

FINAL AS-ADMINISTERED

ADMINISTRATIVE JPMs

**DAVIS BESSE INITIAL EXAM
(OCTOBER 2-6, 2000)**

FIVE JPMs

DAVIS-BESSE NUCLEAR POWER STATION
JOB PERFORMANCE MEASURE WORKSHEET

JPM NO.: Admin 1-1

Rev. 0

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TASK NO.: 336-005-03-0300

TASK DESCRIPTION: Call Out Proper Relief for Replacement of a Safe Shutdown Equipment Operator.

K/A REFERENCE: XXX-GEN-2.1.05 2.3/3.4

APPLICABLE METHOD OF TESTING: Actual Performance
Control Room
Simulator
Classroom

TIME FOR COMPLETION: 10 minutes

APPLICABILITY: ☐ RO ☒ SRO

TASK STANDARDS:

Perform callout of operator to relieve the safe shutdown EO.
Ensure proper turnover is conducted.

REQUIRED MATERIALS:

Shift Manning List
Overtime Callout List
Fitness for Duty Callout Form

GENERAL REFERENCES:

DB-OP-00000, Conduct of Operations, Revision 03, C-2
DB-OP-00100, Shift Turnover, Revision 03, C-1
NG-IS-00004, Fitness for Duty Program, Revision 06, C-1
FHAR Section 8.3, Revision 16

INITIAL CONDITIONS:

You are the Shift Supervisor the plant is in MODE 1 at 100% power.

INITIATING CUES:

At 1300 Tim Bolton reports to you he is ill and leaves to go home. You are to perform the required actions as the Shift Supervisor. Assume you are on day shift .

INITIAL CONDITIONS:

You are the Shift Supervisor the plant is in MODE 1 at 100% power.

INITIATING CUES:

At 1300 Tim Bolton reports to you he is ill and leaves to go home.

You are to perform the required actions as the Shift Supervisor.

Assume you are on day shift .

PERFORMANCE INFORMATION

NOTE: Critical steps denoted with a "C". Failure to meet any one of these standards for this item constitutes failure. Sequence is NOT critical unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Recognize that the shift is at less than minimum
.....C..... manning, and an EO callout is needed.

STANDARD: Review DB-OP-00000, Conduct of Operations or Tech. Spec.,
Section 6 for manning requirements.

COMMENTS: The sequence of the next two steps can be done in any order as
long as they are done prior to the actual phone call to the
relief EO.

NOTE: Hand examinee the shift rooster and the schedule change notice once
he has located the equivalent information in the control room.

CUE: None.

SAT UNSAT

2. PERFORMANCE STEP: Determine from the schedule change notice the
.....C..... available people for callout..

STANDARD: Look at shift manning list to determine Walter and Vassello
are eligible for callout. May review overtime list for
available people .

CUE: None.

SAT UNSAT

3. PERFORMANCE STEP: Fill out Fitness For Duty (FFD) form as required by
the FFD Program.

STANDARD: Obtain a FFD form prior to callout of relief operator.

COMMENTS: (If asked) Provide candidate with FFD form.

CUE: None.

SAT UNSAT

4. PERFORMANCE STEP: Call the EO and fill out the Fitness for Duty form.

STANDARD: Using the Fitness for Duty form, call out the operator.

CUE: The EO informs you that he is fit for duty and will be in within an hour.

SAT UNSAT

TERMINATING CUES: This JPM is complete.

END TIME

VERIFICATION OF COMPLETION

Operator _____ Evaluator _____

SSN _____ Date _____

License: ☐ RO ☐ SRO ☐ ONL

Validated Completion Time: _____ minutes

Actual Completion Time: _____ minutes

Acceptable Progress Maintained: Yes No N/A

Result: ☐ SATISFACTORY ☐ UNSATISFACTORY

NOTE: An "Unsatisfactory" requires Comment and will require
subsequent remedial training.

Comments/Feedback: _____

Evaluator's Signature_____
Date

SHIFT ROOSTER

Klein	Inside SSA
Koch	Outside SSA, FC
McPherson	ROP
Sutter	ROS
Bolton	Z3, SEO
Pocino	Z2, FB
Matherly	Z1, FB
Magers	FB
Mabie	FB

CALL-IN QUESTIONNAIRE

IS-005-00

SECTION 1 - GENERAL INFORMATION

PERSON CALLED

DATE

TIME

REASON

HAS ALCOHOL BEEN CONSUMED WITHIN PREVIOUS 5 HOURS?

