

RO Job Performance Measure "A"

Facility: **Vogtle**

Task No: V-LO-TA-63005

Task Title: **Perform AFD Monitoring**

JPM No: V-NRC-JP-14915-HL17

K/A: G2.1.7 RO 4.4 SRO 4.7

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: Unit 1 has recently recovered from a load rejection. The unit is at 70% power. Annunciator ALB10-F06 is lit.

I&C has reported that the AFD monitor alarm ALB10-F06 is inoperable.

Initiating Cue: The SS directs you to perform 14915-1 Data Sheet 6 for AFD monitoring using the data supplied.

Task Standard: AFD monitoring per 14915-1 Data Sheet 6 performed correctly.

Required Materials: 14915-1, Data Sheet 6
Unit 1 Plant Technical Data Book Tab 6.0
Calculator

This JPM is a reuse from Exam 2011-301. The JPM number was V-NRC-JP-19105-004.

Time Critical Task: No

Validation Time: 15 minutes

Performance Information

Critical steps denoted with an asterisk

***Step 1 Determine upper and lower limits of AFD from PTDB-1 Tab 6.0.**

Standard: Candidate fills in date and power level 70% and records the value of the doghouse limit at 70%. Upper limit +19.5% ± 0.5% (calculated value is 19.6%) Lower limit -24% ± 0.5%.

Comment:

Step 2 Record indicated Axial Flux Difference for each operable Excore Channel.

Standard: Candidate records Delta Flux values for all channels.

Comment:

***Step 3 Verify the Axial Flux Difference is within limits of PTDB-1 Tab 6.0.**

Standard: Candidate verifies that three are within limits and initials or signs Verified block to complete the surveillance satisfactory.

Comment:

Step 4 With the indicated AFD outside of the above required limits on 2 or more channels and with THERMAL POWER greater than or equal to 50% of RATED THERMAL POWER, **reduce** THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes.

Standard: This step does not apply.

Comment:

Terminating cue: Student returns initiating cue sheet.

DATA SHEET 6 (ANSWER KEY)

DATA SHEET 6
Sheet 2 of 4

**AXIAL FLUX DIFFERENCE
WITH
AFD MONITOR ALARM INOPERABLE**

Date Today's date Power 70%

Upper Limit = +19.5% ± 0.5% (from PTDB Tab 6.0)

Lower Limit = -24% ± 0.5%

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED
<u>Current time</u>	<u>-15%</u>	<u>-22%</u>	<u>-25%</u>	<u>-15%</u>	<u>initials</u>

Verification of Completion

Job Performance Measure No: V-NRC-JP-14915-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____


Initial Conditions: Unit 1 has recently recovered from a load rejection. The unit is at 70% power. Annunciator ALB10-F06 is lit.

I&C has reported that the AFD monitor alarm ALB10-F06 is inoperable.

Initiating Cue: The SS directs you to perform 14915-1 Data Sheet 6 for AFD monitoring using the data supplied.

NI Channel	Reading
1NI-41B	70%
1N-42B	68%
1N-43B	70%
1N-44B	70%

Delta Flux Channel	
1N-41C	-15%
1N-42C	-22%
1N-43C	-25%
1N-44C	-15%

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SPECIAL CONDITIONS SURVEILLANCE LOGS

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.	ALL
Reference Use:	Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	NONE
Information Use:	Available on plant site for reference as needed.	NONE



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1.0 PURPOSE

- 1.1 To provide logs and instructions for performing surveillances required to be performed only under special conditions and, or increased frequency.
- 1.2 To provide logs and instructions for the performance of the following surveillances when Plant Computer is inoperable;
- a. Data Sheet 3, "Rod Group Alignment Limits With Rod Position Deviation Monitor Inoperable".
 - b. Data Sheet 6, "Axial Flux Difference With AFD Monitor Alarm Inoperable",
 - c. Data Sheet 11, "Power Level Monitoring".
 - d. With the plant computer inoperable, 1-FT-12835 is out of service and ODCM Table 3-1 should be referenced for required actions to be performed. (Chemistry responsibility)
 - e. Verify operability of the HFASA per 14423, "Source Range Analog Channel Operational Test."

2.0 APPLICABILITY

This procedure is applicable in all modes.

3.0 PRECAUTIONS AND LIMITATIONS

Out of tolerance data shall be circled in red and reported immediately to the Shift Supervisor (SS).

4.0 PREREQUISITES AND INITIAL CONDITIONS

The plant is in an applicable mode and a special condition as listed on Table 1 exists.

5.0 INSTRUCTIONS

Complete the data sheet(s) specified on Table 1 for the required special condition surveillance(s).

6.0 ACCEPTANCE CRITERIA

The acceptance criteria for each surveillance is verified on the applicable data sheets.

7.0 EVALUATION AND REVIEW

7.1 TEST PURPOSE

Special Condition(s):

Data Sheet(s) completed (Circle Appropriate Sheets):

1 2 3 4a 4b 5 6 7 8 9 10 11 12 13 14 15 16 17 18

7.2 Results obtained through the performance of this procedure meet the ACCEPTANCE CRITERIA of Section 6.0.


YES NO

7.3 IF no was checked, immediately **notify** the SS and **initiate** action in accordance with the actions specified on the data sheet(s) not meeting the acceptance criteria.

7.4 Comments (include any abnormal conditions and corrective actions taken):

Test Completed and SS Notified: _____

Supervisory Review: _____
Signature
Date
Time

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DATA SHEET 6

Sheet 1 of 4

AXIAL FLUX DIFFERENCE
WITH
AFD MONITOR ALARM INOPERABLE

1. **Determine** upper and lower limits of AFD from PTDB-1 Tab 6.0.
2. **Record** indicated Axial Flux Difference for each operable Excore Channel
 - a. At least once every hour.
 - b. At least once every hour until the AFD monitor alarm is updated after restoration.
3. **Verify** the Axial Flux Difference is within limits of PTDB-1 Tab 6.0.
4. With the indicated AFD outside of the above required limits on 2 or more channels and with THERMAL POWER greater than or equal to 50% of RATED THERMAL POWER, **reduce** THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes.

Approved By
S. E. Prewitt

Vogtle Electric Generating Plant



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DATA SHEET 6

Sheet 2 of 4

AXIAL FLUX DIFFERENCE WITH AFD MONITOR ALARM INOPERABLE

Date _____ Power _____%

Upper Limit = _____ (from PTDB Tab 6.0)

Lower Limit = _____

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED

Shift Supervisor Review:

_____/_____/_____
Initial Date Time

Approved By
S. E. Prewitt

Vogtle Electric Generating Plant 

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DATA SHEET 6

Sheet 4 of 4

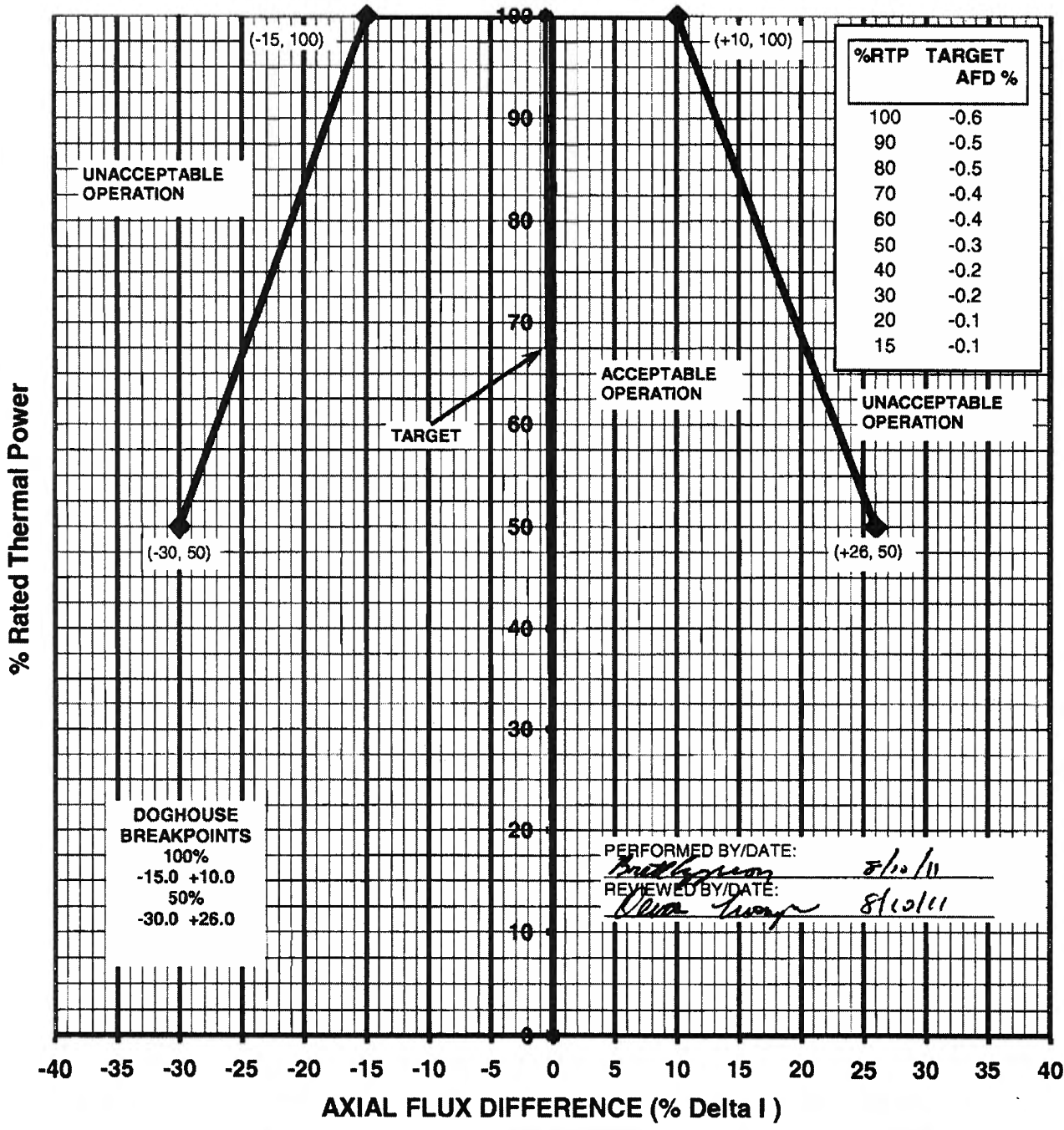
TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED

Shift Supervisor Review:

_____/_____/_____
Initial Date Time

AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF RATED THERMAL POWER

**Axial Flux Difference Limits As A Function Of Rated Thermal Power
UNIT 1 CYCLE 17**



SRO Job Performance Measure "A"

Facility: **Vogtle**

Task No: V-LO-TA-63005

Task Title: **Evaluate Inoperable AFD Monitor Alarm**

JPM No: V-NRC-JP-14915-HL17

K/A: G2.1.7 (SRO 4.7)

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Note to examiner: Hand out the Cue Sheet ONLY

Initial Conditions: Unit 1 has recently recovered from a load rejection. The unit is at 70% power. Annunciator ALB10-F06 is lit.

I&C has reported that the AFD monitor alarm ALB10-F06 is inoperable.

Initiating Cue: You are the SS. Determine the Tech Spec required actions and perform any necessary surveillances for the AFD monitor alarm inoperability using the data supplied.

Task Standard: Inoperable AFD monitor alarm ALB10-F06 is evaluated and applicable actions taken (AFD calculated and LCO evaluated).

Required Materials: 14915-1, Data Sheet 6
Unit 1 Plant Technical Data Book Tab 6.0
17010-C Annunciator Response procedure for window ALB10-F06
Tech Specs, Tech Spec Bases, COLR
Calculator

This JPM is a reuse from Exam 2011-301. The JPM number was V-NRC-JP-14915-004.

Time Critical Task: No

Validation Time: 15 minutes

Performance Information

Critical steps denoted with an asterisk

***Determine surveillance required to be performed.**

CUE: If asked: Provide the ARP 17010-C copy for window ALB10-F06.

CUE: When asked: Provide 14915-1 Data Sheet 6.

Standard: Candidate determines AFD must be determined for each OPERABLE excore channel within 1 hour using 14915-1 Data Sheet 6.

Comment:

***Step 1 Determine upper and lower limits of AFD from PTDB-Unit 1 Tab 6.0.**

Standard: Candidate fills in date and power level 70% and records the value of the doghouse limit at 70% Upper limit +19.5% ± 0.5% (calculated value is 19.6%) Lower limit -24% ± 0.5%.

Comment:

Step 2 Record indicated Axial Flux Difference for each operable Excore Channel.

Standard: Candidate records Delta Flux values for all channels.

Comment:

***Step 3 Verify the Axial Flux Difference is within limits of PTDB-Unit 1 Tab 6.0.**

Standard: Candidate verifies that two are not within limits and does NOT initial or sign the Verified block to complete the surveillance signifying it is unsatisfactory. Initial or signature with a note that the results are unsat would also be acceptable.

Comment:

***Step 4 Determine required action.**

With the indicated AFD outside of the above required limits on 2 or more channels and with THERMAL POWER greater than or equal to 50% of RATED THERMAL POWER, **reduce** THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes.

Standard: Candidate should report the above action must be done.

Comment:

Terminating cue: Student returns initiating cue sheet.

DATA SHEET 6 (ANSWER KEY)

DATA SHEET 6
Sheet 2 of 4

**AXIAL FLUX DIFFERENCE
WITH
AFD MONITOR ALARM INOPERABLE**

Date Today's date Power 70%

Upper Limit = +19.5% ± 0.5% (from PTDB Tab 6.0)

Lower Limit = -24% ± 0.5%

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED
Current time	<u>-25%</u>	<u>-20%</u>	<u>-22%</u>	<u>-25%</u>	<u>Note 1</u>

Note 1 AFD unsat

Verification of Completion

Job Performance Measure No: V-NRC-JP-14915-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____


Initial Conditions: Unit 1 has recently recovered from a load rejection. The unit is at 70% power. Annunciator ALB10-F06 is lit.

I&C has reported that the AFD monitor alarm ALB10-F06 is inoperable.

Initiating Cue: You are the SS. Determine the Tech Spec required actions and perform any necessary surveillances for the AFD monitor alarm inoperability using the data supplied.

NI Channel	Reading
N41	70%
N42	68%
N43	70%
N44	70%

Delta Flux Channel	
N41C	-25%
N42C	-20%
N43C	-22%
N44C	-25%

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WINDOW F06

ORIGIN

YC-1140

SETPOINT

Plant Technical
Data Book, Tab 6

DELTA FLUX
DEVIATION

1.0

PROBABLE CAUSE

1. Xenon transient
2. Control rod motion
3. Thermal power transient
4. Loss of Power Range Detector voltage.
5. IPC Failure

2.0

AUTOMATIC ACTIONS

NONE


3.0

INITIAL OPERATOR ACTIONS

NOTE

The Delta Flux Deviation Program satisfies the requirement for "Verify AFD within limits for each OPERABLE excore channel" in Technical Specifications SR 3.2.3.1.

NONE

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WINDOW F06
(Continued)

4.0 SUBSEQUENT OPERATOR ACTIONS

NOTE

This annunciator comes in immediately upon exceeding the limits for acceptable operation.


1. With Reactor Power greater than 50% **check** differential flux indications and if two or more are outside the limits, perform the following:
 - a. **Restore** the indicated AFD to within the limits, or
 - b. **Reduce** Thermal Power to less than 50% of Rated Thermal Power within 30 minutes.
2. Thermal Power shall not be increased above 50% of Rated Thermal Power until the indicated AFD is within the limits specified by the COLR.
3. IF loss of Power Range Detector voltage is determined, **Go To** 18002-C, "Nuclear Instrumentation System Malfunction".
4. **Refer To** Technical Specification LCO 3.2.3.
5. IF alarm is inoperable, begin recording differential flux in accordance with 14915-1, "Special Condition Surveillance Logs" (Technical Specifications SR 3.2.3.1).
6. **Refer To** Plant Computer alarm summary display for additional information relating to this alarm.

5.0 COMPENSATORY OPERATOR ACTIONS

Initiate Data Sheet 6 of 14915-1, "Special Condition Surveillance Logs"

END OF SUB-PROCEDURE

REFERENCES: Technical Specification Section LCO 3.2.3

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SPECIAL CONDITIONS SURVEILLANCE LOGS

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.	ALL
Reference Use:	Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	NONE
Information Use:	Available on plant site for reference as needed.	NONE



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1.0 **PURPOSE**

- 1.1 To provide logs and instructions for performing surveillances required to be performed only under special conditions and, or increased frequency.
- 1.2 To provide logs and instructions for the performance of the following surveillances when Plant Computer is inoperable;
- a. Data Sheet 3, "Rod Group Alignment Limits With Rod Position Deviation Monitor Inoperable".
 - b. Data Sheet 6, "Axial Flux Difference With AFD Monitor Alarm Inoperable",
 - c. Data Sheet 11, "Power Level Monitoring".
 - d. With the plant computer inoperable, 1-FT-12835 is out of service and ODCM Table 3-1 should be referenced for required actions to be performed. (Chemistry responsibility)
 - e. Verify operability of the HFASA per 14423, "Source Range Analog Channel Operational Test."

2.0 **APPLICABILITY**

This procedure is applicable in all modes.

3.0 **PRECAUTIONS AND LIMITATIONS**

Out of tolerance data shall be circled in red and reported immediately to the Shift Supervisor (SS).

4.0 **PREREQUISITES AND INITIAL CONDITIONS**

The plant is in an applicable mode and a special condition as listed on Table 1 exists.

5.0 **INSTRUCTIONS**

Complete the data sheet(s) specified on Table 1 for the required special condition surveillance(s).

6.0 **ACCEPTANCE CRITERIA**

The acceptance criteria for each surveillance is verified on the applicable data sheets.

Approved By
S. E. Prewitt

Vogle Electric Generating Plant



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Date Approved
3/25/2010

SPECIAL CONDITIONS SURVEILLANCE LOGS

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7.0 EVALUATION AND REVIEW

7.1 TEST PURPOSE

Special Condition(s):

Data Sheet(s) completed (Circle Appropriate Sheets):

1 2 3 4a 4b 5 6 7 8 9 10 11 12 13 14 15 16 17 18

7.2 Results obtained through the performance of this procedure meet the ACCEPTANCE CRITERIA of Section 6.0.


YES NO

7.3 IF no was checked, immediately **notify** the SS and **initiate** action in accordance with the actions specified on the data sheet(s) not meeting the acceptance criteria.

7.4 Comments (include any abnormal conditions and corrective actions taken):

Test Completed and SS Notified: _____

Supervisory Review: _____
Signature Date Time

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DATA SHEET 6

Sheet 1 of 4

AXIAL FLUX DIFFERENCE
WITH
AFD MONITOR ALARM INOPERABLE

1. **Determine** upper and lower limits of AFD from PTDB-1 Tab 6.0.
2. **Record** indicated Axial Flux Difference for each operable Excore Channel
 - a. At least once every hour.
 - b. At least once every hour until the AFD monitor alarm is updated after restoration.
3. **Verify** the Axial Flux Difference is within limits of PTDB-1 Tab 6.0.
4. With the indicated AFD outside of the above required limits on 2 or more channels and with THERMAL POWER greater than or equal to 50% of RATED THERMAL POWER, **reduce** THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes.

