projections exceed PAGs and adding 5 miles to the projected distance.
   _____ **Projected Distance (miles) + 5 miles =** _____ **Evacuation Distance (miles)**

2. Determine the affected sectors for the current 15 minute average (From) wind direction
   _____ **Affected Sectors**

3. Recommend Evacuation from 10 miles to the Evacuation Distance (calculated in step 1) for the Affected Sectors (determined in step 2).

4. Check Line 5, Item E – Other on the Emergency Notification Form and record the recommended sectors and distance range in miles for Evacuation. (Note: Refer to 50 mile IPZ map as necessary)

PAR 4

WIND DIRECTION FROM (degrees)	AFFECTED SECTORS
N, > 349 - 11	H, J, K
NNE, >11 – 34	J, K, L
NE, >34 – 56	K, L, M
ENE, >56 – 79	L, M, N
E, >79-101	M, N, P
ESE, >101 – 124	N, P, Q
SE, >124-146	P, Q, R
SSE, >146 - 169	Q, R, A
S, >169 - 191	R, A, B
SSW, >191 - 214	A, B, C
SW, >214-236	B, C, D
WSW, >236-259	C, D, E
W, >259 – 281	D, E, F
WNW, >281 – 304	E, F, G
NW, >304 - 326	F, G, H
NNW, >326 - 349	G, H, J

Attachment 4
Table 1

PLANT VOGTLE
AFFECTED ZONES FOR PROTECTIVE ACTION RECOMMENDATIONS

	PAR 1 and 2	PAR 3
WIND DIRECTION FROM (degrees)	AFFECTED ZONES	AFFECTED ZONES
N, > 349 - 11	A, B5, C5, SRS to 2 Miles	A, B5, C5,D5, E5, F5, B10, C10, D10, SRS to 5 Miles
NNE, >11 – 34	A, B5, C5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, C10, D10, SRS to 5 Miles
NE, >34 – 56	A, B5, C5, D5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, C10, D10, E10, SRS to 5 Miles
ENE, >56 – 79	A, C5, D5, E5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, D10, E10, F10,SRS to 5 Miles
E, >79-101	A, C5, D5, E5, F5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, D10, E10, F10, SRS to 5 Miles
ESE, >101 – 124	A, D5, E5, F5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, E10, F10, G10,SRS to 5 Miles
SE, >124-146	A, D5, E5, F5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, E10, F10, G10,SRS to 10 Miles
SSE, >146 - 169	A, E5, F5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, F10, G10, SRS to 10 Miles
S, >169 - 191	A, F5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, F10, G10, SRS to 10 Miles
SSW, >191 - 214	A, F5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, G10, SRS to 10 Miles
SW, >214-236	A, SRS to 5 Miles	A, B5, C5, D5, E5, F5, SRS to 10 Miles
WSW, >236-259	A, SRS to 5 Miles	A, B5, C5, D5, E5, F5, H10, SRS to 10 Miles
W, >259 – 281	A, B5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, B10, H10, SRS to 10 Miles
WNW, >281 – 304	A, B5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, B10, C10, H10, SRS to 10 Miles
NW, >304 - 326	A, B5, SRS to 5 Miles	A, B5, C5, D5, E5, F5, B10, C10, H10, SRS to 10 Miles
NNW, >326 - 349	A, B5, SRS to 2 Miles	A, B5, C5, D5, E5, F5, B10, C10, D10, SRS to 5 Miles

Attachment 4
Table 2

PLANT VOGTLE
GUIDANCE FOR PARS BEYOND THE 10 MILE EPZ

1. Calculate the Evacuation Distance by determining the maximum Projected Distance where MIDAS dose projections exceed PAGs and adding 5 miles to the projected distance.
   _____**Projected Distance (miles) + 5 miles =** _____ **Evacuation Distance (miles)**

2. Determine the affected sectors for the current 15 minute average (From) wind direction
   _____ **Affected Sectors**

3. Recommend Evacuation from 10 miles to the Evacuation Distance (calculated in step 1) for the Affected Sectors (determined in step 2).

4. Check Line 5, Item E – Other on the Emergency Notification Form and record the recommended sectors and distance range in miles for Evacuation. (Note: Refer to 50 mile IPZ map as necessary)

PAR 4

WIND DIRECTION FROM (degrees)	AFFECTED SECTORS
N, > 349 - 11	H, J, K
NNE, >11 – 34	J, K, L
NE, >34 – 56	K, L, M
ENE, >56 – 79	L, M, N
E, >79-101	M, N, P
ESE, >101 – 124	N, P, Q
SE, >124-146	P, Q, R
SSE, >146 - 169	Q, R, A
S, >169 - 191	R, A, B
SSW, >191 - 214	A, B, C
SW, >214-236	B, C, D
WSW, >236-259	C, D, E
W, >259 – 281	D, E, F
WNW, >281 – 304	E, F, G
NW, >304 - 326	F, G, H
NNW, >326 - 349	G, H, J

Attachment 5
Figure 1

PAR WORKSHEET

INSTRUCTIONS:

1. Check the box for the applicable PAR (1, 2, 3, or 4).
2. Record the 15 minute average "wind direction from" for the selected PAR.
   Use met instrumentation corresponding to primary release point(s) (BWR) OR ground level release (PWR).
3. Use the applicable "**Site Specific**" PAR table (Table 1 or 2) to determine the affected zones.

CAUTION:	PAR Revisions must include previous PARs.

On the ENN Form for the selected PAR:

- Select block 5.B and record the "Evacuate" zones OR select block 5.C and record the "Shelter" zones"
- Select block 5.D
- IF PAR 4 is selected, THEN additionally select block 5.E "Other" and provide "Affected Sectors" and "To Miles"

☐ PAR 1	**Wind direction from**	
	ENN Line 5 [C] Shelter Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ PAR 2	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ PAR 3	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations /Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy

☐ PAR 4	**Wind direction from**	
	ENN Line 5 [B] Evacuate Zones	
	ENN Line 5 [D]	Advise remainder of EPZ to Monitor Local Radio/TV Stations/ Tone Alert Radios. Consider the use of KI (Potassium Iodide) in accordance with State Plans and Policy
	ENN Line 5 [E] OTHER	Evacuate Affected Sectors _____ to _____miles

Approval: _____ _____/_____

Emergency Director **Date/Time**