☐

YES

☐

NO

IF YES, COMPLETE SECTIONS 2 AND 3

IF NO, COMPLETE SECTION 3

SECTION 2 - APPROVAL

JUSTIFY WHY THE INDIVIDUAL IS NEEDED

DUTY PLANT MANAGER APPROVAL (Signature)

(May be obtained by telephone) **X**

☐

YES

☐

NO

IF DUTY PLANT MANAGER DOES NOT APPROVE THE REQUEST, COMPLETE SECTION 3

TRANSPORTATION PROVIDED?

☐

YES

☐

NO

IF NO, WHY NOT?

SUPERVISOR-SECURITY SHIFT NOTIFIED TO PERFORM BAC EXAM (Name)

SECTION 3 - DOCUMENTATION

CALL-OUT PERFORMED BY (Print - Name)

SIGNATURE

X

POSITION/TITLE

WHEN COMPLETE, FORWARD TO ACCESS CONTROL - MAIL STOP 5125

	2-Oct-00 Monday			3-Oct-00 Tuesday			4-Oct-00 Wednesday			5-Oct-00 Thursday		
	2300-0700	0700-1500	1500-2300	2300-0700	0700-1500	1500-2300	2300-0700	0700-1500	1500-2300	2300-0700	0700-1500	1500-2300
	5	3	4	5	6	4	5	2	4	5	2	3
Reactor Operator	Isbell F	Bechtel F	Baker F	Isbell F	Arebaugh F	Baker F	Isbell F	McPherson F	Baker F	Isbell F	McPherson F	Bechtel F
	Jones F	Migot F	Walter C	Jones F	Boss F	Walter C	Jones F	Pocino F	Walter C	Jones F	Pocino F	Migot F
	Witt C	Rowland F	~~~~ Jones	Witt C	~~~~ Jones	~~~~ Jones	Witt C	Sutter F	~~~~ Sutter	Witt C	Sutter F	McPherson ~~~~ Isbell
	Baker, J. ~~~~ Bechtel	~~~~ ~~~~	~~~~ ~~~~	Baker, J. ~~~~ Arebaugh	~~~~ ~~~~	~~~~ ~~~~	Baker, J. ~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ Arebaugh	* Arebaugh F	Pocino ~~~~ ~~~~
	~~~~ Rowland	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~
	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~

Equipment Operator III	Bracken C	Ferrell F	Fehrman C	* Bracken C	* Matherly F	Fehrman C	Bracken C	* Bolton F	Fehrman C	* Bracken C	Bolton F	~~~~ ~~~~
	Purk F	McElhaney F	Smith F	Purk F	Roidl F	Smith F	Purk F	Magers F	Smith F	Fehrman ~~~~ Bolton	Magers F	* McElhaney F
	Vassello ~~~~	* Matherly F	Vassello F	Empcke ~~~~ Roidl	Dudas F	* Vassello F	Empcke ~~~~ Bolton	* Matherly F	Vassello F	Empcke ~~~~	~~~~ ~~~~	Empcke F
	~~~~ ~~~~	~~~~ ~~~~	* Empcke F	~~~~ ~~~~	Tiell F	* Empcke F	~~~~ ~~~~	~~~~ ~~~~	* Empcke F	Smith ~~~~	~~~~ ~~~~	~~~~ Purk
	~~~~ ~~~~	~~~~ ~~~~	Matherly ~~~~	~~~~ ~~~~	Bracken ~~~~ Vassello	Matherly ~~~~	~~~~ ~~~~	~~~~ ~~~~	Matherly ~~~~ Bracken	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~

Equipment Operator II	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~
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Equipment Operator I	~~~~ ~~~~	Durnwald F	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~ Mabie	* Mabie F	~~~~ ~~~~	~~~~ ~~~~ Mabie	* Mabie F	Durnwald F
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Auxiliary Operator	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~
	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~	~~~~ ~~~~

Auxiliary Operator Trainee	~~~~ ~~~~	~~~~ ~~~~	Justice	~~~~ ~~~~	Boles	Justice	~~~~ ~~~~	~~~~ ~~~~	Wolf	Justice	~~~~ ~~~~	~~~~ ~~~~
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* - DENOTES OVERTIME HAS BEEN SCHEDULED

	6-Oct-00 Friday			7-Oct-00 Saturday			8-Oct-00 Sunday		
	2300-0700	0700-1500	1500-2300	2300-0700	0700-1500	1500-2300	2300-0700	0700-1500	1500-2300
	5	2	3	4	2	3	4	2	3
Reactor Operator	Isbell F	McPherson F	Bechtel F	Baker F	McPherson F		Baker F	McPherson F	Bechtel F
	Jones F	Pocino F	Migot F	Walter C		* Migot F	Walter C	Pocino F	Note 2 Migot F
	Bechtel ~~~~~ Sutter	* Sutter F		Bechtel ~~~~~	* Sutter F	McPherson ~~~~~ Walter		* Sutter F	Rowland F
	Migot ~~~~~				Baker, J. ~~~~~ Migot	Sutter ~~~~~		~~~~~ Bechtel	Sutter ~~~~~ Baker, J.

Equipment Operator III	Bracken C	* Bolton F	* Ferrell F	Fehrman C	* Bolton F	* Ferrell F	* Fehrman C	* Note 2 Bolton F	Ferrell F