Approved By
S. E. Prewitt

Vogtle Electric Generating Plant 

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Date Approved
3/25/2010

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DATA SHEET 6

Sheet 2 of 4

**AXIAL FLUX DIFFERENCE
WITH
AFD MONITOR ALARM INOPERABLE**

Date _____ Power _____%

Upper Limit = _____ (from PTDB Tab 6.0)

Lower Limit = _____

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED

Shift Supervisor Review:

_____/_____/_____
Initial Date Time

DATA SHEET 6

Sheet 3 of 4

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED

Shift Supervisor Review: _____ / _____ / _____
Initial Date Time

Approved By
S. E. Prewitt

Vogtle Electric Generating Plant



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DATA SHEET 6

Sheet 4 of 4

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C	VERIFIED

Shift Supervisor Review:

_____/_____/_____
Initial Date Time

Approved By

Vogtle Electric Generating Plant



TAB NO. 6.0

Rev 315

Date Approved

8/10/2011

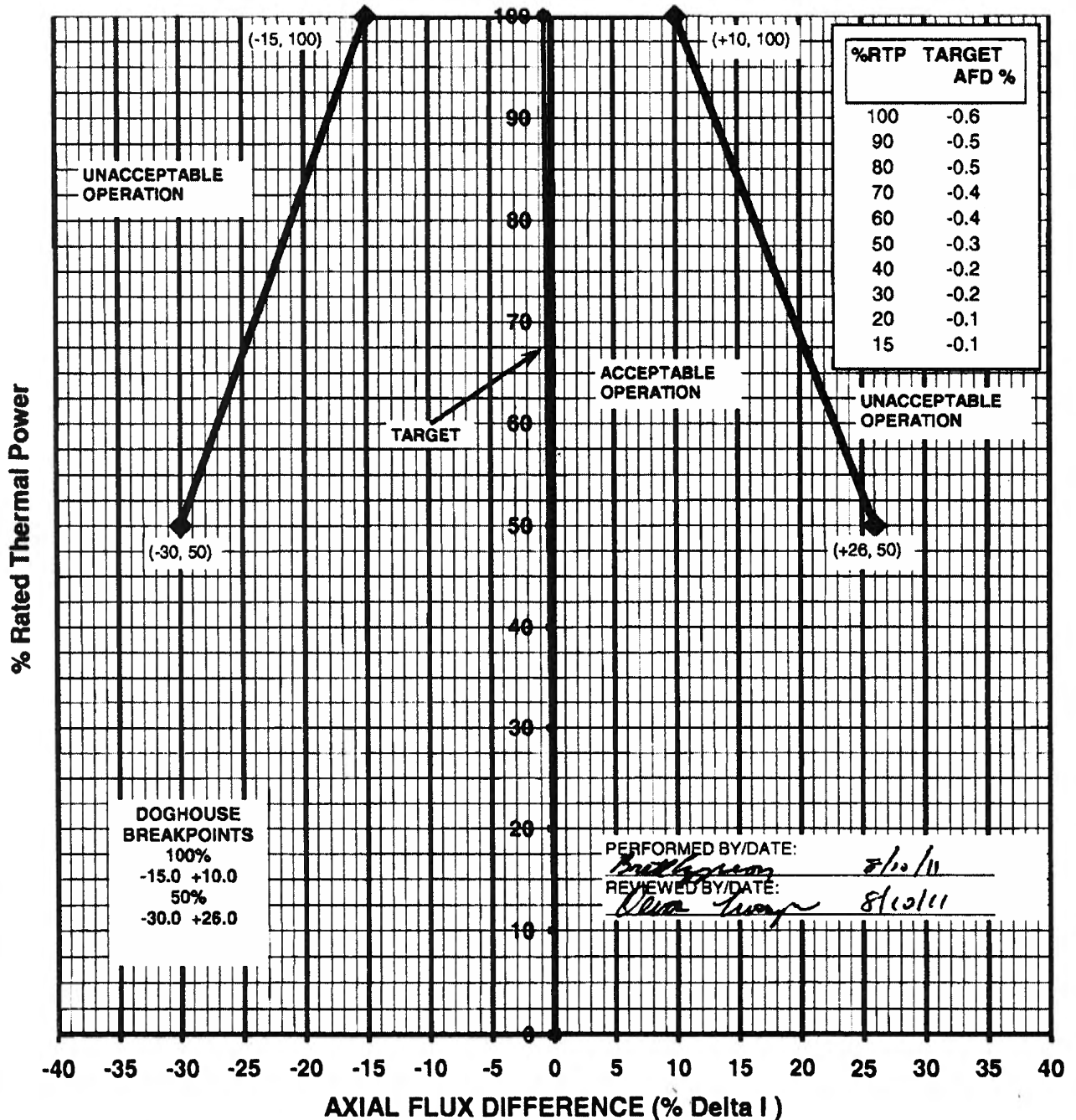
Plant Technical Data Book

Unit 1

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AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF RATED THERMAL POWER

Axial Flux Difference Limits As A Function Of Rated Thermal Power
UNIT 1 CYCLE 17

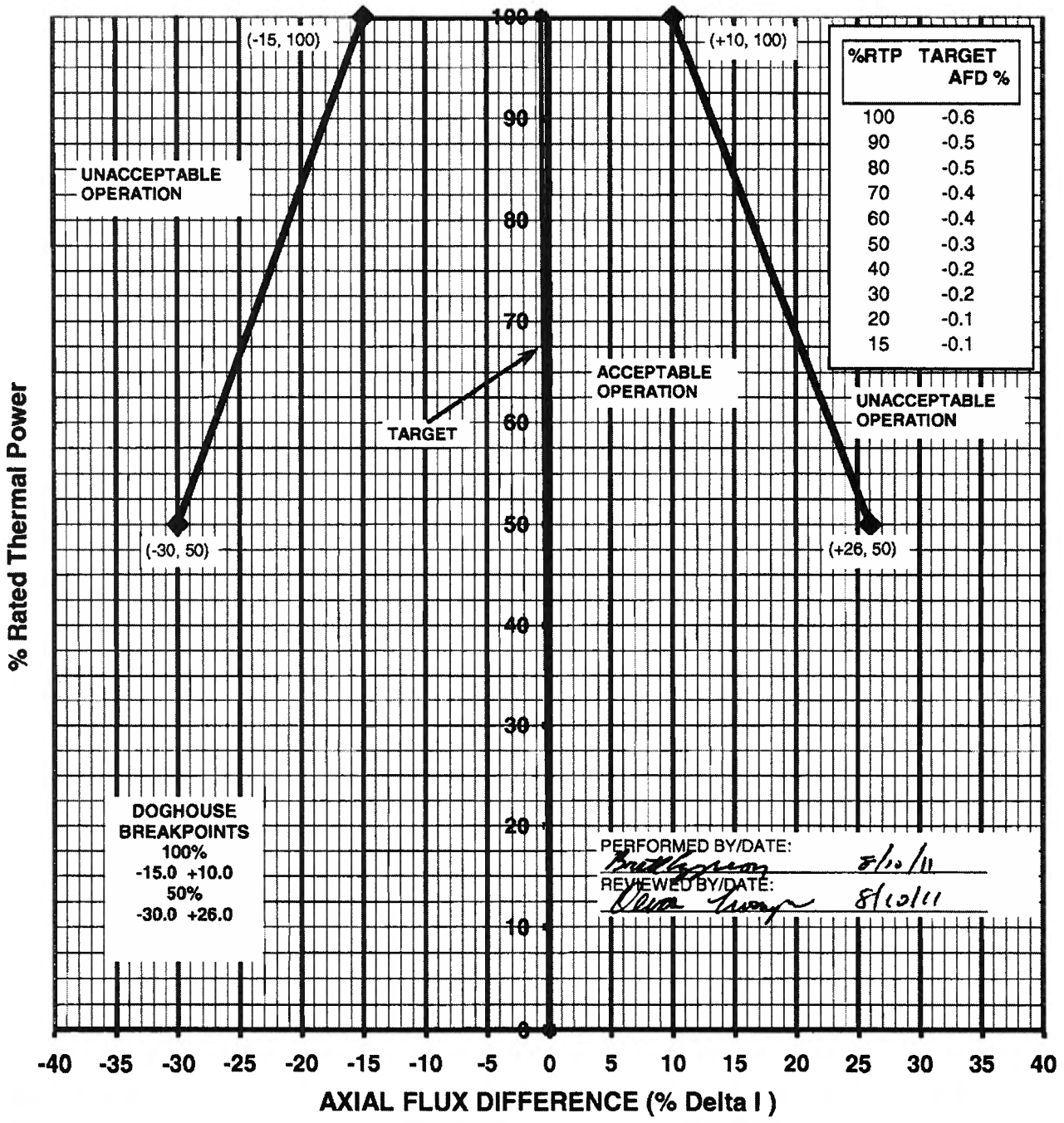


Approved By: *[Signature]*
 Date Approved: *8/10/2011*



AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF RATED THERMAL POWER

Axial Flux Difference Limits As A Function Of Rated Thermal Power
 UNIT 1 CYCLE 17



RO Admin Job Performance Measure "B"

Facility: **Vogle**

Task No: V-LO-TA-27003

Task Title: K_{eff} Determination for Shutdown Banks withdrawn

JPM No: V-NRC-JP-14005-HL17

K/A Reference: G2.1.25 RO 3.9 SRO 4.2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: The crew is performing a reactor startup following a trip from 100% power, steady state conditions.

Initiating Cue: Using the data below, the SS has directed you to "Determine K_{eff} for withdrawal of the Shutdown Banks using 14005-1".

Reactor Trip occurred 35 hours ago:

Current Plant Conditions

Boron Concentration 1400 ppm

Tavg 557°F

All rods are inserted

ECP Boron Concentration 1400 ppm

ECC Control Rod Position 120 steps CBD

The following values are from Rx Engineering

Cycle Burnup 1250 MWD/MTU

Axial Offset Reactivity Correction 0 pcm

Boron-free Xenon plus Samarium Worth 2350 pcm

Task Standard: K_{EFF} calculated with the shutdown banks withdrawn..

Required Materials: 1. 14005-1, "Shutdown Margin And K_{EFF} Calculations"
Ver 27.0

2. PTDB Tab 1.0 for Cycle 17

General References: None

Time Critical Task: No

Validation Time: 15 minutes

Performance Information

Critical steps denoted with an asterisk

14005-1 Data Sheet 3 selected.

Standard: Candidate selects Data Sheet 3.

Comment:

Sheet 1 of Data Sheet 3 completed.

Standard: Candidate completes Sheet 1 as indicated on KEY from plant conditions given.

Comment:

*** Sheet 2 of Data Sheet 3 completed.**

Standard: Candidate completes Sheet 2 using the PTDB as indicated on KEY.

Step J.1 obtained from Table 1.5.4-T1 BOL value.

Step J.2 obtained from Table 1.5.1-T2 at CBD =120.

Step J.3 obtained from plant conditions.

Step J.4 completed from J.1, J.2, J.3 and math performed.

Step J.5 completed from J.4 and math performed.

Comment:

Terminating cue: Candidate returns cue sheet and completed Data sheet 3.

KEY
DATA SHEET 3

Sheet 1 of 2

KEFF WITH SHUTDOWN BANKS WITHDRAWN

G. CONDITIONS PRIOR TO ENTERING MODE 3 (SUBCRITICALITY)

G.1 Mode 3 declared Date Current date minus 35 hours Time current time minus 35 hours

G.2 Cycle Burnup 1250 MWD/MTU
(from Reactor Engineering)

G.3 Power Level 100 %

H. CURRENT/PROJECTED CONDITIONS (circle one)

H.1 Date N/A Time N/A
(If this Keff is being calculated for projected conditions, then enter the projected time.)

H.2 Core Average Temperature 557 ±1 °F

H.3 Length of Shutdown 35 hours

H.4 Estimated Critical Boron Concentration (ECC) at (H.3) hours after Mode 3 entry
1400 ppm

H.5 Estimated Critical Position (ECP) at (H.3) hours after Mode 3 entry
CBC 228 CBD 120

**KEY
DATA SHEET 3**

J. KEFF CALCULATION

NOTE

For all calculations, record the ABSOLUTE VALUES of the reactivity values obtained from the PTDB.

- J.1 "Cumulative Control Rod Worth" for D+C+B+A Configuration at HZP and Burnup (G.2) (PTDB TAB 1.5.4-T1) + 3039 pcm
- J.2 Integral "Rod Worth" BOL, MOL or EOL at ECP (H.5) and Burnup (G.2) [If the Length of Shutdown (H.3) is less than 4 hours OR **greater than 12 hours, then USE HZP, HFP-Eq-Xe PTDB TAB 1.5.1-T2, T5, or T8.** If the Length of Shutdown (H.3) is between 4 and 12 hours, then USE HZP, HZP-Peak-Xe PTDB TAB 1.5.1-T3, T6, or T9.] + 366 pcm
- J.3 Axial Offset Reactivity Correction (From Reactor Engineering) + 0 pcm
- J.4 Shutdown Reactivity:
(J.1) - (J.2) - (J.3) =
3039 - 366 - 0 = (+) 2673 pcm
- J.5 Keff: $1.0000 / [1.0000 + ((J.4)/100,000)] =$
 $1.0000 / [1.0000 + (2673 / 100,000)] =$ + 0.974

ACCEPTANCE CRITERIA

Keff (J.5) shall be less than +0.99.

YES NO

Completed By:

SIGNATURE

CURRENT
DATE/TIME

Signature

Date/Time

Verified By:

Signature

Date/Time

Verification of Completion

Job Performance Measure No. V-NRC-JP-14005-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Initial Conditions: The crew is performing a reactor startup following a trip from 100% power, steady state conditions.

Initiating Cue: Using the data below, the SS has directed you to “Determine K_{eff} for withdrawal of the Shutdown Banks using 14005-1”.

Reactor Trip occurred 35 hours ago.

Current Plant conditions:

Boron Concentration	1400 ppm
Tavg	557°F
Current Rod Height	All rods are inserted
ECP Boron Concentration	1400 ppm
ECC Control Rod Position	120 steps CBD

The following values are from Rx Engineering:

Cycle Burnup	1250 MWD/MTU
Axial Offset Reactivity Correction	0 pcm
Boron-free Xenon plus Samarium Worth	2350 pcm

SRO Admin Job Performance Measure "B"

Facility: **Vogtle**

Task No: V-LO-TA-27003

Task Title: K_{eff} Determination for Shutdown Banks withdrawn

JPM No: V-NRC-JP-14005-HL17

K/A Reference: G2.1.25 RO 3.9 SRO 4.2

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: The crew is performing a reactor startup following a trip from 100% power, steady state conditions.

Initiating Cue: Using the data below, the SS has directed you to "Determine K_{eff} for withdrawal of the Shutdown Banks using 14005-1".

Reactor Trip occurred 35 hours ago:

Current Plant Conditions

Boron Concentration 1400 ppm

Tavg 557°F

All rods are inserted

ECP Boron Concentration 1400 ppm

ECC Control Rod Position 120 steps CBD

The following values are from Rx Engineering

Cycle Burnup 1250 MWD/MTU

Axial Offset Reactivity Correction 0 pcm

Boron-free Xenon plus Samarium Worth 2350 pcm

Task Standard: K_{EFF} calculated with the shutdown banks withdrawn..

Required Materials: 1. 14005-1, "Shutdown Margin And K_{EFF} Calculations"
Ver 27.0

2. PTDB Tab 1.0 for Cycle 17

General References: None

Time Critical Task: No

Validation Time: 15 minutes

Performance Information

Critical steps denoted with an asterisk

14005-1 Data Sheet 3 selected.

Standard: Candidate selects Data Sheet 3.

Comment:

Sheet 1 of Data Sheet 3 completed.

Standard: Candidate completes Sheet 1 as indicated on KEY from plant conditions given.

Comment:

*** Sheet 2 of Data Sheet 3 completed.**

Standard: Candidate completes Sheet 2 using the PTDB as indicated on KEY.

Step J.1 obtained from Table 1.5.4-T1 BOL value.

Step J.2 obtained from Table 1.5.1-T2 at CBD =120.

Step J.3 obtained from plant conditions.

Step J.4 completed from J.1, J.2, J.3 and math performed.

Step J.5 completed from J.4 and math performed.

Comment:

Terminating cue: Candidate returns cue sheet and completed Data sheet 3.

KEY
DATA SHEET 3

Sheet 1 of 2

KEFF WITH SHUTDOWN BANKS WITHDRAWN

G. CONDITIONS PRIOR TO ENTERING MODE 3 (SUBCRITICALITY)

G.1 Mode 3 declared Date Current date minus 35 hours Time current time minus 35 hours

G.2 Cycle Burnup 1250 MWD/MTU
(from Reactor Engineering)

G.3 Power Level 100 %

H. CURRENT/PROJECTED CONDITIONS (circle one)

H.1 Date N/A Time N/A
(If this Keff is being calculated for projected conditions, then enter the projected time.)

H.2 Core Average Temperature 557 ±1 °F

H.3 Length of Shutdown 35 hours

H.4 Estimated Critical Boron Concentration (ECC) at (H.3) hours after Mode 3 entry
1400 ppm

H.5 Estimated Critical Position (ECP) at (H.3) hours after Mode 3 entry
CBC 228 CBD 120

**KEY
DATA SHEET 3**

Sheet 2 of 2

J. KEFF CALCULATION

NOTE

For all calculations, record the ABSOLUTE VALUES of the reactivity values obtained from the PTDB.

- J.1 "Cumulative Control Rod Worth" for D+C+B+A Configuration at HZP and Burnup (G.2) (PTDB TAB 1.5.4-T1) + 3039 pcm
- J.2 Integral "Rod Worth" BOL, MOL or EOL at ECP (H.5) and Burnup (G.2) [If the Length of Shutdown (H.3) is less than 4 hours OR **greater than 12 hours, then USE HZP, HFP-Eq-Xe PTDB TAB 1.5.1-T2, T5, or T8.** If the Length of Shutdown (H.3) is between 4 and 12 hours, then USE HZP, HZP-Peak-Xe PTDB TAB 1.5.1-T3, T6, or T9.] + 366 pcm
- J.3 Axial Offset Reactivity Correction (From Reactor Engineering) + 0 pcm
- J.4 Shutdown Reactivity:
(J.1) - (J.2) - (J.3) =
3039 - 366 - 0 = (-) 2673 pcm
- J.5 Keff: $1.0000 / [1.0000 + ((J.4)/100,000)] =$
 $1.0000 / [1.0000 + (2673 / 100,000)] =$ + 0.974

ACCEPTANCE CRITERIA

Keff (J.5) shall be less than +0.99.

YES NO

Completed By:

SIGNATURE

CURRENT
DATE/TIME

Signature

Date/Time

Verified By:

Signature

Date/Time

Verification of Completion

Job Performance Measure No. V-NRC-JP-14005-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Initial Conditions: The crew is performing a reactor startup following a trip from 100% power, steady state conditions.

Initiating Cue: Using the data below, the SS has directed you to “Determine K_{eff} for withdrawal of the Shutdown Banks using 14005-1”.

Reactor Trip occurred 35 hours ago.

Current Plant conditions:

Boron Concentration	1400 ppm
Tavg	557°F
Current Rod Height	All rods are inserted
ECP Boron Concentration	1400 ppm
ECC Control Rod Position	120 steps CBD

The following values are from Rx Engineering:

Cycle Burnup	1250 MWD/MTU
Axial Offset Reactivity Correction	0 pcm
Boron-free Xenon plus Samarium Worth	2350 pcm

RO Admin Job Performance Measure "C"

Facility: **Vogle**

Task No: V-LO-TA-63004

Task Title: Determine Tagging Requirements

JPM No: V-NRC-JP-NMP-AD-003-HL17

K/A Reference: G2.2.13 RO 4.1 SRO 4.3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: Unit 1 is at 100% Power. A planned outage for Containment Spray Pump (CSP) Train "A" is required to replace the pump seals.

All electrical components and associated handswitches requiring Tagout for the CSP "A" work will be tagged under another referenced Tagout.

All pump motor cooling water required for Tagout for the CSP "A" work will be tagged under another referenced Tagout.

Initiating Cue: Determine the appropriate boundary points and required positions of components to isolate the fluid boundary and drain CSP "A", 1-1206-P6-001.

Task Standard: Boundary points for isolation and drains for CSP "A" are determined.

Required Materials: Provide following references to candidate
NMP-AD-003, "Equipment Clearance and Tagging" Ver. 14.0
NMP-AD-003-002 "Tagout Standards" Ver. 7.0
P&ID 1X4DB131 Ver. 35.0
Provide to candidate if requested.
1X4DR003 Ver. 1.0 Fill and Vent Diagram For Containment
Spray System

General References: none

Time Critical Task: No

Validation Time: 30 minutes

Performance Information

Critical steps denoted with an asterisk

References NMP-AD-003, NMP-AD-003-002, and P&ID 1X4DB131.

Standard: Candidate uses references.

Comment:

Determines the following components and positions are required to isolate and drain fluid boundary for CSP A.

Standard:

- Candidate correctly identifies the listed points to tag out CSP as listed below.
- **The ones in BOLD are the critical points.**
- The description should describe valve function.
- The description listed is expected description.
- The lineup description is listed in parentheses.
- The additional drains may be added but are not required.

Component Number	Description	Required Position
1-HV-9001A	CSP A Pump Discharge Isolation Valve (CNMT SPRAY ISO)	CLOSED
1-HV-9017A	CSP A RWST Suction Isolation Valve (CNMT SPRAY PUMP A RWST SUCT ISO VLV)	CLOSED
1-HV-9003A	CSP A CNMT Sump Suction Isolation Valve (CNMT SPRAY PUMP A CNMT SUMP SUCT ORC)	CLOSED
1-1206-U4-115	1HV-9003A Bypass Line Isolation Valve (CNMT SPRAY PUMP TRAIN A SUMP SUPPLY HV 9003A BYP)	CLOSED
1-1206-U4-006	CSP A RWST Test line Isolation Valve (CNMT SPRAY PUMP TRAIN A TEST FLOWPATH ISOLATION)	CLOSED Or Locked Closed
1-1206-U4-034	CSP A Discharge to Eductor Isolation Valve (CNMT SPRAY SPRAY ADD TK DISCH ISO TO EDUCTOR 1)	CLOSED Or Locked Closed
1-1206-U4-109	CSP A Pump Casing Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE CASING DRAIN)	OPEN
1-1206-U4-112	CSP A Pump Casing Drain Valve (CNMT SPRAY PUMP TRAIN A SUCTION CASING DRAIN)	OPEN
1-1206-U4-108	CSP A Pump Casing Vent Valve (CNMT SPRAY PUMP TRAIN A CASE VENT)	UNFLANGE/OPEN or UNCAP/OPEN
1-1206-X4-108	CSP A Header Vent Valve (CNMT SPRAYTY HEADER TRAIN A VENT)	UNCAP/OPEN
1-1206-U4-002	CSP A Suction Drain Valve (CNMT SPRAY PUMP TRAIN A SUCTION FLOOR DRAIN ISO)	OPEN
1-1206-X4-005	CSP A RWST Supply Drain Valve (CNMT SPRAY PUMP TRAIN A RWST SUPPLY DRN TO FLOOR)	UNCAP/OPEN
1-1206-X4-009	CSP A Suction Vent Valve (CNMT SPRAY PUMP TRAIN A SUCTION PRESS TEST ROOT)	OPEN

1-1206-X4-026	CSP A Discharge Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE LINE DRAIN)	UNCAP/OPEN
1-1206-X4-013	CSP A Discharge to Eductor Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE TO EDUCTOR DRN)	UNCAP/OPEN
1-1206-X4-035	CSP A Header Drain Valve (CNMT SPRAY HEADER TRAIN A DRAIN)	UNCAP/OPEN
1-1206-U4-011	CSP A Discharge Flush Conn Isolation (CNMT SPRAY PUMP TRAIN A DISCH FLUSH CONN ISO)	UNFLANGE/OPEN or CLOSED

Comment:

Terminating cue: Candidate informs SS of completion of the identified points to Tagout Containment Spray Pump A or returns the cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-NMP-AD-003-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

SRO Admin Job Performance Measure "C"

Facility: **Vogle**

Task No: V-LO-TA-63004

Task Title: Determine Tagging Requirements

JPM No: V-NRC-JP-NMP-AD-003-HL17

K/A Reference: G2.2.13 RO 4.1 SRO 4.3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Note to Examiner: There is a second cue sheet on Page 7.

Read to the examinee:

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

Initial Conditions: Unit 1 is at 100% Power. A planned outage for Containment Spray Pump (CSP) Train "A" is required to replace the pump seals.

All electrical components and associated handswitches requiring Tagout for the CSP "A" work will be tagged under another referenced Tagout.

All pump motor cooling water required for Tagout for the CSP "A" work will be tagged under another referenced Tagout.

Initiating Cue: Determine the appropriate boundary points and required positions of components to isolate the fluid boundary and drain CSP "A", 1-1206-P6-001.

Task Standard: Boundary points for isolation and drains for CSP "A" are determined. LCO, required actions, and completion times are determined.

Required Materials: Provide following references to candidate

NMP-AD-003, "Equipment Clearance and Tagging" Ver. 14.0

NMP-AD-003-002 "Tagout Standards" Ver. 7.0

P&ID 1X4DB131 Ver. 35.0

Tech Specs

Provide to candidate if requested.

1X4DR003 Ver. 1.0 Fill and Vent Diagram For Containment Spray System

General References: none

Time Critical Task: No

Validation Time: 30 minutes

Performance Information

Critical steps denoted with an asterisk

References NMP-AD-003, NMP-AD-003-002, and P&ID 1X4DB131.

Standard: Candidate uses references.

Comment:

Determines the following components and positions are required to isolate and drain fluid boundary for CSP A.

Standard:

- Candidate correctly identifies the listed points to tag out CSP as listed below.
- **The ones in BOLD are the critical points.**
- The description should describe valve function.
- The description listed is expected description.
- The lineup description is listed in parentheses.
- The additional drains may be added but are not required.

Component Number	Description	Required Position
1-HV-9001A	CSP A Pump Discharge Isolation Valve (CNMT SPRAY ISO)	CLOSED
1-HV-9017A	CSP A RWST Suction Isolation Valve (CNMT SPRAY PUMP A RWST SUCT ISO VLV)	CLOSED
1-HV-9003A	CSP A CNMT Sump Suction Isolation Valve (CNMT SPRAY PUMP A CNMT SUMP SUCT ORC)	CLOSED
1-1206-U4-115	1HV-9003A Bypass Line Isolation Valve (CNMT SPRAY PUMP TRAIN A SUMP SUPPLY HV 9003A BYP)	CLOSED
1-1206-U4-006	CSP A RWST Test line Isolation Valve (CNMT SPRAY PUMP TRAIN A TEST FLOWPATH ISOLATION)	CLOSED Or Locked Closed
1-1206-U4-034	CSP A Discharge to Eductor Isolation Valve (CNMT SPRAY SPRAY ADD TK DISCH ISO TO EDUCTOR 1)	CLOSED Or Locked Closed
1-1206-U4-109	CSP A Pump Casing Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE CASING DRAIN)	OPEN
1-1206-U4-112	CSP A Pump Casing Drain Valve (CNMT SPRAY PUMP TRAIN A SUCTION CASING DRAIN)	OPEN
1-1206-U4-108	CSP A Pump Casing Vent Valve (CNMT SPRAY PUMP TRAIN A CASE VENT)	UNFLANGE/OPEN or UNCAP/OPEN
1-1206-X4-108	CSP A Header Vent Valve (CNMT SPRAY HEADER TRAIN A VENT)	UNCAP/OPEN
1-1206-U4-002	CSP A Suction Drain Valve (CNMT SPRAY PUMP TRAIN A SUCTION FLOOR DRAIN ISO)	OPEN
1-1206-X4-005	CSP A RWST Supply Drain Valve (CNMT SPRAY PUMP TRAIN A RWST SUPPLY DRN TO FLOOR)	UNCAP/OPEN
1-1206-X4-009	CSP A Suction Vent Valve (CNMT SPRAY PUMP TRAIN A SUCTION PRESS TEST ROOT)	OPEN

1-1206-X4-026	CSP A Discharge Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE LINE DRAIN)	UNCAP/OPEN
1-1206-X4-013	CSP A Discharge to Eductor Drain Valve (CNMT SPRAY PUMP TRAIN A DISCHARGE TO EDUCTOR DRN)	UNCAP/OPEN
1-1206-X4-035	CSP A Header Drain Valve (CNMT SPRAY HEADER TRAIN A DRAIN)	UNCAP/OPEN
1-1206-U4-011	CSP A Discharge Flush Conn Isolation (CNMT SPRAY PUMP TRAIN A DISCH FLUSH CONN ISO)	UNFLANGE/OPEN or CLOSED

Comment:

Terminating cue: Candidate informs SS of completion of the identified points to Tagout Containment Spray Pump A or returns the cue sheet.

When Candidate returns first cue sheet give the candidate the cue sheet on Page 7.

Initial Conditions: Unit 1 is at 100% Power. A planned outage for Containment Spray Pump (CSP) Train "A" is required to replace the pump seals.

All electrical components and associated handswitches requiring Tagout for the CSP "A" work will be tagged under another referenced Tagout.

All pump motor cooling water required for Tagout for the CSP "A" work will be tagged under another referenced Tagout.

Initiating Cue: You are the Shift Supervisor authorizing the tagouts for this outage. Determine the Tech Spec LCO(s), required actions, and completion times (if any) that result from authorizing this work.

***Candidate determines the Tech Spec LCO(s), required actions, and completion times.**

Standard: Candidate determines the following (bolded items are critical):

LCO 3.6.6 Two containment spray trains and two containment cooling trains shall be **OPERABLE**.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours* <u>AND</u> 6 days from discovery of failure to meet the LCO*
B. One containment cooling train inoperable.	B.1 Restore containment cooling train to OPERABLE status.	72 hours <u>AND</u> 6 days from discovery of failure to meet the LCO
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 84 hours

* For the VEGP Unit 2 June 23, 2008 entry into Technical Specification 3.6.6, the Containment Spray Pump B may be inoperable for a period not to exceed 7 days.

Initial Conditions: Unit 1 is at 100% Power. A planned outage for Containment Spray Pump (CSP) Train "A" is required to replace the pump seals.

All electrical components and associated handswitches requiring Tagout for the CSP "A" work will be tagged under another referenced Tagout.

All pump motor cooling water required for Tagout for the CSP "A" work will be tagged under another referenced Tagout.

Initiating Cue: You are the Shift Supervisor authorizing the tagouts for this outage. Determine the Tech Spec LCO(s), required actions, and completion times (if any) that result from authorizing this work.

Verification of Completion

Job Performance Measure No. V-NRC-JP-NMP-AD-003-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

RO Job Performance Measure "D"

Facility: **Vogtle**

Task No: N/A

Task Title: **Determine Posting Requirements**

JPM No: V-NRC-JP-00930-HL17

K/A Reference: K/A: G2.3.13 RO 3.4 SRO 3.8

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr which is 4 feet from the line.

See attached room map.

Initiating Cue: Determine the appropriate posting required at the entry to the room.

Task Standard: Determine proper HP posting for the room.

Required Materials: 1. HP survey map
2. Procedure 00930-C, "Radiation And Containment Control" Ver 26.0
3. Tech Specs

General References: None

Time Critical Task: No

Validation Time: 10 minutes

Performance Information

Critical steps denoted with an asterisk

* **Calculate the dose at one foot.**

As distance (4ft) is less than half of source length (10ft),

Use line source equation $I_1 D_1 = I_2 D_2$

where I_1 = closest source intensity
 I_2 = farthest source intensity
 D_1 = closest distance
 D_2 = farthest distance

Standard: Candidate calculates $I_1 = \frac{500 \text{ mr/hr} \times (4)}{1} = 2000 \text{ mr/hr}$
2000 mr/hr at one foot.

Comment:

* **Determine posting requirement**

Standard: Candidate determines Locked High Radiation Area based on dose at one foot greater than 1000 mr/hr.

Comment:

Terminating cue: Student returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-NRC-JP-00930-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

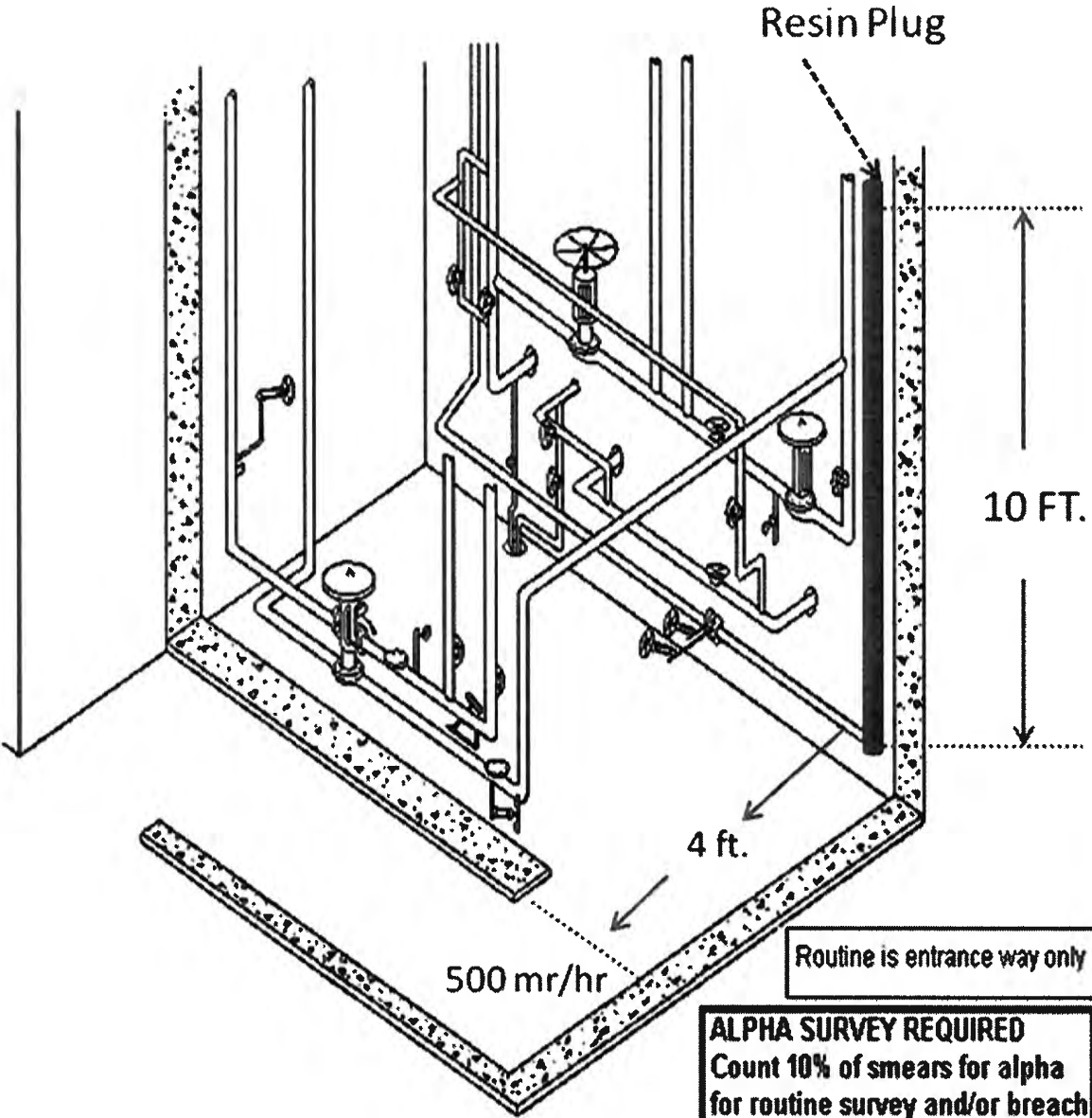
Examiner's signature and date: _____


Initial Conditions: **Initial Conditions:** A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr which is 4 feet from the line.

See attached room map.

Initiating Cue: **Determine the appropriate posting required at the entry to the room.**

VALVE GALLERY CVCS MIXED BED DEMIN (1AXA28)




Approved By C.R.Dedrickson	Vogtle Electric Generating Plant 	Procedure Number Rev 00930-C 26
Date Approved 08/05/2009	RADIATION AND CONTAMINATION CONTROL	Page Number 1 of 28

PRB REVIEW REQUIRED

RADIATION AND CONTAMINATION CONTROL

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.	
Reference Use: Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	
Information Use: Available on plant site for reference as needed.	ALL

Approved By C.R.Dedrickson	Vogtle Electric Generating Plant 	Procedure Number Rev 00930-C 26
Date Approved 08/05/2009	RADIATION AND CONTAMINATION CONTROL	Page Number 2 of 28

1.0 **PURPOSE**(1984301253) (1985303534)

This procedure establishes requirements and responsibilities for monitoring and controlling exposure to radiation and contamination. It includes criteria for Radiation Controlled Areas, the Radiation Work Permit (RWP) system, sampling and surveys, shielding, and the Self Monitoring process as follows:

- 4.0** **REQUIREMENTS**
- 5.0** **PROCEDURE**
- 5.1** **POSTING**
- 5.2** **RADIATION WORK PERMIT**
- 5.3** **CONTAMINATION CONTROLS**
- 5.4** **PERSONNEL MONITORING**
- 5.6** **SURVEYS AND SAMPLING**
- 5.7** **SHIELDING**
- 5.8** **SELF MONITORING**

2.0 **DEFINITIONS**


2.1 **AIRBORNE RADIOACTIVITY AREA** (1985306088) (1993327366)

A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

- a. To such a degree that an individual present in the area without respiratory protection equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 Derived Air Concentrations (DAC)-hours.
- OR
- b. An area should be considered an Airborne Radioactivity Area when the airborne activity reaches 0.3 DACs for isotopes which have a classification other than submersion, and 100% of the DAC limits for isotopes which have a classification of submersion. DAC limits are specified in 10CFR20 Appendix B, Table I, Column 3.

2.2 **ANNUAL LIMIT ON INTAKE (ALI)**

The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in 10CFR20, Appendix B, Table 1, Columns 1 and 2. (1993327366)

Approved By C.R.Dedrickson	Vogtle Electric Generating Plant 	Procedure Number Rev 00930-C 26
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2.3 CONTAMINATED AREAS, MATERIALS AND EQUIPMENT

Any area where loose surface contamination exceeds the following limits shall be posted as a Contaminated Area. Items exceeding the following measurements will be posted as radioactive material and handled in accordance with Procedure 00960-C, "Control of Radioactive Material." (1984301315)

2.3.1 Fixed Surface Radioactive Contamination (contamination embedded in material surface)

Beta-gamma 100 cpm above background as measured with an HP-210 probe or equivalent or as specified by HP procedures for other instruments.

Alpha 50 cpm above background as measured with an alpha survey meter.

2.3.2 Loose Surface Radioactive Contamination (removable contamination)

Beta-gamma ≥ 1000 dpm/100 cm²

Alpha ≥ 20 dpm/100 cm²

2.4 CONTROLLED AREA


Any area outside of the restricted area but inside the site boundary, access to which can be limited for any reason.

2.5 DERIVED AIR CONCENTRATION (DAC)

The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2000 hours, results in an intake of one ALI. DAC values are given in 10CFR20, Appendix B, Table 1, Column 3. (1993327366)

2.6 HIGH RADIATION AREA

Any area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 100 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553) (1985306089)

Approved By C.R.Dedrickson	Vogtle Electric Generating Plant 	Procedure Number Rev 00930-C 26
Date Approved 08/05/2009	RADIATION AND CONTAMINATION CONTROL	Page Number 4 of 28

2.7 HOT PARTICLES

Hot particles are discrete radioactive particles that are characterized by intense emissions of beta particles, X-rays and gamma rays. For the purpose of hot particle control, a hot particle will be defined as an extremely localized count rate (RM-14 with HP-210 probe, or equivalent) of 250,000 cpm or more emanating from a discrete particle.

2.8 HOT PARTICLE BUFFER AREA (HPBA)

An area, free of hot particles, surrounding a Hot Particle Control Area (HPCA). Hot particles are not expected in this area; however, this area is surveyed frequently to determine that hot particles are not transported out of the HPCA.

2.9 HOT PARTICLE CONTROL AREA

A work area where hot particles are known to be present. An HPCA may be a room, a roped off area or a containment used to confine hot particle contamination.

2.10 HOT SPOTS

Components or items having localized contact readings in excess of 100 mrem/hr and more than 5 times the general area dose rates.

2.11 LOCKED HIGH RADIATION AREA


Any area accessible to individuals, in which radiation levels external to the body could result in an individual receiving a dose equivalent equal to or in excess of 1000 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553)

2.12 RADIATION AREA

Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553) (1985306090)

2.13 RADIATION CONTROLLED AREA (RCA)

Any area which contains or potentially contains radiation, contamination, or radioactive materials in quantities or levels sufficient to require posting of protective measures.

Approved By C.R.Dedrickson	Vogle Electric Generating Plant 	Procedure Number Rev 00930-C 26
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2.14 RADIOACTIVE MATERIALS AREA

A radioactive materials area is any area or room in which radioactive material is used or stored and which contains radioactive material in an amount exceeding 10 times the quantity of such material specified in 10CFR20, Appendix C. This does not apply to materials contained within process equipment or materials in transport that are packaged and labeled in accordance with Department of Transportation (DOT) regulations. (1985306086) (1985306087)

2.15 RADIATION WORKER

Plant personnel assigned duties inside Radiation Control Areas.

2.16 RESTRICTED AREA

Any area to which access is limited by the licensee for the purpose of protection of individuals against undue risks from exposure to radiation and radioactive materials. The area inside an RCA is a restricted area. Others may be defined as needed.

2.17 SELF MONITORING

Radiation and Contamination monitoring performed by qualified Radiation Workers for themselves only.


2.18 SURVEYS AND SAMPLING

2.18.1 The measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

2.18.2 "Survey" is also an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, concentrations or quantities of radioactive material present.

2.19 VERY HIGH RADIATION AREA

Any area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter (3 feet) from a radiation source or 1 meter from any surface that the radiation penetrates.


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3.0 RESPONSIBILITIES

3.1 HEALTH PHYSICS MANAGER

The Health Physics Manager is responsible for ensuring the Health Physics Section performs the following:

- 3.1.1 Reviews radiation safety incidents and approves corrective action.
- 3.1.2 Establishes and maintains a radiation and contamination control program which includes appropriate procedures and instructions.
- 3.1.3 Establishes and maintains a Radiation Work Permit (RWP) system to control and minimize exposure to radiation and contamination. (1984302057)
- 3.1.4 Assigns HP Personnel as appropriate to the Maintenance Performance Teams.
- 3.1.5 Performs and documents radiation and contamination surveys, air sampling, and analysis, and reviews plant areas to ensure that all areas with existing or potential high radiation exposure rates are properly posted and controlled. (1985307052)
- 3.1.6 Classifies, posts, barricades, and controls ingress and egress to Radiation Controlled Areas to control radiation exposure and spread of contamination.(1984301951) (1985307052)
- 3.1.7 Determines protective clothing requirements and stay times.
- 3.1.8 Requests and verifies installation of shielding.
- 3.1.9 Supervises and monitors decontamination of personnel, equipment and facilities.
- 3.1.10 Establishes controls for use and disposition of contaminated materials and equipment.
- 3.1.11 Performs maintenance, calibrations, and surveillances on assigned HP instrumentation and equipment.
- 3.1.12 Performs trend analysis on radiation and contamination exposure controls. Recommends actions necessary to correct adverse trends. (1999340604) (2000340662)
- 3.1.13 Maintains control and limitations for Self Monitoring Program.

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3.1.14 Ensures the Plant Training and Emergency Preparedness Department is notified of changes in the use of protective clothing so that General Employee Training remains current.

3.1.15 Actively participates in the Training Advisory Committee to maintain all training current and relative to plant demands.

3.2 PLANT SUPERVISION

3.2.1 Ensure that supervised personnel comply with rules, regulations and procedures associated with radiation safety and comply with RWPs. (1984301983)

3.2.2 Request RWPs to support work in Radiation Controlled Areas if not already requested by the Performance Team work planner.

3.2.3 Notify HP promptly when radiological problems occur and interface with HP to resolve deficiencies.

3.2.4 Ensure that the work area has been cleaned up and restored to normal conditions after work evolution is completed.

3.2.5 Ensure appropriate individuals receive Self Monitoring training.

3.2.6 Ensure individuals complete Job Performance Measures (JPMs) sign off criteria.

3.3 PLANT PERSONNEL


3.3.1 Practice radiation safety and maintain their radiation exposure As Low As Reasonably Achievable (ALARA).

3.3.2 Comply with all radiation protection rules, regulations and procedures. Supervisors are responsible for ensuring their employees follow all radiation protection rules, regulations and procedures.

3.3.3 Read and comply with RWP requirements whenever their duties require the use of an RWP.

3.3.4 Individuals are responsible for surveying themselves for contamination when crossing a local control point or the main access control point. (1984301969)

3.3.5 If contamination is found, the individual notifies HP Personnel for decontamination. (1984301969)

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3.3.6 Know their current exposure status.

3.3.7 Perform Self Monitoring within established procedures and limits, if qualified.

3.4 PLANT TRAINING AND EMERGENCY PREPAREDNESS MANAGER

The Plant Training and Emergency Preparedness Manager is responsible for ensuring the Training Department performs the following:

3.4.1 Establishes and maintains a Self Monitoring training program.

3.4.2 Maintains records for personnel who have completed Self Monitoring training.

3.4.3 Keeping other plant sections informed on personnel who are Self Monitoring qualified.

4.0 REQUIREMENTS

4.1 PERSONNEL REQUIREMENTS

4.1.1 All personnel shall receive indoctrination and training in radiation and contamination control requirements in accordance with approved plant procedures, commensurate with their work assignments.