	* Purk F	* Magers F	* McElhaney F	* Smith F	* Magers F	* McElhaney F	* Smith F	* Magers F	* McElhaney F
	McElhaney ~~~~~ Bolton	* Matherly F	* Roidl F	* Vassello F	Vassello ~~~~~ McElhaney	Magers ~~~~~ Fehrman	* Vassello F	Vassello ~~~~~	
			Matherly ~~~~~ Smith	Ferrell ~~~~~ Bolton		~~~~~ Smith	Ferrell ~~~~~ Bolton		

Equipment Operator II									
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Equipment Operator I	~~~~~ Mabie	* Mabie F	Durnwald F	~~~~~ Mabie	* Mabie F	* Durnwald F	Durnwald ~~~~~ Mabie	Mabie F	Durnwald F
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Auxillary Operator									

Auxillary Operator Trainee		Wolf		Justice	Wolf		Justice	Wolf	
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* - DENOTES OVERTIME HAS BEEN SCHEDULED

Plant Support					
	02-Oct-00	03-Oct-00	04-Oct-00	05-Oct-00	06-Oct-00
	Monday	Tuesday	Wednesday	Thursday	Friday
Reactor Operator			Arebaugh F		Arebaugh F
	Boss F		Boss F	Boss F	Boss F

Equipment Operator III					Empcke F
				Matherly	
	Roidl F		Roidl F	Roidl F	

Equipment Operator II					
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Equipment Operator I					
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Auxiliary Operator					

Auxiliary Operator Trainee	Boles		Boles	Boles	Boles
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Training Crew 1					
Licensed	Baldwin Cuff	Baldwin Cuff	Baldwin Cuff	Baldwin Cuff	Baldwin Cuff
	Lawrence Ploeger	Lawrence Ploeger	Lawrence Ploeger	Lawrence Ploeger	Lawrence Ploeger
	Fox Rohde	Fox Rohde	Fox Rohde	Fox Rohde	Fox Rohde
	Whalen	Whalen	Whalen	Whalen	Whalen
Non-Licensed	Dudas Tiell	In Plant Support	Dudas Tiell	Dudas Tiell	Dudas Tiell

## Vacations &amp; Paid Absences

Name	From	Thru	Time Code
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## Other Activities

Name	From	Thru	Description
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## Notes:

1. Cannot stand Fire Brigade duties only.
2. M. Migot to relieve T. Bolton at 1300

Prepared By: Kevin Giesler (signature on file)	Date: 9/14/00	Approved By: Robert Coad (signature on file)	Date: 9/14/00
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**OPERATIONS SECTION MANNING**

Off-Shift Assignments		
Superintendent, Plant Operations D. M. Inlay		
Reactor Operators	Haugh #	McLain C,#
Off Shift SRO	Bentley	McGee

SHIFT ASSIGNMENTS						
	1	2	3	4	5	6
Shift Supervisor	Baldwin C	Bonfiglio C	Gillig C	Roberts	Lewis C	Myers

Assistant Shift Supervisor	Cuff C	Klein C	Walleman C	Hartnett C	Howard C	Phillips C
	Lawrence C		R29	Wadsworth C	Koch C	Conn C

Reactor Operator	Fox F,#	McPherson F,#	Bechtel F#	Baker, J. F	Isbell F,#	Arebaugh C,#
	Rohde F,#	Pocino F,#	Migot F,#	Walter C,#	Jones, M. F,#	Boss F,#
	Whalen, T. C,#	Sutter F	Rowland F,#		Witt C	R29

Equipment Operator III	Dudas F#	Bolton F,#	Ferrell F #	Fehrmann C	Bracken C,#	Empcke F,#
	Tiell F,#	Magers F,#	McElhanev F,#	Smith F#	Purk F.#	Matherly F#
				Vassello F,#		Roidl F

Equipment Operator II						

Equipment Operator I		Mabie F,#	Durnwald F,#			

Auxiliary Operator	Holmes F#	Brown F#	Wagner F #	Levy F#	Johnson F#	Jarra F#
	Slobodzian F #			Rudolph F,#		Nichelson F,#

Operations Support Staff			
Supervisor - Operations D. P. Ricci			
Senior Operations Advisors	Stallard	Shift Managers	Ploeger C
	Jones, D.		Horvath C
	Lakis		R29 Whalen,D. C
	Wise		Melssen
Shift Supervisor Admin. Assistants	Baker, K.		Patrick C
	Giesler		Cobbledick C
Operations Fire Protection Advisor	Patton	Operations Analyst	Fehr
	Baker,A.		

TRAINING ASSIGNMENTS						