4.1.2 HP Personnel shall receive additional training in radiation safety in accordance with approved plant procedures.

4.1.3 Prior to performing Self Monitoring personnel will receive specific training.

4.1.4 Personnel performing Self Monitoring must have specific JPMs signed off to be qualified to perform Self Monitoring tasks.


4.2 ENTRY/EXIT (1984301955) (1985305100)

4.2.1 Personnel will normally access and exit RCAs through the designated access control points determined by Health Physics.

4.2.2 Personnel access to areas of unknown radiological conditions will normally be restricted until survey data is established by Health Physics personnel.

4.2.3 Entrance and access to a High Radiation Area shall be controlled by a specific RWP. (1985307052)

4.2.4 Access to containment buildings is controlled by HP and areas are surveyed to establish allowable working periods. Telemetry may be used in place of stay times.


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- 4.2.5 Any individual, or group of individuals, permitted to enter a High Radiation Area shall be continuously provided with or accompanied by one or more of the following: (1985306646) (1985306649) (1995329954) (1995329955)
- a. Radiation monitoring device(s) which continuously indicates the radiation dose rate in the area.
 - b. Radiation monitoring device(s) which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas is permitted after the dose rate level has been made known to personnel.
 - c. An individual qualified to implement Health Physics procedures, equipped with a radiation dose rate monitoring device and who will be responsible for providing positive control over activities within the area while performing periodic radiation surveillance as specified by the Health Physics Manager, or designee, in the RWP.

NOTE

If an escort is required, only Health Physics Personnel are qualified to perform escort duties in Locked High Radiation Areas.

- 4.2.6 In addition to the requirements for a High Radiation Area, access of personnel into a Locked High Radiation Area (> 1000 mrem/h) shall be under an approved, specific RWP, that shall specify the dose rate levels in the immediate work areas and the maximum allowable stay times for individuals in those areas.
- 4.2.6.1 Specific RWP's may govern entry into many Locked High Radiation Area's, therefore, ALARA briefings will clarify RWP requirements for dose rate specifications in the immediate work area.
- 4.2.6.2 In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.
- 4.2.7 In addition to the requirements for a Locked High Radiation Area, access of personnel into a Very High Radiation Area must receive prior written approval from the Health Physics Manager, or designee.
- 4.2.7.1 A Health Physics escort is required for entry.
- 4.2.7.2 In the event of a declared emergency the Emergency Director may grant access to a Very High Radiation Area.


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5.0 PROCEDURE

5.1 POSTING

The following precautions and limitations apply to postings used to identify or delineate Radiation Controlled Areas:

- 5.1.1 Radiological warning signs, ropes or barricades shall be placed in such a manner as to alert personnel of the hazard upon approach.
 - 5.1.1.1 Removal or repositioning of signs, ropes or barriers is prohibited unless authorized by Health Physics personnel.
 - 5.1.1.2 Signs, ropes, and barricades may be placed in areas of low or no, radiological hazard, if appropriate, for the purpose of access control. (1999340604) (2000340661)
 - 5.1.1.3 Radiological posting signs shall have a yellow background with a purple, magenta, or black radiation symbol.
 - 5.1.1.4 Ropes and barrier tape used for radiological warnings shall be yellow and magenta. The exception to the required color is when chain is used as a barrier, provided the chain is identified as a radiological barrier.
 - 5.1.1.5 Signs, ropes, and other material of the conventional yellow and magenta color shall not be used for any purpose other than radiological control marking, unless approved by HP Supervision and controlled by Procedure 00960-C.
 - 5.1.1.6 To the extent practicable, measured radiation levels and locations of sources should be posted at the entry into any radiation or high radiation area.
 - 5.1.1.7 Use of handwritten signs shall be minimized.

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5.1.2 Radiation Controlled Area

5.1.2.1 Each Radiation Controlled Area shall have all personnel access points and doors posted with a sign bearing the radiation symbol and the words:

**CAUTION
Radiation Controlled Area
RWP Required For Entry
Dosimetry Required For Entry**

5.1.2.2 In addition to the requirements of Step 5.1.2.1 all areas posted as an RCA (except those areas exempted by the Health Physics Manager, or designee) shall have the exit doors and pathways posted with the words:

**CAUTION
All Personnel and Materials
Must Be Surveyed Before
Leaving This Area**

5.1.2.3 The use of tape bearing the words "Radiation Controlled Area" may be used in addition to required signs.

5.1.2.4 Areas may be specifically posted with the words "Radiation Controlled Area, RWP and Dosimetry Required For Entry" if HP Supervision deem that potential exists for a change of conditions requiring greater awareness of hazards in the area to be entered.


5.1.3 Radiation Area (2000341553) (1985306090)

5.1.3.1 Each radiation area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Radiation Area**

5.1.3.2 The RWP will define entry requirements for these areas.

5.1.3.3 Posting boundaries for Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

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5.1.4 High Radiation Area (2000341553) (1985306089)

5.1.4.1 Each High Radiation Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words: (1985307052)

DANGER
High Radiation Area
Health Physics Escort Required
or
Alarming Dosimeter Required
RWP Required for Entry


Per 10CFR20.1902(b) High Radiation Area signs may use either the word "CAUTION" or "DANGER." Danger is the wording selected for use at Vogtle, Hatch, and Farley.

5.1.4.2 Posting boundaries for High Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

5.1.4.3 Each entrance or access point into a High Radiation Area shall be locked, except during periods when access to the areas is required, with positive control over each individual entry, or provide continuous direct or electronic surveillance that is capable of preventing unauthorized entry.

5.1.4.4 In lieu of the controls specified in Section 5.1.4.3, each High Radiation Area in which the radiation exposure rate is greater than 100 mrem/h and less than 1000 mrem/h shall be barricaded and conspicuously posted as directed above. (1985307052)

5.1.4.5 Individuals who have successfully completed HP self-monitoring training are qualified to provide their own escort in High Radiation Areas.

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5.1.5 Locked High Radiation Area (2000341553) (1985306649) (1995329955)

5.1.5.1 Each Locked High Radiation Area shall be locked in such a manner as to prevent unauthorized entry and not prevent exit from the area. Those areas, where no enclosure can be reasonably constructed, shall be roped off and a flashing light installed as a warning device. Areas meeting the above requirements shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words: (1985307052) (1995330004)

**DANGER
Locked
High Radiation Area
Health Physics Escort Required
Alarming Dosimeter Required
RWP Required For Entry**

5.1.5.2 Posting boundaries for High Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

5.1.5.3 Control of keys for Locked High Radiation Areas will be by Operations or Health Physics Supervision in accordance with Procedure 00008-C, "Plant Lock And Key Control."

5.1.6 Very High Radiation Area (1985306649) (1995329955)


5.1.6.1 Each Very High Radiation Area shall meet all of the access and posting controls which apply to Locked High Radiation Areas and an HP escort is required for area entry.

5.1.6.2 Each Very High Radiation Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**GRAVE DANGER
Very High Radiation Area
Health Physics Escort Required
Alarming Dosimeter Required
RWP Required for Entry**

5.1.6.3 Very High Radiation Area boundaries will be determined by surveys made at a distance of 1 meter (3 feet).

5.1.6.4 Control of keys for Very High Radiation Areas will be in accordance with Procedure 00008-C.

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5.1.7 Hot Spots

5.1.7.1 Each identified hot spot should be conspicuously posted with a sign bearing the radiation symbol and the words:

Hot Spot

5.1.7.2 In addition to the requirements of Step 5.1.7.1, each Hot Spot **should be** documented via the Heath Physics Department's computerized survey system. The related survey information should be marked on the corresponding room or area survey status sign.

5.1.7.3 Do not apply hot spot stickers by use of adhesive backing due to the possibility of chloride contamination. Use approved tape or other means to affix the sticker to the desired location.

5.1.8 Contaminated Areas, Materials, Equipment and Personnel.

5.1.8.1 Each contaminated area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:


CAUTION Contaminated Area

5.1.8.2 Areas, or rooms, posted as contaminated areas will be defined (by barrier, tape, etc) at the entrance/exit point of the area and a step-off pad, placed as soon as practicable, to prevent the spread of contamination.

5.1.8.3 The RWP will define entry requirements.

5.1.8.4 All personnel should take measures to minimize the spread of higher contamination to low or uncontaminated areas.

5.1.8.5 Materials, equipment and personnel shall be considered contaminated if they exceed the limits of Subsection 2.3. Materials and equipment shall be labeled in accordance with 00960-C, "Control of Radioactive Materials." Personnel shall be decontaminated.

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- 5.1.8.6 Areas that are potentially contaminated shall be controlled as contaminated areas.
- 5.1.8.7 Contaminated Areas may be defined with yellow and magenta ribbon, tape, or rope.
- 5.1.8.8 Contaminated Areas should be decontaminated as soon as practicable.
- 5.1.8.9 Areas where activities, such as opening a potentially contaminated system, grinding or machining on potentially contaminated surfaces, are performed, shall be controlled as Contaminated Areas.
- 5.1.8.10 Materials taken into Contaminated Areas should be minimized to only those necessary to perform the work.

5.1.9 Airborne Radioactivity Areas (1985306088)

- 5.1.9.1 Each Airborne Radioactivity Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Airborne Radioactivity Area
Notify Health Physics Prior to Entry**

- 5.1.9.2 Entrances into these areas will be controlled by a specific RWP.
- 5.1.9.3 Posting may also be required for any work evolution likely to cause airborne contamination such as initial opening of reactor systems, grinding, welding, burning or operating air-operated equipment in contaminated areas.


5.1.10 Radioactive Materials Area (1985306086) (1985306087)

- 5.1.10.1 Each Radioactive Materials Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Radioactive Material**

- 5.1.10.2 In addition to the requirements of Step 5.1.11.1, containers containing radioactive material shall be clearly marked with signs, or stickers, bearing the radiation symbol and the words:

**CAUTION
Radioactive Material**

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5.1.10.3 Posting of radioactive material containers should have the contact radiation dose marked on the sign or wrapping, in accordance with Health Physics procedures.

5.1.10.4 For the purpose of this procedure, the radioactive material container may be a plastic bag or suitable wrapping.

5.1.11 Hot Particle Control Area

5.1.11.1 Each Hot Particle Control Area (HPCA) shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Hot Particle Control Area
Health Physics Escort Required**

5.1.11.2 Areas, or rooms, posted as Hot Particle Control Areas will be defined (by barrier, tape, etc) (such as yellow and magenta rope, tape or ribbon) at the entrance/exit point and a step-off pad(s) placed as soon as practicable to prevent the spread of hot particles.

5.1.11.3 Each Hot Particle Buffer Area (HPBA) shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Hot Particle Buffer Area
Increased HP Surveillance Required**


5.1.12 Radiological Status Sheets/Boards

Highly frequented radiation areas, as designated by HP Supervision, should be posted by HP to indicate radiation levels. Results may be specified as ranges.


5.2 RADIATION WORK PERMIT (RWP) (1999340604)

5.2.1 The RWP specifies radiation safety requirements for each job and assures worker briefings are given. The RWP also provides a mechanism for evaluating person-rem expenditures on each job. Procedure 43007-C, "Issuance, Use And Control Of Radiation Work Permit," specifies the details of the RWP program.

5.2.2 HP shall establish and maintain a Radiation Work Permit system to control and minimize radiation exposure during operation and maintenance at VEGP. An RWP is required for any entry into an RCA and must be reviewed daily by each worker prior to entry. (1999340604) (2000340662)

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- 5.2.3 Radiation Work Permits shall provide radiological controls that address specific conditions of the job and areas for the purpose of worker protection. Protective clothing and/or radiological control requirements (i.e., respiratory protection) shall be established by RWP and modified only by authorized Health Physics personnel. (1984301975) (1999340604) (2000340661) (2000340662)
- 5.2.4 Health Physics personnel or plant supervision may stop the job whenever radiological conditions change or work practices are inconsistent with the pre-job planning and/or RWP. If this occurs, then:
- a. HP Supervision must be notified and appropriate changes made in the approach to the job, if practicable. Subject changes will be reflected on the RWP.
 - b. Stop work actions and subsequent changes in job controls must be documented in the ALARA Review Package.
- 5.2.5 HP Supervision or the Shift Supervisor may authorize entry with an urgent, or emergency, RWP when critical immediate action is required.
- 5.2.5.1 In this case, however, HP shall provide continuous coverage to ensure radiation safety practices are followed. The job shall be documented after its completion.
- 5.2.5.2 Supply kits and Emergency Preparedness kits will be strategically located throughout the plant and will contain equipment and materials for emergency response.
- 5.2.6 General Radiation Work Permit**
- 5.2.6.1 The General RWP is used for the performance of routine duties and surveillance work. General RWPs will not be issued for work in high radiation areas, areas of significant loose contamination, or areas requiring a specific job survey by Health Physics prior to entry. (1984301305)
- 5.2.6.2 General RWPs specify basic radiation safety requirements such as minimum protective clothing, dosimetry, respiratory protection, access restrictions, and the type or extent of work that is authorized.
- 5.2.6.3 Records of entries shall be specified by name, elapsed time and incremental dose, and maintained on a daily basis.

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5.2.7 Specific Radiation Work Permits

The Specific RWP is used for the performance of a specific job in specific locations or areas. The Specific RWP is active for the duration of the job and may be modified on the basis of surveys. Surveys shall be performed as required to support RWP authorized work.

5.2.8 HP should review active RWPs on a routine basis.

5.2.9 When a job is in a high radiation area, HP Supervision may determine that performing pre-job RWP surveys would not be consistent with ALARA. The RWP may then be initiated prior to surveys being taken. However, HP shall enter the areas with the work crew and perform the appropriate surveys while the job is being done. The survey data will be recorded on the RWP and radiological controls adjusted as necessary.

5.2.10 The RWP should be posted at the job location or main HP control point.

5.2.11 Personnel authorized to make an entry on a Specific RWP requiring a pre-job briefing should be specified by name or section. Records of entries will be maintained in accordance with step 5.2.6.3.


5.2.12 Issuance of Radiation Work Permits

5.2.12.1 Personnel should initiate an RWP by notifying Health Physics at least 24 hours before job performance is required to allow sufficient time to generate the RWP and perform an ALARA review. Exceptions to the 24 hours should be considered for planned maintenance. For planned maintenance activities Health Physics should be notified 14 days prior to the start of the activities.

5.2.12.2 HP reviews the work to be performed and specifies radiological controls to minimize exposure to personnel.

5.2.12.3 If pre-job planning is required, it shall be performed in accordance with VEGP procedures.

5.2.12.4 HP shall approve the RWP. HP Supervision shall sign all RWPs. A copy of the RWP may be included in the Work Order (WO) package. However, the posted RWP shall be reviewed daily prior to use in order that changes to radiological conditions may be noted.

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5.2.13 Termination Of Radiation Work Permits

- 5.2.13.1 Specific RWPs shall be terminated or suspended whenever the job is completed or canceled, or whenever significant changes in radiological conditions occur. The job supervisor/TL/ATL should inform HP of RWPs to be terminated.
- 5.2.13.2 General RWPs shall be terminated whenever significant changes in radiological conditions occur or at the end of each calendar year. General RWPs shall be reviewed by Health Physics Supervision each calendar quarter.
- 5.2.13.3 HP should ensure that terminated RWPs are clearly identified as terminated.
- 5.2.13.4 HP should also ensure that terminated RWPs are removed from the job location and/or control points and returned to the Health Physics office.
- 5.2.13.5 Specific RWPs may be suspended after consultation with either Work Planning of the Work Group Supervisor. For efficiency or record processing purposes Health Physics may, at its discretion, determine that an RWP needs to remain open. (2003002525)
- 5.2.13.6 Any RWP will be terminated unless Health Physics has been apprised of the need for suspending the RWP or Health Physics has made a determination, at its discretion, that the RWP should remain in an active or suspended state. (2003002525)

5.3 CONTAMINATION CONTROLS

5.3.1 Use Of Protective Clothing (PC)

- 5.3.1.1 Personnel shall wear and use protective clothing in a manner consistent with the training each has received.
- 5.3.1.2 HP shall ensure that PCs are commensurate with the levels and state of the contamination expected for the area entered. These requirements can only be modified by qualified Health Physics personnel. (1984301946)
- 5.3.1.3 Outer street clothing and jewelry should be removed prior to donning PCs. Violations of this policy may result in the confiscation of contaminated clothing and personal effects. While outside separate dressing areas, men and women will be expected to remain modestly attired in the workplace. Loose fitting, non-revealing garments, such as scrubs or a pair of gym shorts and a T-shirt, are considered appropriate. Tight fitting, revealing undergarments are not acceptable attire.

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5.3.1.4 The use of protective clothing for purposes other than contamination control is prohibited. Protective clothing should be distinctly marked or colored to facilitate control. Yellow plastics used for contamination control shall not be used as uncontrolled clothing for use in protection from the elements (e.g., raingear).

5.3.1.5 Protective clothing is stored in accordance with Procedure 92015-C, "Transient Combustibles Control."

5.3.2 Control Of Radioactive Contamination (1984301315)

5.3.2.1 HP shall establish controls to ensure that the spread of contamination during work is minimized.

5.3.2.2 These controls shall include, but are not limited to consideration of the following:

- a. Engineered Controls
- b. Special Training
- c. Job Planning
- d. Monitoring of Materials and Equipment

5.3.2.3 Step-off pads will be used to control entrance and exit from a contaminated area, to minimize the spread of contamination from an area.

5.3.2.4 Multiple step-off pads (two or more) may be used in areas of high contamination.


5.4 PERSONNEL MONITORING

5.4.1 Personnel monitoring shall be performed in a manner consistent with the training each has received.


5.4.2 A full whole body frisk shall be performed by all personnel when exiting the RCA access control point or at other areas designated by HP. Whole body monitors should be used as primary means of surveying when provided.

5.4.3 The HP Manager, or designee may exempt the whole body survey requirement for exit from Radiation Controlled Areas where sealed radioactive material is stored, after surveys verify the escape of radioactive material is unlikely to occur under normal conditions.

5.4.4 Personnel exiting contaminated areas are responsible for surveying themselves when they cross a local control point equipped with either friskers or personnel contamination monitors.

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- 5.4.5 Personnel exiting contaminated areas should frisk their hands and feet at the nearest frisker location and notify HP if contamination is found.
- 5.4.6 After performing a hands and feet frisk, personnel should proceed to the nearest personnel contamination monitor for a whole body survey. This survey is to be performed prior to the individual putting on street clothes.
- 5.4.7 When exiting contaminated areas, hand carried tools and materials (e.g., clipboards, notebooks, pencils, etc.), shall be frisked for beta-gamma contamination by HP Personnel unless a red tool bag has been provided (outside the contaminated area in accordance with HP procedures) for their return.
- 5.4.8 HP shall be notified immediately whenever contamination is detected on any individual or their personal articles. At no time are individuals to perform self decontamination without HP Personnel present.
- 5.4.9 Personnel decontamination should be performed when the results of personnel monitoring exceed 100 cpm above background per probe area when using an HP-210 probe or equivalent. Exceptions may be warranted if isotopic identification demonstrates that the material is short lived (e.g., Rb-88, Cs-138). HP Supervision shall approve the exceptions.
- 5.4.10 HP shall directly supervise the decontamination of contaminated individuals. HP shall use approved methods of decontamination and document personnel contamination and decontamination effectiveness. Medical assistance may be required when contamination cannot be removed by use of approved methods.
- 5.4.11 Whenever internal contamination is suspected, bioassays shall be performed in accordance with Procedure 00940-C, "Bioassay Program."
- 5.4.12 HP shall control, on an individual basis, the use of contaminated or radioactive articles and maintain possession of contaminated personal articles until sufficient radioactive decay or decontamination bring items into compliance with Procedure 00960-C or until items are discarded.

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5.5 DECONTAMINATION OF MATERIALS AND FACILITIES (1984301315)

5.5.1 HP should evaluate the generation of additional radwaste and additional exposure to personnel against the benefits of reduced personnel exposure and contamination levels when prescribing the methods and extent of decontamination efforts.

5.5.2 HP shall ensure that only approved decontamination methods and permissible chemicals are used. Chemistry Personnel should be consulted to identify permissible chemicals.

5.5.3 HP will be notified of all spills. HP may approve methods for immediate cleanup of small spills (e.g. Chemistry spilling Reactor Coolant Sample). 2003201146

5.6 RADIATION AND CONTAMINATION SURVEYS (1999340604) (2000340661)

5.6.1 HP shall perform radiation and contamination surveys in accordance with HP Department Procedures to mark and confirm Radiation Controlled Areas, and unrestricted area boundaries, to determine if abnormal radiation levels exist, and to determine extent and magnitude of radiation and contamination levels so that personnel radiation exposure can be maintained ALARA. (1984301951) (1985305365) (1985307052)


5.6.2 Controls for release of potentially contaminated or activated materials or facilities for unrestricted use are addressed in Procedure 00960-C.

5.6.3 Protective clothing and gloves will be worn when sampling radioactive systems. (1984301314)

5.6.4 HP shall perform radiation and contamination surveys, as required, to support the operation and maintenance of VEGP.

5.6.5 HP conducts surveys during performance of critical steps. Examples of such critical steps include: Opening of radioactive systems and certain grinding, welding or machining operations on contaminated equipment.

5.6.6 When unusual exposures have occurred, surveys shall be performed to determine the cause. Corrective actions shall be instituted to minimize further personnel exposure.

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5.6.7

Plant personnel shall notify Health Physics when radiation and contamination surveys are required. Examples include but are not limited to, the following activities:

- a. At predetermined task steps, requiring a re-evaluation of radiological conditions in active work areas and adjacent areas, whenever operations are performed that have the potential for changing radiation levels.
- b. As necessary to control the spread of loose surface contamination whenever operations are performed that have been known to result in, or are expected to result in, the spread of contamination.
- c. Upon initial entry to vaults, tanks and voids containing radioactive piping or components.
- d. Upon opening of contaminated or potentially contaminated systems.
- e. For picking up, receiving or opening packages containing radioactive material.
- f. Prior to the need for modification of shielding.
- g. Prior to handling radioactive sources, i.e., incore fission detectors.
- h. Release of facilities or equipment for unrestricted use.
- i. Prior to removal of any posted Radiation Control Area boundary.
- j. Whenever smoke removal equipment (portable or installed) is used in the RCA. (1985306168)

5.6.8

HP shall perform airborne radioactivity surveys in accordance with HP Department Procedures to provide a basis for the selection of respiratory protection equipment, the degree of engineering controls to be implemented for a particular task, and assurance that regulatory requirements are met. (1984301975)

5.7


SHIELDING

5.7.1

Temporary shielding shall be evaluated and controlled per Procedure 41006-C, "Temporary Shielding.". When determined to be necessary, shielding will be provided to control doses to within the limits of applicable regulation.

5.7.2

Addition, deletion, or modification of permanent shielding shall be controlled per Procedure 00400-C, "Plant Design Control."

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5.8 SELF MONITORING

- 5.8.1 Only personnel specifically trained and qualified under the VEGP RAD WORKERS SELF MONITORING Training may perform Self Monitoring.
- 5.8.2 Personnel trained and qualified under Plant Hatch or Plant Farley Rad Workers Self Monitoring training may be exempted from the VEGP training requirement for Self Monitoring
- 5.8.3 Personnel will consult with HP if there is any question on their qualification to perform the task.
- 5.8.4 Notify HP for instruction when personnel contamination is detected.
- 5.8.5 Radiation and Contamination Limits in Tables 1 & 2 included in this procedure will be followed.
- 5.8.6 Refer to Table 3, "Self Monitoring Controls Checklist," for additional instructions.

6.0 REFERENCES

6.1 PROCEDURES

- 6.1.1 00008-C, "Plant Lock And Key Control"
- 6.1.2 00100-C, "Quality Assurance Records Administration"
- 6.1.3 00400-C, "Plant Design Control"
- 6.1.4 00940-C, "Bioassay Program"
- 6.1.5 00960-C, "Control Of Radioactive Material"
- 6.1.6 00970-C, "Respiratory Protection Program"
- 6.1.7 41006-C, "Temporary Shielding"
- 6.1.8 43000-C, "Radiation And Contamination Surveys"
- 6.1.9 43002-C "Airborne Radioactivity Sampling And Evaluation"
- 6.1.10 43007-C, "Issuance, Use And Control Of Radiation Work Permits"
- 6.1.11 92015-C, "Use, Control and Storage Of Flammable/Combustible Materials"

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6.2 10CFR20, "Standards For Protection Against Radiation"

6.3 VEGP Rad Workers Self Monitoring Training

6.4 COMMITMENTS, OPEN ITEMS AND ACTION ITEMS

6.4.1 Commitments

1984301253, 1984301305, 1984301314, 1984301315, 1984301946,
1984301951, 1984301955, 1984301969, 1984301975, 1984301983,
1984302057, 1985303534, 1985305100, 1985305365, 1985306086,
1985306087, 1985306088, 1985306089, 1985306090, 1985306168,
1985306646, 1985306649, 1985307052, 1993327366, 1995329954,
1995329955, 1995330004, 1999340604, 2000340661, 2000340662,
2000341553

6.4.2 Applicable Condition Reports or Action Items

2003002525, 2003201146

END OF PROCEDURE TEXT

TABLE 1

**DOSE RATE GUIDELINES FOR SELF MONITORING
QUALIFIED INDIVIDUALS**

DOSE RATE	EXPECTED DOSE (INTEGRATED DOSE) mrem	WORKER REQUIREMENTS
<1000 mrem/hr	≤100 mrem	None
	>100 mrem	Obtain HP support
≥1000 mrem/hr		Obtain briefing on area dose rates and authorization on RWP Obtain entry requirements

<u>Symbol</u>	<u>Meaning</u>
<	less than
>	greater than
≥	equal to or greater than
≤	equal to or less than

TABLE 2

CONTAMINATION LEVEL GUIDELINES FOR SELF MONITORING QUALIFIED INDIVIDUALS

CONTAMINATION LEVELS	TASK DESCRIPTION	DRESS REQUIREMENTS	HEALTH PHYSICS SUPPORT
≤ 1000 dpm/100cm ²	None	None	None
> 1000 dpm/100cm ² $\leq 10,000$ dpm/100cm ²	No breach, climbing or kneeling. Tasks permitted include walkdowns, inspections, equipment setup, chemistry sampling, etc.)	Booties and Gloves	None
	Breach of system	Full PCs Facial PCs	Contact HP prior to contaminated system breach
	Climbing, equipment setup involving kneeling or tight areas		None
$> 10,000$ dpm/100cm ² $\leq 50,000$ dpm/100cm ²	No breach or climbing. Tasks permitted include walkdowns, inspections, equipment setup, chemistry sampling, operation rounds, etc.)	Lab coat, booties, and gloves	None
	Breach of system	Full PCs (single), Breathing Zone air sample, Facial PCs for climbing, airborne, and splash protection	Contact HP prior to contaminated system breach
	Climbing, equipment setup involving kneeling or tight areas		None
$> 50,000$ dpm/100cm ² $\leq 300,000$ dpm/100cm ²	Valve CM/PM, repacking, or line-up, rotate blind flanges, remove boron, etc.	Full PCs (single). Facial PCs, BZs, as required	Area setup, ventilation setup, Herculite, etc.
$> 300,000$ dpm/100cm ²			Contact HP

<u>Symbol</u>	<u>Meaning</u>
>	greater than
≤	equal to or less than


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TABLE 3

SELF MONITORING CONTROLS CHECKLIST

Prior to initiating Self Monitoring in a Radiation Controlled Area, perform the following steps:

1. Review the assigned RWP.
2. When utilizing Self Monitoring, the following must be performed:
 - a. Review the latest HP Routine Surveys for the area where work is to be performed.
 - b. If the dose and contamination levels are outside the limits set for Self Monitoring in Tables 1 and 2 of this procedure, or if maintenance will require breaching of a potentially contaminated system, contact HP prior to beginning work.

NOTE

Dress requirements will be determined by the latest survey data and should be reevaluated after the initial Self Monitoring Survey is performed.

3. Obtain the appropriate dose and contamination monitoring instrumentation and perform an initial survey of the area where work is to be performed. If the measurements taken are within the limits established by this procedure, work may proceed.
4. Monitor dose and contamination levels during the work process.
5. Perform exit survey. If the dose or contamination levels have increased during the work process, notify HP and document the survey results.

SRO Job Performance Measure "D"

Facility: **Vogtle**

Task No: N/A

Task Title: **Determine Posting Requirements**

JPM No: V-NRC-JP-00930-HL17

K/A Reference: K/A: G2.3.13 RO 3.4 SRO 3.8

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Note to Examiner: There is a second cue sheet on Page 5.

Read to the examinee:

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

Initial Conditions: A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr, which is 4 feet from the line.

See attached room map.

Initiating Cue: Determine the appropriate posting required at the entry to the room.

Task Standard: Determine proper HP posting for the room.

Required Materials: 1. HP survey map
2. Procedure 00930-C, "Radiation And Containment Control" Ver
26.0
3. Tech Specs

General References: None

Time Critical Task: No

Validation Time: 10 minutes

Performance Information

Critical steps denoted with an asterisk

*** Calculate the dose at one foot.**

As distance (4ft) is less than half of source length (10ft),

Use line source equation $I_1D_1=I_2D_2$

where, I_1 = closest source intensity
 I_2 = farthest source intensity
 D_1 = closest distance
 D_2 = farthest distance

Standard: Candidate calculates $I_1 = \frac{500 \text{ mr/hr} \times (4)}{1} = 2000 \text{ mr/hr}$
2000 mr/hr at one foot.

Comment:

*** Determine posting requirement**

Standard: Candidate determines Locked High Radiation Area based on dose at one foot greater than 1000 mr/hr.

Comment:

Terminating cue: Student returns initiating cue sheet

When Candidate returns first cue sheet give the candidate the cue sheet on Page 5.

Initial Conditions: A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr, which is 4 feet from the line.

See attached room map.

Initiating Cue: Based on your posting requirement determination, determine the administrative control section(s) that are required by Tech Specs (if any).

Initial Conditions: A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr, which is 4 feet from the line.

See attached room map.

Initiating Cue: Based on your posting requirement determination, determine the administrative control section(s) that are required by Tech Specs (if any).

*** Determine Tech Spec administrative controls**

Standard: Candidate references Tech Spec 5.7 and determines for a Locked High Radiation Area 5.7.1 and 5.7.2 and 5.7.3 apply.

5.7.1 Pursuant to 10 CFR 20, paragraph 20.1601(c), in lieu of the requirements of 10 CFR 20.1601, each high radiation area, as defined in 10 CFR 20, in which the intensity of radiation is > 100 mrem/hr but < 1000 mrem/hr, shall be barricaded and conspicuously posted as a high radiation area, and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (RWP). Individuals qualified in radiation protection procedures (e.g., Health Physics Technicians) or personnel continuously escorted by such individuals may be exempt from the RWP issuance requirement during the performance of their assigned duties in high radiation areas with exposure rates ≤ 1000 mrem/hr, provided they are otherwise following plant radiation protection procedures for entry into such high radiation areas.

Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

- a. A radiation monitoring device that continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate levels in the area have been established and personnel are aware of them.
- c. An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by Health Physics supervision in the RWP.

5.7.2 In addition to the requirements of Specification 5.7.1, areas with radiation levels ≥ 1000 mrem/hr shall be provided with locked or continuously guarded doors to prevent unauthorized entry, and the keys shall be maintained under the administrative control of Operations or health physics supervision. Doors shall remain locked except during periods of access by personnel under an approved RWP that shall specify the dose rate levels in the immediate work areas and the maximum allowable stay times for individuals in those areas. In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in

radiation protection procedures to provide positive exposure control over the activities being performed within the area.

- 5.7.3 For individual high radiation areas within radiation levels of > 1000 mrem/hr, accessible to personnel, that are located within large areas such as reactor containment, where no enclosure exists for purposes of locking, or that cannot be continuously guarded, and where no enclosure can be reasonably constructed around the individual area, that individual area shall be barricaded and conspicuously posted, and a flashing light shall be activated as a warning device.

Comment:

Terminating cue: Student returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-NRC-JP-00930-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

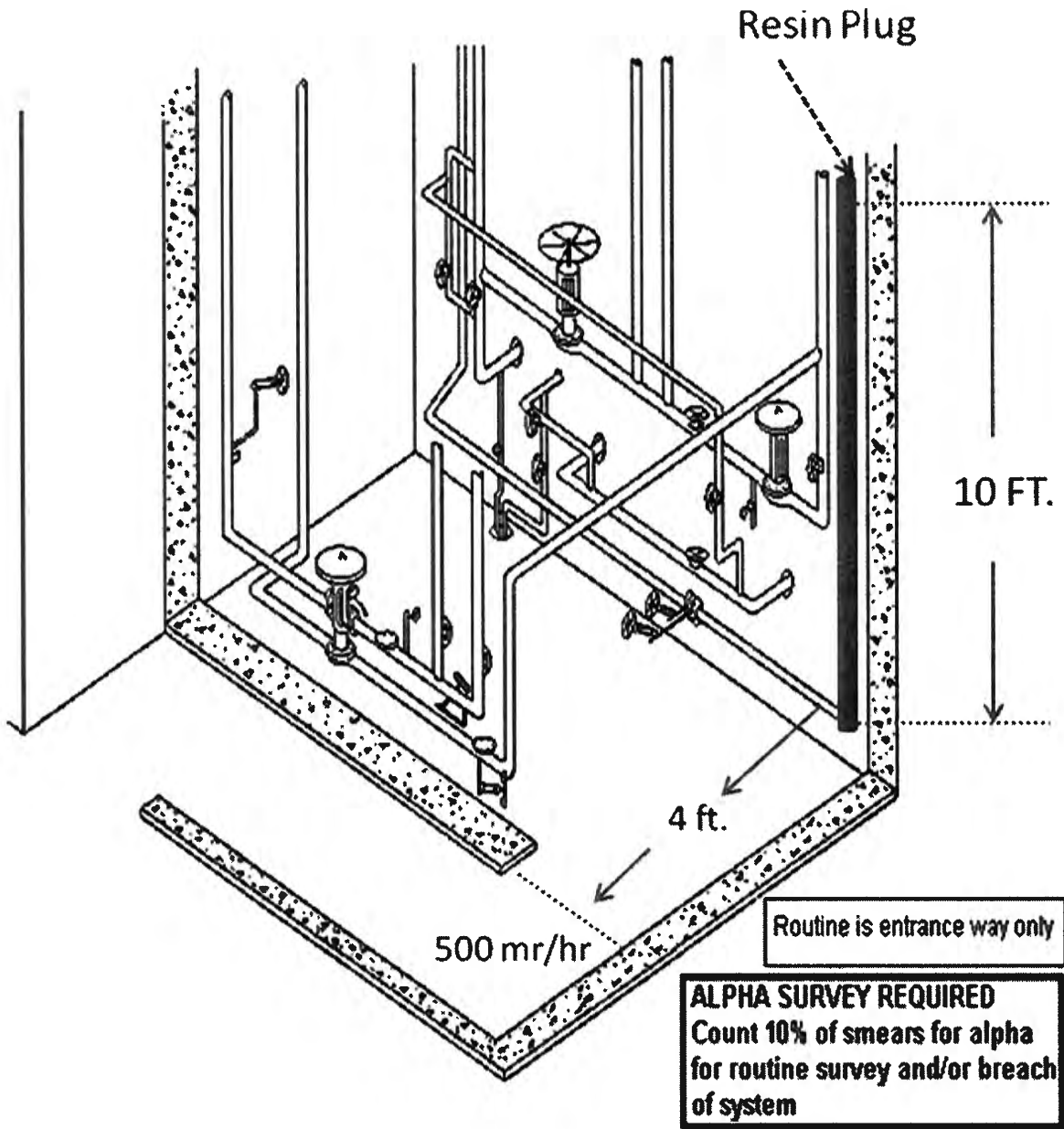
Examiner's signature and date: _____


Initial Conditions: A line is plugged with CVCS demin resin in Aux Bldg RA-28. The resin plug is estimated to be 10 feet long. The dose rate at the room entrance is 500 mr/hr which is 4 feet from the line.

See attached room map.

Initiating Cue: Determine the appropriate posting required at the entry to the room.

VALVE GALLERY CVCS MIXED BED DEMIN (1AXA28)




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PRB REVIEW REQUIRED

RADIATION AND CONTAMINATION CONTROL

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.	
Reference Use: Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	
Information Use: Available on plant site for reference as needed.	ALL

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1.0 PURPOSE(1984301253) (1985303534)

This procedure establishes requirements and responsibilities for monitoring and controlling exposure to radiation and contamination. It includes criteria for Radiation Controlled Areas, the Radiation Work Permit (RWP) system, sampling and surveys, shielding, and the Self Monitoring process as follows:

- 4.0 REQUIREMENTS**
- 5.0 PROCEDURE**
- 5.1 POSTING**
- 5.2 RADIATION WORK PERMIT**
- 5.3 CONTAMINATION CONTROLS**
- 5.4 PERSONNEL MONITORING**
- 5.6 SURVEYS AND SAMPLING**
- 5.7 SHIELDING**
- 5.8 SELF MONITORING**

2.0 DEFINITIONS


2.1 AIRBORNE RADIOACTIVITY AREA (1985306088) (1993327366)

A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

- a. To such a degree that an individual present in the area without respiratory protection equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 Derived Air Concentrations (DAC)-hours.
- OR
- b. An area should be considered an Airborne Radioactivity Area when the airborne activity reaches 0.3 DACs for isotopes which have a classification other than submersion, and 100% of the DAC limits for isotopes which have a classification of submersion. DAC limits are specified in 10CFR20 Appendix B, Table I, Column 3.

2.2 ANNUAL LIMIT ON INTAKE (ALI)

The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in 10CFR20, Appendix B, Table 1, Columns 1 and 2. (1993327366)

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2.3 CONTAMINATED AREAS, MATERIALS AND EQUIPMENT

Any area where loose surface contamination exceeds the following limits shall be posted as a Contaminated Area. Items exceeding the following measurements will be posted as radioactive material and handled in accordance with Procedure 00960-C, "Control of Radioactive Material." (1984301315)

2.3.1 Fixed Surface Radioactive Contamination (contamination embedded in material surface)

Beta-gamma 100 cpm above background as measured with an HP-210 probe or equivalent or as specified by HP procedures for other instruments.

Alpha 50 cpm above background as measured with an alpha survey meter.

2.3.2 Loose Surface Radioactive Contamination (removable contamination)

Beta-gamma ≥ 1000 dpm/100 cm²

Alpha ≥ 20 dpm/100 cm²

2.4 CONTROLLED AREA


Any area outside of the restricted area but inside the site boundary, access to which can be limited for any reason.

2.5 DERIVED AIR CONCENTRATION (DAC)

The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2000 hours, results in an intake of one ALI. DAC values are given in 10CFR20, Appendix B, Table 1, Column 3. (1993327366)

2.6 HIGH RADIATION AREA

Any area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 100 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553) (1985306089)

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2.7 HOT PARTICLES

Hot particles are discrete radioactive particles that are characterized by intense emissions of beta particles, X-rays and gamma rays. For the purpose of hot particle control, a hot particle will be defined as an extremely localized count rate (RM-14 with HP-210 probe, or equivalent) of 250,000 cpm or more emanating from a discrete particle.

2.8 HOT PARTICLE BUFFER AREA (HPBA)

An area, free of hot particles, surrounding a Hot Particle Control Area (HPCA). Hot particles are not expected in this area; however, this area is surveyed frequently to determine that hot particles are not transported out of the HPCA.

2.9 HOT PARTICLE CONTROL AREA

A work area where hot particles are known to be present. An HPCA may be a room, a roped off area or a containment used to confine hot particle contamination.

2.10 HOT SPOTS

Components or items having localized contact readings in excess of 100 mrem/hr and more than 5 times the general area dose rates.

2.11 LOCKED HIGH RADIATION AREA

Any area accessible to individuals, in which radiation levels external to the body could result in an individual receiving a dose equivalent equal to or in excess of 1000 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553)

2.12 RADIATION AREA

Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem/hr at 30 cm (12 inches) from the radiation source or from any surface which the radiation penetrates. (2000341553) (1985306090)

2.13 RADIATION CONTROLLED AREA (RCA)

Any area which contains or potentially contains radiation, contamination, or radioactive materials in quantities or levels sufficient to require posting of protective measures.

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2.14 RADIOACTIVE MATERIALS AREA

A radioactive materials area is any area or room in which radioactive material is used or stored and which contains radioactive material in an amount exceeding 10 times the quantity of such material specified in 10CFR20, Appendix C. This does not apply to materials contained within process equipment or materials in transport that are packaged and labeled in accordance with Department of Transportation (DOT) regulations. (1985306086) (1985306087)

2.15 RADIATION WORKER

Plant personnel assigned duties inside Radiation Control Areas.

2.16 RESTRICTED AREA

Any area to which access is limited by the licensee for the purpose of protection of individuals against undue risks from exposure to radiation and radioactive materials. The area inside an RCA is a restricted area. Others may be defined as needed.

2.17 SELF MONITORING

Radiation and Contamination monitoring performed by qualified Radiation Workers for themselves only.

2.18 SURVEYS AND SAMPLING

2.18.1 The measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

2.18.2 "Survey" is also an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, concentrations or quantities of radioactive material present.

2.19 VERY HIGH RADIATION AREA


Any area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter (3 feet) from a radiation source or 1 meter from any surface that the radiation penetrates.

3.0 **RESPONSIBILITIES**

3.1 **HEALTH PHYSICS MANAGER**

The Health Physics Manager is responsible for ensuring the Health Physics Section performs the following:

- 3.1.1 Reviews radiation safety incidents and approves corrective action.
- 3.1.2 Establishes and maintains a radiation and contamination control program which includes appropriate procedures and instructions.
- 3.1.3 Establishes and maintains a Radiation Work Permit (RWP) system to control and minimize exposure to radiation and contamination. (1984302057)
- 3.1.4 Assigns HP Personnel as appropriate to the Maintenance Performance Teams.
- 3.1.5 Performs and documents radiation and contamination surveys, air sampling, and analysis, and reviews plant areas to ensure that all areas with existing or potential high radiation exposure rates are properly posted and controlled. (1985307052)
- 3.1.6 Classifies, posts, barricades, and controls ingress and egress to Radiation Controlled Areas to control radiation exposure and spread of contamination.(1984301951) (1985307052)
- 3.1.7 Determines protective clothing requirements and stay times.
- 3.1.8 Requests and verifies installation of shielding.
- 3.1.9 Supervises and monitors decontamination of personnel, equipment and facilities.
- 3.1.10 Establishes controls for use and disposition of contaminated materials and equipment.
- 3.1.11 Performs maintenance, calibrations, and surveillances on assigned HP instrumentation and equipment.
- 3.1.12 Performs trend analysis on radiation and contamination exposure controls. Recommends actions necessary to correct adverse trends. (1999340604) (2000340662)
- 3.1.13 Maintains control and limitations for Self Monitoring Program.