	1	2	3	4	5	6
Auxiliary Operator Trainees	Ager	Wolf	Gerwin	Justice	Higgins	Boles
SRO Upgrade Class		Havey F,#	Burk C,#	Bonnett F,#	Pierson C,#	

**Legends:**

C - Fire Brigade Captain qualified  
F - Fire Brigade qualified  
# - First Aid Team member

Approved:	Date:	Rev. 29-00
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DAVIS-BESSE NUCLEAR POWER STATION  
JOB PERFORMANCE MEASURE WORKSHEET

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JPM NO.: Admin 1-2

Rev. 0

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TASK NO.: 115-036-01-0100, 333-011-01-0300

TASK DESCRIPTION: Perform a Second Check on a Shutdown Margin Calculation  
and Find Shutdown Margin is  $< 1\% \Delta K/K$

K/A REFERENCE: XXX-GEN-2.1.33 3.4/4.0

APPLICABLE METHOD OF TESTING: Actual Performance  
Simulator  
Control Room  
Classroom

TIME FOR COMPLETION: 20 minutes

APPLICABILITY: ☐ RO ☒ SRO

TASK STANDARDS:

1. Correctly use RO curves to determine reactivity worths of control rods, fuel, boron, temperature and Flux Redistribution Penalty (FRP) within the stated accuracy bands.
2. Successfully check the calculation for a shutdown margin within the stated accuracy band.
3. Identify the Shutdown Margin does not meet Technical Specifications and direction the appropriate corrective actions.

REQUIRED MATERIALS:

DB-NE-06202, Reactivity Balance Calculations, Rev. 01  
DB-NE-06201, Reactor Operators Curve Book, Rev. 5

GENERAL REFERENCES:

DB-NE-06202, Reactivity Balance Calculations, Rev. 01

**INITIAL CONDITIONS:**

The plant is in Mode 3 with a reactor startup in progress.

All systems are in their normal lineup.

The START program is not available.

The following conditions exist:

Burnup: 10 EFPD

Boron Conc.: 1535 ppmB

Tave: 528°F

APSRs at 30%

There is NO known stuck rod.

The Reactor Engineer reports reactivity worth due to transient poisons is -0.7%  $\Delta K/K$  and that the correction factor for boron 10 depletion is 0.96. The Reactivity Anomaly is zero.

**INITIATING CUES:**

The Shift Supervisor has requested you to check the calculation for a shutdown margin per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book.

(Hand a copy of DB-NE-06201, DB-NE-06202 to examinee and the completed Calculation Sheet Attachment 4.)

**INITIAL CONDITIONS:**

The plant is in Mode 3 with a reactor startup in progress.

All systems are in their normal lineup.

The START program is not available.

The following conditions exist:

Burnup: 10 EFPD

Boron Conc.: 1535 ppmB

Tave: 528°F

APSRs at 30%

There is NO known stuck rod.

The Reactor Engineer reports reactivity worth due to transient poisons is -0.7%  $\Delta K/K$  and that the correction factor for boron 10 depletion is 0.96. The Reactivity Anomaly is zero.

**INITIATING CUES:**

The Shift Supervisor has requested you to check the calculation for a shutdown margin per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book.

(Hand a copy of DB-NE-06201, DB-NE-06202 to examinee and the completed Calculation Sheet Attachment 4.)

**PERFORMANCE INFORMATION**

NOTE: Critical steps denoted with a "C". Failure to meet any one of these standards for this item constitutes failure. Sequence is NOT critical unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Locate correct procedure section.

STANDARD: Identifies Section 8 or Attachment 4 of DB-NE-06202, Reactivity Balance Calculations, as the correct section.

COMMENT: Sequence NOT required for this JPM except for the last step.

Examinee may complete a separate Attachment 4 prior to verifying the initial Attachment 4.