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3.1.14 Ensures the Plant Training and Emergency Preparedness Department is notified of changes in the use of protective clothing so that General Employee Training remains current.

3.1.15 Actively participates in the Training Advisory Committee to maintain all training current and relative to plant demands.

3.2 PLANT SUPERVISION

3.2.1 Ensure that supervised personnel comply with rules, regulations and procedures associated with radiation safety and comply with RWPs. (1984301983)

3.2.2 Request RWPs to support work in Radiation Controlled Areas if not already requested by the Performance Team work planner.

3.2.3 Notify HP promptly when radiological problems occur and interface with HP to resolve deficiencies.

3.2.4 Ensure that the work area has been cleaned up and restored to normal conditions after work evolution is completed.

3.2.5 Ensure appropriate individuals receive Self Monitoring training.

3.2.6 Ensure individuals complete Job Performance Measures (JPMs) sign off criteria.

3.3 PLANT PERSONNEL


3.3.1 Practice radiation safety and maintain their radiation exposure As Low As Reasonably Achievable (ALARA).

3.3.2 Comply with all radiation protection rules, regulations and procedures. Supervisors are responsible for ensuring their employees follow all radiation protection rules, regulations and procedures.

3.3.3 Read and comply with RWP requirements whenever their duties require the use of an RWP.

3.3.4 Individuals are responsible for surveying themselves for contamination when crossing a local control point or the main access control point. (1984301969)

3.3.5 If contamination is found, the individual notifies HP Personnel for decontamination. (1984301969)

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3.3.6 Know their current exposure status.

3.3.7 Perform Self Monitoring within established procedures and limits, if qualified.

3.4 PLANT TRAINING AND EMERGENCY PREPAREDNESS MANAGER

The Plant Training and Emergency Preparedness Manager is responsible for ensuring the Training Department performs the following:

3.4.1 Establishes and maintains a Self Monitoring training program.

3.4.2 Maintains records for personnel who have completed Self Monitoring training.

3.4.3 Keeping other plant sections informed on personnel who are Self Monitoring qualified.

4.0 REQUIREMENTS

4.1 PERSONNEL REQUIREMENTS

4.1.1 All personnel shall receive indoctrination and training in radiation and contamination control requirements in accordance with approved plant procedures, commensurate with their work assignments.

4.1.2 HP Personnel shall receive additional training in radiation safety in accordance with approved plant procedures.

4.1.3 Prior to performing Self Monitoring personnel will receive specific training.

4.1.4 Personnel performing Self Monitoring must have specific JPMs signed off to be qualified to perform Self Monitoring tasks.


4.2 ENTRY/EXIT (1984301955) (1985305100)

4.2.1 Personnel will normally access and exit RCAs through the designated access control points determined by Health Physics.

4.2.2 Personnel access to areas of unknown radiological conditions will normally be restricted until survey data is established by Health Physics personnel.

4.2.3 Entrance and access to a High Radiation Area shall be controlled by a specific RWP. (1985307052)

4.2.4 Access to containment buildings is controlled by HP and areas are surveyed to establish allowable working periods. Telemetry may be used in place of stay times.


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- 4.2.5 Any individual, or group of individuals, permitted to enter a High Radiation Area shall be continuously provided with or accompanied by one or more of the following: (1985306646) (1985306649) (1995329954) (1995329955)
- a. Radiation monitoring device(s) which continuously indicates the radiation dose rate in the area.
 - b. Radiation monitoring device(s) which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas is permitted after the dose rate level has been made known to personnel.
 - c. An individual qualified to implement Health Physics procedures, equipped with a radiation dose rate monitoring device and who will be responsible for providing positive control over activities within the area while performing periodic radiation surveillance as specified by the Health Physics Manager, or designee, in the RWP.

NOTE

If an escort is required, only Health Physics Personnel are qualified to perform escort duties in Locked High Radiation Areas.

- 4.2.6 In addition to the requirements for a High Radiation Area, access of personnel into a Locked High Radiation Area (> 1000 mrem/h) shall be under an approved, specific RWP, that shall specify the dose rate levels in the immediate work areas and the maximum allowable stay times for individuals in those areas.
- 4.2.6.1 Specific RWP's may govern entry into many Locked High Radiation Area's, therefore, ALARA briefings will clarify RWP requirements for dose rate specifications in the immediate work area.
- 4.2.6.2 In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.
- 4.2.7 In addition to the requirements for a Locked High Radiation Area, access of personnel into a Very High Radiation Area must receive prior written approval from the Health Physics Manager, or designee.
- 4.2.7.1 A Health Physics escort is required for entry.
- 4.2.7.2 In the event of a declared emergency the Emergency Director may grant access to a Very High Radiation Area.


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5.0 PROCEDURE

5.1 POSTING

The following precautions and limitations apply to postings used to identify or delineate Radiation Controlled Areas:

- 5.1.1 Radiological warning signs, ropes or barricades shall be placed in such a manner as to alert personnel of the hazard upon approach.
 - 5.1.1.1 Removal or repositioning of signs, ropes or barriers is prohibited unless authorized by Health Physics personnel.
 - 5.1.1.2 Signs, ropes, and barricades may be placed in areas of low or no, radiological hazard, if appropriate, for the purpose of access control. (1999340604) (2000340661)
 - 5.1.1.3 Radiological posting signs shall have a yellow background with a purple, magenta, or black radiation symbol.
 - 5.1.1.4 Ropes and barrier tape used for radiological warnings shall be yellow and magenta. The exception to the required color is when chain is used as a barrier, provided the chain is identified as a radiological barrier.
 - 5.1.1.5 Signs, ropes, and other material of the conventional yellow and magenta color shall not be used for any purpose other than radiological control marking, unless approved by HP Supervision and controlled by Procedure 00960-C.
 - 5.1.1.6 To the extent practicable, measured radiation levels and locations of sources should be posted at the entry into any radiation or high radiation area.
 - 5.1.1.7 Use of handwritten signs shall be minimized.

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5.1.2 Radiation Controlled Area

5.1.2.1 Each Radiation Controlled Area shall have all personnel access points and doors posted with a sign bearing the radiation symbol and the words:

**CAUTION
Radiation Controlled Area
RWP Required For Entry
Dosimetry Required For Entry**

5.1.2.2 In addition to the requirements of Step 5.1.2.1 all areas posted as an RCA (except those areas exempted by the Health Physics Manager, or designee) shall have the exit doors and pathways posted with the words:

**CAUTION
All Personnel and Materials
Must Be Surveyed Before
Leaving This Area**

5.1.2.3 The use of tape bearing the words "Radiation Controlled Area" may be used in addition to required signs.

5.1.2.4 Areas may be specifically posted with the words "Radiation Controlled Area, RWP and Dosimetry Required For Entry" if HP Supervision deem that potential exists for a change of conditions requiring greater awareness of hazards in the area to be entered.


5.1.3 Radiation Area (2000341553) (1985306090)

5.1.3.1 Each radiation area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Radiation Area**

5.1.3.2 The RWP will define entry requirements for these areas.

5.1.3.3 Posting boundaries for Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

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5.1.4 High Radiation Area (2000341553) (1985306089)

5.1.4.1 Each High Radiation Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words: (1985307052)

DANGER
High Radiation Area
Health Physics Escort Required
or
Alarming Dosimeter Required
RWP Required for Entry


Per 10CFR20.1902(b) High Radiation Area signs may use either the word "CAUTION" or "DANGER." Danger is the wording selected for use at Vogtle, Hatch, and Farley.

5.1.4.2 Posting boundaries for High Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

5.1.4.3 Each entrance or access point into a High Radiation Area shall be locked, except during periods when access to the areas is required, with positive control over each individual entry, or provide continuous direct or electronic surveillance that is capable of preventing unauthorized entry.

5.1.4.4 In lieu of the controls specified in Section 5.1.4.3, each High Radiation Area in which the radiation exposure rate is greater than 100 mrem/h and less than 1000 mrem/h shall be barricaded and conspicuously posted as directed above. (1985307052)

5.1.4.5 Individuals who have successfully completed HP self-monitoring training are qualified to provide their own escort in High Radiation Areas.

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5.1.5 Locked High Radiation Area (2000341553) (1985306649) (1995329955)

5.1.5.1 Each Locked High Radiation Area shall be locked in such a manner as to prevent unauthorized entry and not prevent exit from the area. Those areas, where no enclosure can be reasonably constructed, shall be roped off and a flashing light installed as a warning device. Areas meeting the above requirements shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words: (1985307052) (1995330004)

**DANGER
Locked
High Radiation Area
Health Physics Escort Required
Alarming Dosimeter Required
RWP Required For Entry**

5.1.5.2 Posting boundaries for High Radiation Areas are determined by radiation surveys. These surveys will be made at a distance of 30 cm (~12 inches) from the radiation source or from any surface the radiation penetrates.

5.1.5.3 Control of keys for Locked High Radiation Areas will be by Operations or Health Physics Supervision in accordance with Procedure 00008-C, "Plant Lock And Key Control."

5.1.6 Very High Radiation Area (1985306649) (1995329955)


5.1.6.1 Each Very High Radiation Area shall meet all of the access and posting controls which apply to Locked High Radiation Areas and an HP escort is required for area entry.

5.1.6.2 Each Very High Radiation Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**GRAVE DANGER
Very High Radiation Area
Health Physics Escort Required
Alarming Dosimeter Required
RWP Required for Entry**

5.1.6.3 Very High Radiation Area boundaries will be determined by surveys made at a distance of 1 meter (3 feet).

5.1.6.4 Control of keys for Very High Radiation Areas will be in accordance with Procedure 00008-C.

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5.1.7 Hot Spots

5.1.7.1 Each identified hot spot should be conspicuously posted with a sign bearing the radiation symbol and the words:

Hot Spot

5.1.7.2 In addition to the requirements of Step 5.1.7.1, each Hot Spot **should be** documented via the Health Physics Department's computerized survey system. The related survey information should be marked on the corresponding room or area survey status sign.

5.1.7.3 Do not apply hot spot stickers by use of adhesive backing due to the possibility of chloride contamination. Use approved tape or other means to affix the sticker to the desired location.

5.1.8 Contaminated Areas, Materials, Equipment and Personnel.

5.1.8.1 Each contaminated area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:


**CAUTION
Contaminated Area**

5.1.8.2 Areas, or rooms, posted as contaminated areas will be defined (by barrier, tape, etc) at the entrance/exit point of the area and a step-off pad, placed as soon as practicable, to prevent the spread of contamination.

5.1.8.3 The RWP will define entry requirements.

5.1.8.4 All personnel should take measures to minimize the spread of higher contamination to low or uncontaminated areas.

5.1.8.5 Materials, equipment and personnel shall be considered contaminated if they exceed the limits of Subsection 2.3. Materials and equipment shall be labeled in accordance with 00960-C, "Control of Radioactive Materials." Personnel shall be decontaminated.

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- 5.1.8.6 Areas that are potentially contaminated shall be controlled as contaminated areas.
- 5.1.8.7 Contaminated Areas may be defined with yellow and magenta ribbon, tape, or rope.
- 5.1.8.8 Contaminated Areas should be decontaminated as soon as practicable.
- 5.1.8.9 Areas where activities, such as opening a potentially contaminated system, grinding or machining on potentially contaminated surfaces, are performed, shall be controlled as Contaminated Areas.
- 5.1.8.10 Materials taken into Contaminated Areas should be minimized to only those necessary to perform the work.

5.1.9 Airborne Radioactivity Areas (1985306088)

- 5.1.9.1 Each Airborne Radioactivity Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Airborne Radioactivity Area
Notify Health Physics Prior to Entry**

- 5.1.9.2 Entrances into these areas will be controlled by a specific RWP.
- 5.1.9.3 Posting may also be required for any work evolution likely to cause airborne contamination such as initial opening of reactor systems, grinding, welding, burning or operating air-operated equipment in contaminated areas.


5.1.10 Radioactive Materials Area (1985306086) (1985306087)

- 5.1.10.1 Each Radioactive Materials Area shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Radioactive Material**

- 5.1.10.2 In addition to the requirements of Step 5.1.11.1, containers containing radioactive material shall be clearly marked with signs, or stickers, bearing the radiation symbol and the words:

**CAUTION
Radioactive Material**

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5.1.10.3 Posting of radioactive material containers should have the contact radiation dose marked on the sign or wrapping, in accordance with Health Physics procedures.

5.1.10.4 For the purpose of this procedure, the radioactive material container may be a plastic bag or suitable wrapping.

5.1.11 Hot Particle Control Area

5.1.11.1 Each Hot Particle Control Area (HPCA) shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Hot Particle Control Area
Health Physics Escort Required**

5.1.11.2 Areas, or rooms, posted as Hot Particle Control Areas will be defined (by barrier, tape, etc) (such as yellow and magenta rope, tape or ribbon) at the entrance/exit point and a step-off pad(s) placed as soon as practicable to prevent the spread of hot particles.

5.1.11.3 Each Hot Particle Buffer Area (HPBA) shall be conspicuously posted with a sign, or signs, bearing the radiation symbol and the words:

**CAUTION
Hot Particle Buffer Area
Increased HP Surveillance Required**


5.1.12 Radiological Status Sheets/Boards

Highly frequented radiation areas, as designated by HP Supervision, should be posted by HP to indicate radiation levels. Results may be specified as ranges.

5.2 RADIATION WORK PERMIT (RWP) (1999340604)

5.2.1 The RWP specifies radiation safety requirements for each job and assures worker briefings are given. The RWP also provides a mechanism for evaluating person-rem expenditures on each job. Procedure 43007-C, "Issuance, Use And Control Of Radiation Work Permit," specifies the details of the RWP program.

5.2.2 HP shall establish and maintain a Radiation Work Permit system to control and minimize radiation exposure during operation and maintenance at VEGP. An RWP is required for any entry into an RCA and must be reviewed daily by each worker prior to entry. (1999340604) (2000340662)

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5.2.3 Radiation Work Permits shall provide radiological controls that address specific conditions of the job and areas for the purpose of worker protection. Protective clothing and/or radiological control requirements (i.e., respiratory protection) shall be established by RWP and modified only by authorized Health Physics personnel. (1984301975) (1999340604) (2000340661) (2000340662)

5.2.4 Health Physics personnel or plant supervision may stop the job whenever radiological conditions change or work practices are inconsistent with the pre-job planning and/or RWP. If this occurs, then:

- a. HP Supervision must be notified and appropriate changes made in the approach to the job, if practicable. Subject changes will be reflected on the RWP.
- b. Stop work actions and subsequent changes in job controls must be documented in the ALARA Review Package.

5.2.5 HP Supervision or the Shift Supervisor may authorize entry with an urgent, or emergency, RWP when critical immediate action is required.

5.2.5.1 In this case, however, HP shall provide continuous coverage to ensure radiation safety practices are followed. The job shall be documented after its completion.


5.2.5.2 Supply kits and Emergency Preparedness kits will be strategically located throughout the plant and will contain equipment and materials for emergency response.

5.2.6 General Radiation Work Permit

5.2.6.1 The General RWP is used for the performance of routine duties and surveillance work. General RWPs will not be issued for work in high radiation areas, areas of significant loose contamination, or areas requiring a specific job survey by Health Physics prior to entry. (1984301305)

5.2.6.2 General RWPs specify basic radiation safety requirements such as minimum protective clothing, dosimetry, respiratory protection, access restrictions, and the type or extent of work that is authorized.

5.2.6.3 Records of entries shall be specified by name, elapsed time and incremental dose, and maintained on a daily basis.

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5.2.7 Specific Radiation Work Permits

The Specific RWP is used for the performance of a specific job in specific locations or areas. The Specific RWP is active for the duration of the job and may be modified on the basis of surveys. Surveys shall be performed as required to support RWP authorized work.

5.2.8 HP should review active RWPs on a routine basis.

5.2.9 When a job is in a high radiation area, HP Supervision may determine that performing pre-job RWP surveys would not be consistent with ALARA. The RWP may then be initiated prior to surveys being taken. However, HP shall enter the areas with the work crew and perform the appropriate surveys while the job is being done. The survey data will be recorded on the RWP and radiological controls adjusted as necessary.

5.2.10 The RWP should be posted at the job location or main HP control point.

5.2.11 Personnel authorized to make an entry on a Specific RWP requiring a pre-job briefing should be specified by name or section. Records of entries will be maintained in accordance with step 5.2.6.3.


5.2.12 Issuance of Radiation Work Permits

5.2.12.1 Personnel should initiate an RWP by notifying Health Physics at least 24 hours before job performance is required to allow sufficient time to generate the RWP and perform an ALARA review. Exceptions to the 24 hours should be considered for planned maintenance. For planned maintenance activities Health Physics should be notified 14 days prior to the start of the activities.

5.2.12.2 HP reviews the work to be performed and specifies radiological controls to minimize exposure to personnel.

5.2.12.3 If pre-job planning is required, it shall be performed in accordance with VEGP procedures.

5.2.12.4 HP shall approve the RWP. HP Supervision shall sign all RWPs. A copy of the RWP may be included in the Work Order (WO) package. However, the posted RWP shall be reviewed daily prior to use in order that changes to radiological conditions may be noted.

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5.2.13 Termination Of Radiation Work Permits

- 5.2.13.1 Specific RWPs shall be terminated or suspended whenever the job is completed or canceled, or whenever significant changes in radiological conditions occur. The job supervisor/TL/ATL should inform HP of RWPs to be terminated.
- 5.2.13.2 General RWPs shall be terminated whenever significant changes in radiological conditions occur or at the end of each calendar year. General RWPs shall be reviewed by Health Physics Supervision each calendar quarter.
- 5.2.13.3 HP should ensure that terminated RWPs are clearly identified as terminated.
- 5.2.13.4 HP should also ensure that terminated RWPs are removed from the job location and/or control points and returned to the Health Physics office.
- 5.2.13.5 Specific RWPs may be suspended after consultation with either Work Planning of the Work Group Supervisor. For efficiency or record processing purposes Health Physics may, at its discretion, determine that an RWP needs to remain open. (2003002525)
- 5.2.13.6 Any RWP will be terminated unless Health Physics has been apprised of the need for suspending the RWP or Health Physics has made a determination, at its discretion, that the RWP should remain in an active or suspended state. (2003002525)

5.3 CONTAMINATION CONTROLS

5.3.1 Use Of Protective Clothing (PC)

- 5.3.1.1 Personnel shall wear and use protective clothing in a manner consistent with the training each has received.
- 5.3.1.2 HP shall ensure that PCs are commensurate with the levels and state of the contamination expected for the area entered. These requirements can only be modified by qualified Health Physics personnel. (1984301946)
- 5.3.1.3 Outer street clothing and jewelry should be removed prior to donning PCs. Violations of this policy may result in the confiscation of contaminated clothing and personal effects. While outside separate dressing areas, men and women will be expected to remain modestly attired in the workplace. Loose fitting, non-revealing garments, such as scrubs or a pair of gym shorts and a T-shirt, are considered appropriate. Tight fitting, revealing undergarments are not acceptable attire.

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5.3.1.4 The use of protective clothing for purposes other than contamination control is prohibited. Protective clothing should be distinctly marked or colored to facilitate control. Yellow plastics used for contamination control shall not be used as uncontrolled clothing for use in protection from the elements (e.g., raingear).

5.3.1.5 Protective clothing is stored in accordance with Procedure 92015-C, "Transient Combustibles Control."

5.3.2 Control Of Radioactive Contamination (1984301315)

5.3.2.1 HP shall establish controls to ensure that the spread of contamination during work is minimized.

5.3.2.2 These controls shall include, but are not limited to consideration of the following:

- a. Engineered Controls
- b. Special Training
- c. Job Planning
- d. Monitoring of Materials and Equipment

5.3.2.3 Step-off pads will be used to control entrance and exit from a contaminated area, to minimize the spread of contamination from an area.

5.3.2.4 Multiple step-off pads (two or more) may be used in areas of high contamination.


5.4 PERSONNEL MONITORING

5.4.1 Personnel monitoring shall be performed in a manner consistent with the training each has received.


5.4.2 A full whole body frisk shall be performed by all personnel when exiting the RCA access control point or at other areas designated by HP. Whole body monitors should be used as primary means of surveying when provided.

5.4.3 The HP Manager, or designee may exempt the whole body survey requirement for exit from Radiation Controlled Areas where sealed radioactive material is stored, after surveys verify the escape of radioactive material is unlikely to occur under normal conditions.

5.4.4 Personnel exiting contaminated areas are responsible for surveying themselves when they cross a local control point equipped with either friskers or personnel contamination monitors.

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- 5.4.5 Personnel exiting contaminated areas should frisk their hands and feet at the nearest frisker location and notify HP if contamination is found.
- 5.4.6 After performing a hands and feet frisk, personnel should proceed to the nearest personnel contamination monitor for a whole body survey. This survey is to be performed prior to the individual putting on street clothes.
- 5.4.7 When exiting contaminated areas, hand carried tools and materials (e.g., clipboards, notebooks, pencils, etc.), shall be frisked for beta-gamma contamination by HP Personnel unless a red tool bag has been provided (outside the contaminated area in accordance with HP procedures) for their return.
- 5.4.8 HP shall be notified immediately whenever contamination is detected on any individual or their personal articles. At no time are individuals to perform self decontamination without HP Personnel present.
- 5.4.9 Personnel decontamination should be performed when the results of personnel monitoring exceed 100 cpm above background per probe area when using an HP-210 probe or equivalent. Exceptions may be warranted if isotopic identification demonstrates that the material is short lived (e.g., Rb-88, Cs-138). HP Supervision shall approve the exceptions.
- 5.4.10 HP shall directly supervise the decontamination of contaminated individuals. HP shall use approved methods of decontamination and document personnel contamination and decontamination effectiveness. Medical assistance may be required when contamination cannot be removed by use of approved methods.
- 5.4.11 Whenever internal contamination is suspected, bioassays shall be performed in accordance with Procedure 00940-C, "Bioassay Program."
- 5.4.12 HP shall control, on an individual basis, the use of contaminated or radioactive articles and maintain possession of contaminated personal articles until sufficient radioactive decay or decontamination bring items into compliance with Procedure 00960-C or until items are discarded.

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5.5 DECONTAMINATION OF MATERIALS AND FACILITIES (1984301315)

5.5.1 HP should evaluate the generation of additional radwaste and additional exposure to personnel against the benefits of reduced personnel exposure and contamination levels when prescribing the methods and extent of decontamination efforts.

5.5.2 HP shall ensure that only approved decontamination methods and permissible chemicals are used. Chemistry Personnel should be consulted to identify permissible chemicals.

5.5.3 HP will be notified of all spills. HP may approve methods for immediate cleanup of small spills (e.g. Chemistry spilling Reactor Coolant Sample). 2003201146

5.6 RADIATION AND CONTAMINATION SURVEYS (1999340604) (2000340661)

5.6.1 HP shall perform radiation and contamination surveys in accordance with HP Department Procedures to mark and confirm Radiation Controlled Areas, and unrestricted area boundaries, to determine if abnormal radiation levels exist, and to determine extent and magnitude of radiation and contamination levels so that personnel radiation exposure can be maintained ALARA. (1984301951) (1985305365) (1985307052)


5.6.2 Controls for release of potentially contaminated or activated materials or facilities for unrestricted use are addressed in Procedure 00960-C.

5.6.3 Protective clothing and gloves will be worn when sampling radioactive systems. (1984301314)

5.6.4 HP shall perform radiation and contamination surveys, as required, to support the operation and maintenance of VEGP.

5.6.5 HP conducts surveys during performance of critical steps. Examples of such critical steps include: Opening of radioactive systems and certain grinding, welding or machining operations on contaminated equipment.

5.6.6 When unusual exposures have occurred, surveys shall be performed to determine the cause. Corrective actions shall be instituted to minimize further personnel exposure.

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5.6.7

Plant personnel shall notify Health Physics when radiation and contamination surveys are required. Examples include but are not limited to, the following activities:

- a. At predetermined task steps, requiring a re-evaluation of radiological conditions in active work areas and adjacent areas, whenever operations are performed that have the potential for changing radiation levels.
- b. As necessary to control the spread of loose surface contamination whenever operations are performed that have been known to result in, or are expected to result in, the spread of contamination.
- c. Upon initial entry to vaults, tanks and voids containing radioactive piping or components.
- d. Upon opening of contaminated or potentially contaminated systems.
- e. For picking up, receiving or opening packages containing radioactive material.
- f. Prior to the need for modification of shielding.
- g. Prior to handling radioactive sources, i.e., incore fission detectors.
- h. Release of facilities or equipment for unrestricted use.
- i. Prior to removal of any posted Radiation Control Area boundary.
- j. Whenever smoke removal equipment (portable or installed) is used in the RCA. (1985306168)

5.6.8

HP shall perform airborne radioactivity surveys in accordance with HP Department Procedures to provide a basis for the selection of respiratory protection equipment, the degree of engineering controls to be implemented for a particular task, and assurance that regulatory requirements are met. (1984301975)

5.7


SHIELDING

5.7.1

Temporary shielding shall be evaluated and controlled per Procedure 41006-C, "Temporary Shielding.". When determined to be necessary, shielding will be provided to control doses to within the limits of applicable regulation.

5.7.2

Addition, deletion, or modification of permanent shielding shall be controlled per Procedure 00400-C, "Plant Design Control."

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5.8 SELF MONITORING

- 5.8.1 Only personnel specifically trained and qualified under the VEGP RAD WORKERS SELF MONITORING Training may perform Self Monitoring.
- 5.8.2 Personnel trained and qualified under Plant Hatch or Plant Farley Rad Workers Self Monitoring training may be exempted from the VEGP training requirement for Self Monitoring
- 5.8.3 Personnel will consult with HP if there is any question on their qualification to perform the task.
- 5.8.4 Notify HP for instruction when personnel contamination is detected.
- 5.8.5 Radiation and Contamination Limits in Tables 1 & 2 included in this procedure will be followed.
- 5.8.6 Refer to Table 3, "Self Monitoring Controls Checklist," for additional instructions.

6.0 REFERENCES

6.1 PROCEDURES

- 6.1.1 00008-C, "Plant Lock And Key Control"
- 6.1.2 00100-C, "Quality Assurance Records Administration"
- 6.1.3 00400-C, "Plant Design Control"
- 6.1.4 00940-C, "Bioassay Program"
- 6.1.5 00960-C, "Control Of Radioactive Material"
- 6.1.6 00970-C, "Respiratory Protection Program"
- 6.1.7 41006-C, "Temporary Shielding"
- 6.1.8 43000-C, "Radiation And Contamination Surveys"
- 6.1.9 43002-C "Airborne Radioactivity Sampling And Evaluation"
- 6.1.10 43007-C, "Issuance, Use And Control Of Radiation Work Permits"
- 6.1.11 92015-C, "Use, Control and Storage Of Flammable/Combustible Materials"

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6.2 10CFR20, "Standards For Protection Against Radiation"

6.3 VEGP Rad Workers Self Monitoring Training

6.4 COMMITMENTS, OPEN ITEMS AND ACTION ITEMS

6.4.1 Commitments

1984301253, 1984301305, 1984301314, 1984301315, 1984301946,
1984301951, 1984301955, 1984301969, 1984301975, 1984301983,
1984302057, 1985303534, 1985305100, 1985305365, 1985306086,
1985306087, 1985306088, 1985306089, 1985306090, 1985306168,
1985306646, 1985306649, 1985307052, 1993327366, 1995329954,
1995329955, 1995330004, 1999340604, 2000340661, 2000340662,
2000341553

6.4.2 Applicable Condition Reports or Action Items

2003002525, 2003201146

END OF PROCEDURE TEXT

TABLE 1

**DOSE RATE GUIDELINES FOR SELF MONITORING
QUALIFIED INDIVIDUALS**

DOSE RATE	EXPECTED DOSE (INTEGRATED DOSE) mrem	WORKER REQUIREMENTS
<1000 mrem/hr	≤100 mrem	None
	>100 mrem	Obtain HP support
≥1000 mrem/hr		Obtain briefing on area dose rates and authorization on RWP Obtain entry requirements

<u>Symbol</u>	<u>Meaning</u>
<	less than
>	greater than
≥	equal to or greater than
≤	equal to or less than



TABLE 2

CONTAMINATION LEVEL GUIDELINES FOR SELF MONITORING QUALIFIED INDIVIDUALS

CONTAMINATION LEVELS	TASK DESCRIPTION	DRESS REQUIREMENTS	HEALTH PHYSICS SUPPORT
≤ 1000 dpm/100cm ²	None	None	None
> 1000 dpm/100cm ² $\leq 10,000$ dpm/100cm ²	No breach, climbing or kneeling. Tasks permitted include walkdowns, inspections, equipment setup, chemistry sampling, etc.)	Booties and Gloves	None
	Breach of system	Full PCs Facial PCs	Contact HP prior to contaminated system breach
	Climbing, equipment setup involving kneeling or tight areas		None
$> 10,000$ dpm/100cm ² $\leq 50,000$ dpm/100cm ²	No breach or climbing. Tasks permitted include walkdowns, inspections, equipment setup, chemistry sampling, operation rounds, etc.)	Lab coat, booties, and gloves	None
	Breach of system	Full PCs (single), Breathing Zone air sample, Facial PCs for climbing, airborne, and splash protection	Contact HP prior to contaminated system breach
	Climbing, equipment setup involving kneeling or tight areas		None
$> 50,000$ dpm/100cm ² $\leq 300,000$ dpm/100cm ²	Valve CM/PM, repacking, or line-up, rotate blind flanges, remove boron, etc.	Full PCs (single). Facial PCs, BZs, as required	Area setup, ventilation setup, Herculite, etc.
	$> 300,000$ dpm/100cm ²		Contact HP

Symbol Meaning
 > greater than
 ≤ equal to or less than


Approved By C.R.Dedrickson	Vogtle Electric Generating Plant 	Procedure Number Rev 00930-C 26
Date Approved 08/05/2009	RADIATION AND CONTAMINATION CONTROL	Page Number 28 of 28

TABLE 3

SELF MONITORING CONTROLS CHECKLIST

Prior to initiating Self Monitoring in a Radiation Controlled Area, perform the following steps:

1. Review the assigned RWP.
2. When utilizing Self Monitoring, the following must be performed:
 - a. Review the latest HP Routine Surveys for the area where work is to be performed.
 - b. If the dose and contamination levels are outside the limits set for Self Monitoring in Tables 1 and 2 of this procedure, or if maintenance will require breaching of a potentially contaminated system, contact HP prior to beginning work.

NOTE

Dress requirements will be determined by the latest survey data and should be reevaluated after the initial Self Monitoring Survey is performed.

3. Obtain the appropriate dose and contamination monitoring instrumentation and perform an initial survey of the area where work is to be performed. If the measurements taken are within the limits established by this procedure, work may proceed.
4. Monitor dose and contamination levels during the work process.
5. Perform exit survey. If the dose or contamination levels have increased during the work process, notify HP and document the survey results.

SRO Admin Job Performance Measure "E"

Facility: **Vogtle**

Task No: V-LO-TA-40005

Task Title: Complete EN Form With Offsite Protective Action Recommendations

JPM No: V-NRC-JP-NMP-EP-112-HL17

K/A Reference: G2.4.44 SRO 4.4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

THIS IS A TIME CRITICAL JPM

Initial Conditions: A General Emergency has just been declared for Unit 1 due to a loss of Fuel Cladding and RCS fission product barriers and potential loss of the Containment fission product barrier.

This is the first declaration made.

Unit 1 was shutdown 20 minutes ago.

WebEOC is not functional.

Heavy rains have caused wide spread flooding in the CSRA area with several bridges in Burke County washed out and many roads impassable. Heavy rains are continuing.

No elevated radiation conditions exist on any plant effluent monitors.

Meteorological conditions are those on the Classification Determination provided.

The ENN communicator has completed roll call per NMP-EP-111 checklist 3.

Initiating Cue: Based on the information given, the Emergency Director directs you to, "Manually complete the Emergency Notification form for approval."

Task Standard: EN form completed with PAR 1 determined recommendations documented.

Required Materials: The following materials to be provided to the Candidate:

1. NMP-EP-111, "Emergency Notifications" Ver 4.0
Attachment 1 part 1 Guidance for initial EN Form completion.
2. NMP-EP-112, "Protective Action Recommendations"
Ver 1.0
3. Completed NMP-EP-110 Checklist 1 Classification
Determination.
4. NMP-EP-111 Checklist 3 Emergency Notifications- Manual
Method with the first two steps completed.
5. NMP-EP-111, Figure 1 Emergency Notification Form.

General References: None

Time Critical Task: YES

Validation Time: 15 minutes

Critical items on Emergency Notification Form are per Procedure 60201-C, "Simulator Training & Documentation", which specifies lines required to be done correctly to be satisfactory performance for Emergency Preparedness NRC Performance Indicator.

Performance Information

Critical steps denoted with an asterisk

NMP-EP-111, Checklist 3, Emergency Notifications – Manual Method.

Step 1. Obtain a copy of Table 1 then establish contact on the ENN by performing a roll call of the applicable agencies. Check off each agency on Table 1 as acknowledgement is obtained.

Step 2. Roll call:

a. Read the following script:

Standard: Candidate determines these steps are complete from initial conditions.

Comment:

Step 3. If not already completed, complete the emergency notification form (Figure 1). Guidance for form completion is provided in Attachment 1, Part 1 - Guidance for Initial EN Form completion and Attachment 1, Part 2 - Guidance for Follow-up EN Form Completion.

Standard: Candidate selects NMP-EP-111 Figure 1 and Attachment 1, Part 1.

Comment:

NMP-EP-111, Attachment 1 Part 1 - Guidance for Initial EN Form Completion.

***Steps 1, 2, 3, 4 of EN Form Completed.**

Standard: Candidate completes Lines 1, 2, 3, 4 on Figure 1 EN form per the attached Figure 1 Key. Only boxes filled in black and highlighted text are Critical for task performance.

Comment:

Step 5 Protective Action Recommendations.

Standard: Candidate goes to NMP-EP-112 Protective Action Recommendations.

Comment:

Determine PARs using NMP-EP-112, Attachment 1, Flowchart.

Standard: Candidate performs flowchart and determines PAR 1.

Has a General Emergency been declared -YES
Puff release in progress (projected to exceed PAGs) - NO
Known Site or plant Event making Evacuation dangerous - NO
Known Offsite conditions make evacuation dangerous - YES

Comment:

For PAR 1, 2, and 3, determine the affected zones using Attachment 4, Table 1.

Standard: Candidate selects Attachment 4 Table 1.

Selects >326 to 349 row.

Selects PAR 1 and 2 column.

Selects A, B5, SRS to 2 miles

Attachment 5 Figure 1, PAR WORKSHEET, PAR 1 wind direction from filled.

Comment:

Complete PAR Worksheet for ED review and approval.

Standard: Candidate may complete Attachment 5 Figure 1, PAR WORKSHEET. See Key next page.

PAR 1 box checked.

Wind Direction from - 330° entered.

ENN line 5 (C) – A, B5, SRS to 2 Miles entered.

Comment:

***Step 5 (Back to NMP-EP-111, Attachment 1 – Part 1) Protective Action Recommendations completed on EN form.**

Standard: Candidate completes Line 5 on Figure 1 EN form per the attached Figure 1 Key. Only boxes filled in black and highlighted text are Critical for task performance.

Comment:

***Steps 6 to 13 of EN Form completed.**

Standard: Candidate completes lines 6 to 13 on Figure 1 EN form per the attached Figure 1 Key. Only boxes filled in black and highlighted text are Critical for task performance. Steps 14-16 are blank for an initial notification.

Comment:

Terminating cue: Candidate returns cue sheet and completed NMP-EP-111 Figure 1.

KEY

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"

<input checked="" type="checkbox"/> PAR 1	Wind direction from	330°
	ENN Line 5 [C] Shelter Zones	A, B5, SRS to 2 Miles
	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

<input type="checkbox"/> 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

<input type="checkbox"/> 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

<input type="checkbox"/> 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

KEY

Figure 1 - Emergency Notification Form (page 1 of 2)

1. DRILL ACTUAL EVENT MESSAGE # 1
2. INITIAL FOLLOW-UP NOTIFICATION: TIME _____ DATE ____/____/____ AUTHENTICATION # _____
3. SITE: VOGTLE Confirmation Phone # 1-706-826-3652 (SIM)

4. EMERGENCY CLASSIFICATION: UNUSUAL EVENT ALERT SITE AREA EMERGENCY GENERAL EMERGENCY
BASED ON EAL# FG1 EAL DESCRIPTION: Loss of Two Fission Product Barriers and Potential loss of the Third Fission Product Barrier

5. PROTECTIVE ACTION RECOMMENDATIONS: NONE
 EVACUATE _____
 SHELTER A. B5. SRS to 2 miles
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.
 OTHER _____

6. EMERGENCY RELEASE: None Is Occurring Has Occurred

7. RELEASE SIGNIFICANCE: Not applicable Within normal operating limits Above normal operating limits Under evaluation

8. EVENT PROGNOSIS: Improving Stable Degrading

9. METEOROLOGICAL DATA: Wind Direction from 330 degrees* Wind Speed 4 mph*

(*May not be available for Initial Notifications)* Precipitation Rain* Stability Class* A B C D E F G

10. DECLARATION TERMINATION Time Now Date Today / ____ / ____

11. AFFECTED UNIT(S): 1 2 All

12. UNIT STATUS: (Unaffected Unit(s) Status Not Required for Initial Notifications)
 U1 0 % Power Shutdown at Time T-20min Date Today / ____ / ____
 U2 _____ % Power Shutdown at Time _____ Date ____ / ____ / ____

13. REMARKS: None or clarifying remarks

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

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

14. RELEASE CHARACTERIZATION: TYPE: Elevated Mixed Ground UNITS: Ci Ci/sec μCi/sec

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

FORM: Airborne Start Time _____ Date ____/____/____ Stop Time _____ Date ____/____/____
 Liquid Start Time _____ Date ____/____/____ Stop Time _____ Date ____/____/____

15. PROJECTION PARAMETERS: Projection period: _____ Hours Estimated Release Duration _____ Hours
Projection performed: Time _____ Date ____/____/____ Accident Type: _____

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 organization)

Verification of Completion

Job Performance Measure No. V-NRC-JP-NMP-EP-112-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

THIS IS A TIME CRITICAL JPM

Initial Conditions: A General Emergency has just been declared for Unit 1 due to a loss of Fuel Cladding and RCS fission product barriers and potential loss of the Containment fission product barrier.

This is the first declaration made.

Unit 1 was shutdown 20 minutes ago.

WebEOC is not functional at all facilities.

Heavy rains have caused wide spread flooding in the CSRA area with several bridges in Burke County washed out and many roads impassable. Heavy rains are continuing.

No elevated radiation conditions exist on any plant effluent monitors.

Meteorological conditions are those on the Classification Determination provided.

The ENN communicator has completed roll call per NMP-EP-111 checklist 3.

Initiating Cue: Based on the information given, the Emergency Director directs you to, "Manually complete the Emergency Notification form for approval."

Checklist 3 - Emergency Notifications - Manual Method (page 1 of 2)

Transmission of Emergency Notification Message - Manual Method

NOTES:

1) For notification time purposes (either initial or follow-up notifications) notification time is the time which line 4 of the notification form (Figure 1) is read.

2) The ED should be notified if during the notification process ALL stations fail to respond to the roll call OR a back-up communication system for any agency is being used.

3) The EN Form should be transmitted as soon as it is APPROVED. Do not delay transmittal to complete a Roll Call. Once the EN Form is transmitted, confirm receipt.

Upon receiving direction to prepare to transmit an Emergency Notification Message

1. Obtain a copy of Table 1 then establish contact on the ENN by performing a roll call of the applicable agencies. Check off each agency on Table 1 as acknowledgement is obtained.

2. Roll call:
a. Read the following script:

[Select one] THIS IS A DRILL ACTUAL EMERGENCY] MESSAGE

THIS IS [YOUR NAME] ENN Communicator AT

[Select one] Plant FARLEY Plant HATCH Plant VOGTLE

AN EMERGENCY HAS BEEN DECLARED FOR EVENTS AFFECTING


[Select one] Unit 1 Unit 2 THE SITE]

PLEASE OBTAIN A BLANK EMERGENCY NOTIFICATION FORM AND STANDBY TO RECEIVE AN EMERGENCY MESSAGE"

b. Call each facility by name (see Table 1) and confirm they are standing-by to copy an emergency message.

3. If not already completed, **complete** the emergency notification form (Figure 1). Guidance for form completion is provided in Attachment 1, Part 1 - Guidance for Initial EN Form completion and Attachment 1, Part 2 – Guidance for Follow-up EN Form Completion.

4. Obtain approval to transmit the emergency notification.

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Checklist 3 - Emergency Notifications - Manual Method (page 2 of 2)

Transmission of Emergency Notification Message - Manual Method

5. **Transmit** the EN Form data verbally utilizing the ENN. Read the notification form (line by line) allowing ample time for the recipient to transfer the verbal data onto a blank form. Record the NOTIFICATION time (HH:MM) on the message confirmation portion of the EN Form when line 4 of the EN Form is read.

6. **Continue** by asking:

“DO YOU HAVE ANY QUESTIONS CONCERNING THE EMERGENCY NOTIFICATION MESSAGE?”

Respond to questions as presented. If necessary, continue discussions with individual agencies off-line to prevent delays in future notifications and to limit voice traffic on the ENN that may be distracting to other agencies.

7. Following transmission of the emergency notification, **confirm** receipt of the emergency notification.

a. Call each facility by name (see Table 1).

b. Complete the confirmation portion of the Emergency Notification Form (Figure 1, page 2) by recording the name of the person contacted and the time that message receipt was confirmed.

Continuing Actions

1. Continue by asking:

“DO YOU HAVE ANY QUESTIONS CONCERNING THE EMERGENCY NOTIFICATION MESSAGE?”

Respond to questions as presented. If necessary, continue discussions with individual agencies off-line to prevent delays in future notifications and to limit voice traffic on the ENN that may be distracting to other agencies.

2. If an individual station cannot be reached via the ENN, use the emergency response telephone directory and a commercial telephone line to contact the individual station directly.

3. If multiple agencies cannot be reached via the ENN, then utilize the phone numbers listed in Table 1, “Back-up Communication Systems” to contact individual stations directly, as appropriate.

4. For ALERT and higher emergency classification, make follow-up notifications at least every hour or when conditions warrant. When requested, notify alternate state and county notification locations.

Checklist 1 – Classification Determination (page 1 of 1)

NOTE: Key Parameters should be allowed to stabilize to accurately represent plant conditions prior to classifying an event.

Initial Actions

Completed by
ED

1. **Determine** the appropriate Initiating Condition Matrix for classification of the event based on the current operating mode:

- HOT IC/EAL Matrix Evaluation Chart (**GO** to Step 2) to evaluate the Barriers)
- COLD IC/EAL Matrix Evaluation Chart (**GO** to Step 3)

2. Evaluate the status of the fission product barrier using Figure 1, Fission Product Barrier Evaluation.

a. Select the condition of each fission product barrier:

	LOSS	POTENTIAL LOSS	INTACT
Fuel Cladding Integrity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reactor Coolant System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Containment Integrity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ED

b. Determine the highest applicable fission product barrier Initiating Condition (IC):
(select one) FG1 FS1 FA1 FU1 None

ED

3. **Evaluate** and **determine** the highest applicable IC/EAL using the Matrix Evaluation Chart identified in step 1 **THEN GO** to step 4.