CUE: None.

SAT UNSAT

2. PERFORMANCE STEP: Determine reactivity worth of the fuel.

.....C.....

STANDARD: From Figure 2, determine value of  $15.1 \pm .10\% \Delta K/K$  the value on Attachment 4 is 12.6.

COMMENT: The operator should find this mistake and correct it; actual value is 15.1.

CUE: The Shift Supervisor acknowledges that you have found an error and will review the error with the RO.  
The Shift Supervisor has directed you to continue with the calculations and make any necessary correction.

SAT UNSAT

3. PERFORMANCE STEP: Determine the reactivity worth due to boron.

STANDARD: From Figure 3, determine value of  $-9.85 \pm .10\% \Delta K/K$  for boron based on B10 correction factor of 0.96; from Figure 4, determine value of  $1.004 \pm .002$  for the BCF; multiply these two values to obtain between -8.865 and --10.835%  $\Delta K/K$ .

COMMENT: Actual values: Boron is -9.835  $\Delta K/K$ , BCF is 1.004, and total boron reactivity worth is --9.9%  $\Delta K/K$ .

CUE: None.

SAT UNSAT



- 
4. PERFORMANCE STEP: Utilize the reactivity worth due to transient poisons.

STANDARD: Determine from initial conditions ( $-0.7\% \Delta K/K$ ).

CUE: **None.**

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SAT    UNSAT

5. PERFORMANCE STEP: Determine the reactivity worth due to temperature.

STANDARD: From Figure 12, determine value of  $-0.0096 \pm 0.01 \Delta K/K/^\circ F$  for temperature coefficient,  $-4 \pm 0^\circ F$  for  $\Delta T$ ; multiply these two values to obtain  $+0.0384 \Delta K/K$ .

COMMENT: Actual values: temperature coefficient is  $-0.0096 \Delta K/K/^\circ F$ ;  $\Delta T$  is  $-4^\circ F$ ; temperature reactivity worth is  $+0.0384 \Delta K/K$ .

CUE: **None.**

---

SAT    UNSAT

6. PERFORMANCE STEP: Determine adjusted rod worth for no known stuck rod.

STANDARD: From Figure 10, determine worth of  $-5.145 \pm .02\% \Delta K/K$ .

COMMENT: Actual value is  $5.145\%$ .

CUE: **None.**

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SAT    UNSAT

7. PERFORMANCE STEP: Determine APSR worth.

STANDARD: From Figure 11A, determine APSR worth of  $-0.11 \pm 0.010\% \Delta K/K$ .

CUE: **None.**

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SAT    UNSAT

8. PERFORMANCE STEP: Determine Flux Redistribution Penalty (FRP) using Table 1.

STANDARD: Determine Flux Redistribution Penalty is  $0.300\% \Delta K/K$ .

CUE: **None.**

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SAT    UNSAT

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9. PERFORMANCE STEP: Determine reactivity anomaly worth.

STANDARD: Determine zero from Initial Conditions.

CUE: None.

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SAT UNSAT

10. PERFORMANCE STEP: Determine the value for shutdown margin.

.....C.....

STANDARD: Determine that shutdown margin is a value between .374% and .457%  $\Delta K/K$ .

COMMENT: Actual value is .416%  $\Delta K/K$ .

CUE: None.

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SAT UNSAT

11. PERFORMANCE STEP: Identify the Shutdown Margin is less than the  
.....C..... Technical Specification limit.

STANDARD: Recognize the Shutdown Margin is less than the 1%  $\Delta K/K$  Technical Specification limit.

CUE: The Shift Supervisor directs you to direct the appropriate actions to correct the situation.

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SAT UNSAT

12. PERFORMANCE STEP: Direct the Control Room personnel to begin borating  