ED

IC# FG1 or None

4. **Check** the **highest** emergency classification level identified from either step 2b or 3:

<u>Classification</u>	<u>Based on IC#</u>	<u>Classification</u>	<u>Based on IC#</u>
<input checked="" type="checkbox"/> General	<u>FG1</u>	<input type="checkbox"/> Alert	_____
<input type="checkbox"/> Site-Area	_____	<input type="checkbox"/> NOUE	_____
		<input type="checkbox"/> None	<u>N/A</u>

ED

Remarks (Identify the specific EAL, as needed): Loss of Two Fission Product Barriers and Potential Loss of the Third Fission Product Barrier

5. **Declare** the event by approving the Emergency Classification.

ED

E. Director Date: _____ / Today / _____ Time: Now
Emergency Director


6. **Obtain** Meteorological Data (not required prior to event declaration):

Wind Direction (from) 330° Wind Speed 4 mph Stability Class D Precipitation Rain

ED

7. **Initiate** Checklist 2, Emergency Plan Initiation.

ED

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Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 1 of 8)

CAUTION: ALL TIMES RECORDED/TRANSMITTED ON EMERGENCY NOTIFICATION FORMS SHOULD BE LOCAL TIME RELATIVE TO THE EVENT (I.E., HNP/VEGP: EASTERN, FNP: CENTRAL). DATE AND TIME STAMPS INITIATED ELECTRONICALLY ARE CONTROLLED AUTOMATICALLY.

NOTES:

- 1. In the event that the Control Room staff cannot complete the emergency notification form electronically, transfer of notification responsibilities should be accomplished as soon as practicable to allow for usage of the electronic form. Electronic completion of the EN form is preferred.**

- 2. A hardcopy of the electronic notification form may be obtained at any time when the “print” button is displayed. The printed copy will contain the data populated on the form at the time PRINT is selected.**

- 3. The current copy of the emergency notification form may be saved at any time during the form completion process by selecting SAVE DRAFT.**

- 1. Item 1: MESSAGE NUMBER** is automatically assigned during the transmittal process if using the electronic EN Form tool. Message numbers are sequential for the duration of the Event.

- 2. Item 2: INITIAL** will be checked for any notification associated with the declaration and/or change of an emergency classification.

- 3. Item 3: SITE** - Confirm the correct site is displayed. The site location is automatically completed based on prior selections.

CONFIRMATION PHONE NUMBER: Select from the drop down list

4. Item 4: EMERGENCY CLASSIFICATION

EAL NUMBER: Select from the drop down list

EVENT DESCRIPTION: Confirm the brief description of the initiating conditions for the emergency classification declared is auto completed based on the EAL number selected. The event description block cannot be edited. Additional information or information relative to competing events should be included on line 13, REMARKS.

Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 2 of 8)

CAUTION: PARS MUST BE DEVELOPED, APPROVED AND COMMUNICATED ON THE INITIAL GENERAL EMERGENCY NOTIFICATION WITHIN 15 MINUTES OF THE GENERAL EMERGENCY DECLARATION. CHANGES TO PARS ARE TO BE DEVELOPED AND APPROVED BY THE ED WITHIN 15 MINUTES AFTER A CHANGE IN CONDITIONS WARRANTING THE PAR. THE NOTIFICATION OF THE APPROVED PARS WILL BE TRANSMITTED TO STATE AND LOCAL AUTHORITIES WITHIN 15 MINUTES AFTER THE ED'S APPROVAL AS A FOLLOW-UP MESSAGE.

5. Item 5: PROTECTIVE ACTION RECOMMENDATIONS

Parts, C, D, and E should be completed as delineated in NMP-EP-112. If the recommended protective actions change after the initial GENERAL EMERGENCY declaration is transmitted, a follow-up transmission is required to be initiated within 15 minutes. This information should be obtained from the group responsible for PAR development (e.g., the Dose Assessment Staff in either the TSC or the EOF, as appropriate).

6. Item 6: EMERGENCY RELEASE

NOTES:

- 1. The Emergency Director has the discretion to declare that a radiological release is occurring based on plant conditions that indicate a release is in progress. (i.e., A Steam Generator Tube Rupture with an ARV lifting, site specific effluent radiation monitor readings, etc.)**
- 2. Information for items 6, 7, and 9 are obtained from dose assessment (e.g., Dose Assessment Staff in either the TSC or the EOF, as appropriate).**

Use the following table to determine the status of a radiological release:

IF an abnormal plant condition exists

Select the appropriate release status based on the following:

<u>IF:</u>	<u>THEN:</u>
Dose assessment results (automated or manual) have been completed <u>AND</u> indicate an emergency radiological release is underway	Check <input type="checkbox"/> B. Is Occurring
At least one effluent monitor* is in alarm, <u>AND</u> completed dose projection results (automated or manual) are not available*	Check <input type="checkbox"/> B. Is Occurring
Elevated indications do not exist on any effluent monitor*	Check <input type="checkbox"/> A. None
Dose assessment results (automated or manual) have been completed <u>AND</u> indicate an emergency radiological release is NOT underway	Check <input type="checkbox"/> A. None
Dose assessment results indicate an emergency radiological release occurred previously <u>AND</u> is no longer underway.	Check <input type="checkbox"/> C. Has Occurred"

*Applicable monitors are listed in Table 3

Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 3 of 8)


7. Item 7: RELEASE SIGNIFICANCE (Monitors are listed in table 3)

Use the following table to determine the release significance:

IF an abnormal plant condition exists

<u>AND:</u>	<u>THEN:</u>
Elevated indications do not exist on any effluent monitor*	Check <input checked="" type="checkbox"/> A. Not applicable
Elevated indications exist on at least one effluent monitor* <u>AND</u> no effluent monitors are in alarm <u>AND</u> completed dose assessment results (automated or manual) are not available	Check <input type="checkbox"/> D. Under evaluation
Item 6B or 6C is marked and <u>NO</u> effluent monitor is or has been in alarm <u>OR</u> has exceeded the specified threshold	Check <input checked="" type="checkbox"/> B. Within normal operating limits
6B or 6C is marked and <u>ANY</u> effluent monitor is or has been in alarm <u>OR</u> has exceeded the specified threshold	Check <input type="checkbox"/> C. Above normal operating limits
Dose assessment results indicate an emergency radiological release occurred previously <u>AND</u> is no longer underway.	Check <input type="checkbox"/> C. Above normal operating limits

*Applicable monitors are listed in Table 3

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Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 4 of 8)

8. Item 8: EVENT PROGNOSIS

Indicative of plant conditions and the ability to prevent core damage (e.g., improving, stable, or degrading).

Mark box **A** **Improving** if mitigation efforts appear successful, progressing toward termination.

Mark box **B** **Stable** if escalation to a higher classification is unlikely based on current conditions.

Mark box **C** **Degrading** if escalation to a higher emergency classification or PAR change is likely.

Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 4 of 8)

NOTE:

- 1. All reported meteorological data should be 15 minute average data. Data provided for meteorological parameters should be consistent with data utilized for PARs dose projections reported in line 16, if applicable.**

- 2. Inconsistencies in meteorological data utilized for dose projections and the meteorological data reported on emergency notification forms can result in discrepancies in dose assessments performed by SNC and applicable State and Federal agencies.**



Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 5 of 8)

9. Item 9: METEOROLOGICAL DATA

Record the 15-minute averaged “Wind Direction from”, Wind Speed and Precipitation values and check the appropriate “Stability Class (ΔT)”. Sources for meteorological data are listed in Table 4.

FARLEY		
Stability Class	ΔT value	Sigma Theta ($\sigma\theta$)
A	<-1.74	≥ 22.5
B	-1.74 to <-1.56	17.5 to 22.5
C	-1.56 to <-1.38	12.5 to 17.5
D	-1.38 to <-.46	7.5 to 12.5
E	-.46 to <1.38	3.8 to 7.5
F	1.38 to <3.6	2.1 to 3.8
G	≥ 3.6	<2.1

HATCH				
Stability Class	Differential Temperature (DT)(°F)			Sigma Theta ($\sigma\theta$)
	Primary Met Tower		Backup Met Tower	Primary & Backup Met Towers
	100m-10m	60m-10m	45m-10m	
A	< -3.1	< -1.4	< -1.2	≥ 22.5
B	≥ -3.1 to < -2.8	≥ -1.4 to < -1.3	≥ -1.2 to < -1.1	< 22.5 to ≥ 17.5
C	≥ -2.8 to < -2.4	≥ -1.3 to < -1.1	≥ -1.1 to < -0.9	< 17.5 to ≥ 12.5
D	≥ -2.4 to < -0.8	≥ -1.1 to < -0.4	≥ -0.9 to < -0.3	< 12.5 to ≥ 7.5
E	≥ -0.8 to < 2.4	≥ -0.4 to < 1.1	≥ -0.3 to < 0.9	< 7.5 to ≥ 3.8
F	≥ 2.4 to < 6.5	≥ 1.1 to < 2.9	≥ 0.9 to < 2.5	< 3.8 to ≥ 2.1
G	≥ 6.5	≥ 2.9	≥ 2.5	< 2.1

VOGTLE	
Stability Class	Sigma Theta ($\sigma\theta$)
A	≥ 22.5
B	17.5 to 22.5
C	12.5 to 17.5
D	7.5 to 12.5
E	3.8 to 7.5
F	2.1 to 3.8
G	<2.1

Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 6 of 8)

10. Item 10: DECLARATION or TERMINATION

Enter the time and date (mm/dd/yy) when the **current** emergency classification was declared or terminated.

11. Item 11: AFFECTED UNIT(S) Check the affected unit or “ALL” block if both units are affected by the EAL indicated in item 4. For events involving equipment that is common to both units, “ALL” should be selected.

NOTE: **The unaffected unit’s status is not required for initial notifications. However, the unaffected unit’s status is required for follow-up notifications.**

12. Item 12: UNIT STATUS

IF the affected unit is operating, THEN indicate the % power. If the affected unit is shutdown, then enter the time (HH:MM) and date of the shutdown.

13. Item 13: REMARKS


Record any current information related to the emergency such as significant events which have occurred, significant equipment which is out of service or malfunctioning, events occurring which may impact offsite resources (i.e., dismissal of non-essential personnel, etc), updates on previously reported information (i.e., status of event which previously occurred) and/or additional information that is of lower importance. This section may also be utilized to clarify the EAL description provided in Item 4.

Corrected information from previous notifications may be clarified in this section. For clarity reference previous notification number and line item as appropriate (i.e., “line 11 of message number 5 incorrectly listed the affected unit as Unit 1. Line 11 of this form reflects the correct information.”

For the electronic form, this section is limited to 275 characters. A character count is provided for reference when completing this section.

For Initial Notification or if radiological release or dose assessment information is not available then go to Step 17 - APPROVAL

NOTE: **Lines 14 through 16 (FOLLOW-UP ACTIONS) should be completed and transmitted as soon as dose projection information is available after the onset of any release otherwise, GO to Step 17 - APPROVAL.**

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Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 7 of 8)

14. Item 14: RELEASE CHARACTERIZATION

1. **Select** the appropriate release point characterization for the affected unit(s).
 - a. FOR **FNP** and **VEGP**: **Confirm “Ground Level” is checked.** This selection is auto-selected based on SITE selection of FNP or VEGP.
 - b. FOR **HNP** ONLY

Mark box **A** if the release is **ELEVATED (through the main stack).**

Mark box **B** if the release is **GROUND** (through the reactor building vents)

Mark box **C** if the release is **MIXED** (combination of elevated and ground level release)

Consult with the dose assessment staff for the completion of this item.

IF the release type is **NOT** known, assume that the release is **ELEVATED**

FOR ALL PLANTS

2. Indicate the units of measurement of the release (Ci, Ci/sec or μ Ci/sec), consult dose assessment.
3. Record the Noble Gas, Particulate and Iodine values from the latest available dose projection. Values reported should be consistent with those contained on the dose projection utilized in the PAR evaluation, as appropriate.
4. Check the appropriate block to indicate the status of Airborne or Liquid release(s) by entering the start time (HH:MM) and if applicable the time (HH:MM) and date (mm/dd/yy) the release stopped. Use the time zone local to the plant.

15. Item 15: PROJECTION PARAMETERS

Enter the duration of the dose projection period and the estimated release duration from the latest available dose projection. The value reported should be consistent with that utilized in the PAR evaluation. The default dose PROJECTION PERIOD and ESTIMATED RELEASE DURATION are 4 hours. ACCIDENT TYPEs are provided in Table 2.

16. Item 16: PROJECTED DOSE

IF Item 7, RELEASE SIGNIFICANCE, is marked “A” or “B”,

THEN Enter "less than 0.02 mrem (<0.02) for “TEDE” and “thyroid CDE” dose for the site boundary

OTHERWISE Enter the data provided from the dose assessment staff.

Enter the projected Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) thyroid dose (in mRem) at site boundary, 2, 5, and 10 miles distances provided by the dose assessment staff. Attachment 1 Part 1 – Guidance for Initial EN Form Completion (page 8 of 8)

17. Item 17: Review and Approval

a. Manual Form - IF possible, obtain a peer check of the completed form. The Emergency Director **must approve the form. Verbal authorization may be given to a delegate such as the EOF Manager to sign on behalf of the ED.**

b. Electronic Form

NOTE: Obtain concurrence and approval of emergency information from the ED (in the Control Room or TSC) or the EOF Manager (in the EOF), as appropriate, **PRIOR** to transmission of any message to offsite authorities. Any changes to the form after approval will require the approver's concurrence. Approval may be verbal or obtained by signature of a hardcopy of the emergency notification form.

1. **Notified By:** Enter the name of the individual completing the emergency notification form.
2. Select **Validate** and follow the instructions provided to correct any Items identified during the validation process.

Following correction of any identified Items, re-select **Validate**.
3. Select **Print** to obtain a hardcopy for review/approval. For verbal approvals, no hardcopy is required.
4. Obtain final approval of the ED or EOF Manager, as appropriate.
5. **Time/Date:** Enter the time (**HH:MM**) and date (**mm/dd/yy**) the emergency notification form is approved. The specified format is required to proceed.

NOTE:

1. **APPROVAL is available only after satisfactory VALIDATION**
2. **When completing the notification form electronically, no changes may be made to the current form following electronic approval. A follow-up notification must be completed to convey the changed information.**

6. Select **Approval**

WebEOC will prompt you to confirm your approval of the form. Select OK to approve or cancel to continue without approval.

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Figure 1 - Emergency Notification Form (page 1 of 2)

1. [A] DRILL [B] ACTUAL EVENT MESSAGE # _____
2. [A] INITIAL [B] FOLLOW-UP NOTIFICATION: TIME _____ DATE ____/____/____ AUTHENTICATION # _____
3. SITE: _____ Confirmation Phone # 1-706-826-3652(SIM)

4. EMERGENCY CLASSIFICATION: [A] UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY
BASED ON EAL# _____ EAL DESCRIPTION: _____

5. PROTECTIVE ACTION RECOMMENDATIONS: [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: [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 _____ degrees* Wind Speed _____ mph*

(*May not be available for Initial Notifications)* Precipitation _____* Stability Class* [A] [B] [C] [D] [E] [F] [G]

[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 _____ % Power Shutdown at Time _____ Date ____/____/____
[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 6 A 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 ____/____/____ Accident Type: _____

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 organization)

Figure 1 – Emergency Notification Form (page 2 of 2)

GOVERNMENT AGENCIES NOTIFIED

Record the name, date and agencies notified:

1.

(name)

(date/time) (agency)

2.

(name)

(date/time) (agency)

3.

(name)

(date/time) (agency)

4.

(name)

(date/time) (agency)

5.

(name)

(date/time) (agency)

6.


(name)

(date/time) (agency)

7.

(name)

(date/time) (agency)

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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.	

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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.

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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

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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.

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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 LIMITATIONS

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.

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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.

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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 MUTUALLY 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

* Continuing Activity

Action Checklist for PAR Development

NOTE: ONLY THE MUTUALLY 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".

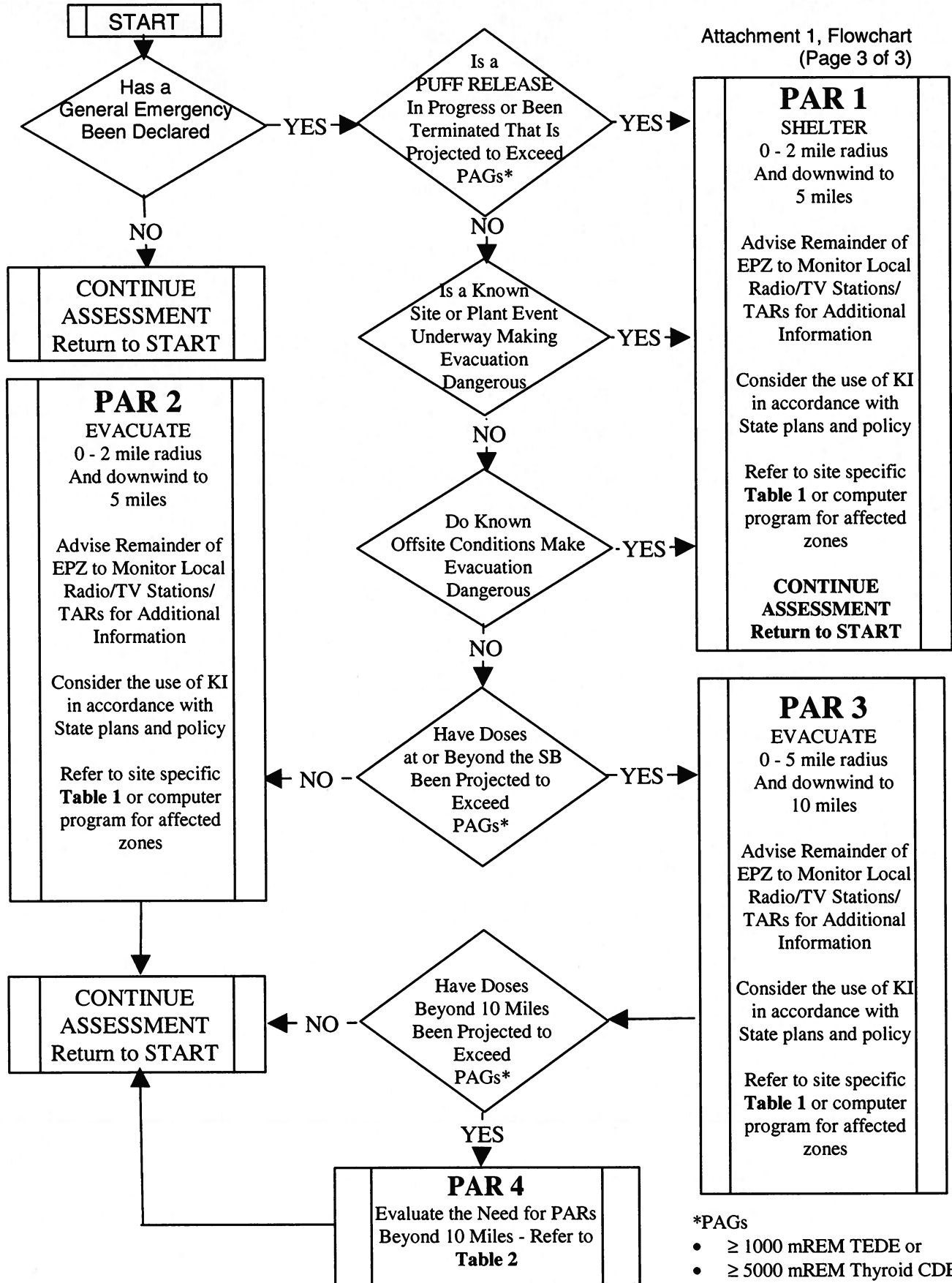
* Continuing Activity

Attachment 1
(Page 2 of 3)

Action Checklist for PAR Development (Cont)

- | | | <u>Please Check</u> |
|-----------|---|--------------------------|
| B. | <u>SUPPLEMENTAL ACTIONS</u> | |
| 1. | * Continue assessment actions applying applicable Precautions & limitations. | <input type="checkbox"/> |
| 2. | * <u>IF</u> a release is in progress <u>THEN</u> 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. | <input type="checkbox"/> |
| 3. | * For PAR 4, determine the affected sectors using Site specific Table 2. The following considerations apply when developing PARs beyond 10 miles: <ul style="list-style-type: none"> • <u>IF</u> a release is in progress and dose assessment calculations indicate a possible need to issue PARs beyond 10 miles, <u>THEN</u> 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, <u>IF</u> available, to validate accuracy of the projection model prior to issuing PARs beyond 10 miles. • <u>IF</u> dose assessment calculations indicate the need to recommend actions beyond 10 miles, <u>THEN</u> consult with affected State agency(s) to compare/validate model assumptions prior to issuing PARs beyond 10 miles. | <input type="checkbox"/> |
| 4. | * <u>IF</u> conditions requiring PAR 1 entry are eliminated or dose projections change such that additional PARs are required <u>THEN</u> 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.) | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> |
| 6. | Utilize real time meteorological and effluent radiation monitor readings in continuing assessment activities. <u>IF</u> radiation monitor readings provide sufficient data for assessment, <u>THEN</u> , it is NOT appropriate to wait for field monitoring data to become available to confirm or expand a PAR within the 10-mile EPZ. | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> |

Attachment 1, Flowchart
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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

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

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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

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

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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

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

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"

<input type="checkbox"/> 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

<input type="checkbox"/> 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

<input type="checkbox"/> 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

<input type="checkbox"/> 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