.....C..... the Reactor Coolant System at  $\geq 25\text{gpm}$  of 7875ppm[B] or its equivalent.

STANDARD: Call the Control Room and direct them to borate the RCS at  $\geq 25\text{gpm}$  of 7875ppm[B] or its equivalent.

CUE: The Control Room has been notified to borate the RCS.

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SAT UNSAT

TERMINATING CUES: This JPM is complete.

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END TIME

VERIFICATION OF COMPLETION

Operator _____ Evaluator _____

SSN _____ Date _____

License:     ☐ RO     ☐ SRO     ☐ ONL

Validated Completion Time: _____ minutes

Actual Completion Time: _____ minutes

Acceptable Progress Maintained:             Yes             No             N/A

Result:       ☐ SATISFACTORY     ☐ UNSATISFACTORY

NOTE: An "Unsatisfactory" requires Comment and will require  
subsequent remedial training.

Comments/Feedback: _____

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_____  
Evaluator's Signature_____  
Date

ATTACHMENT 4: SHUTDOWN MARGIN (SDM) WITH Tave ≥ 500°F - SECTION 8.0EFPD= 10 CF(B10)= .96 B(RCS)= 1535 ppmB Tave= 528 °F APSR= 30 zwdKnown stuck rod? X No _____ Yes Data: Date _____ Time _____

Use the critical reference condition for all data.

Shutdown Margin (SDM)

$$[-1] \times \left[ \frac{12.6}{\rho(\text{fuel})} + \frac{-9.9}{\rho(\text{boron})} + \frac{-.7}{\rho(\text{tp})} + \frac{.0384}{\rho(\text{temp})} + \frac{-5.145}{R} + \frac{-.11}{\rho(\text{APSR})} + \frac{.300}{\text{FRP}} + \frac{0}{\rho(\text{anom})} \right] = \frac{2.916}{\text{SDM}} \Delta k/k$$

Where:

 $\rho(\text{fuel})$  is Fuel Worth from Figure 2 based on EFPD

$$\rho(\text{boron}) \text{ is Boron Worth} = \frac{-9.85}{\rho(\text{BBOL})} \times \frac{1.004}{\text{CF(FBU)}} = \frac{-9.9}{\rho(\text{boron})} \Delta k/k$$

Where:

$$\frac{1535}{\text{B(RCS)}} \times \frac{.96}{\text{CF(B10)}} = \frac{1473}{\text{B(ROCB)}} \text{ ppmB}$$

 $\rho(\text{BBOL})$  is Boron Worth at Beginning of Life from Figure 3 based on B(ROCB) (Critical curve)

CF(FBU) is Correction Factor for Fuel Burnup from Figure 4 based on EFPD (Critical curve)

 $\rho(\text{tp})$  is Transient Poison Worth from START program at time of data

$$\rho(\text{temp}) \text{ is Temperature Reactivity} = \frac{-.0096}{\alpha_T} \times \frac{-4}{\Delta T} = \frac{.0384}{\rho(\text{temp})} \Delta k/k$$

Where:

 $\alpha_T$  is Temperature Coefficient from Figure 12 based on EFPD and B(ROCB)

$$\Delta T = \text{Tave} - 532^\circ\text{F}$$

R is Control Rod Worth from Figure 10 based on EFPD and stuck rod condition

 $\rho(\text{APSR})$  is APSR Worth from Figure 11A based on EFPD and APSR position

FRP is Flux Redistribution Penalty from Table 1 of ROCB

 $\rho(\text{anom})$  is Reactivity Worth of AnomalyCalculated by Don Bondy Date _____ Time _____

Checked by _____ Date _____

Key

25

DB-NE-06202

Revision 01

ATTACHMENT 4: SHUTDOWN MARGIN (SDM) WITH Tave ≥ 500°F - SECTION 8.0EFPD= 10 CF(B10)= .96 B(RCS)= 1535 ppmB Tave= 528 °F APSR= 30 zwdKnown stuck rod? X No      Yes Data: Date      Time     

Use the critical reference condition for all data.

Shutdown Margin (SDM)

$$[-1] \times \left[ \frac{15.1}{\rho(\text{fuel})} + \frac{-9.9}{\rho(\text{boron})} + \frac{-0.7}{\rho(\text{tp})} + \frac{.0384}{\rho(\text{temp})} + \frac{-5.145}{R} + \frac{-.11}{\rho(\text{APSR})} + \frac{.300}{\text{FRP}} + \frac{0}{\rho(\text{anom})} \right] = \frac{.416}{\text{SDM}} \text{ } \Delta k/k$$

Where:

 $\rho(\text{fuel})$  is Fuel Worth from Figure 2 based on EFPD

$$\rho(\text{boron}) \text{ is Boron Worth} = \frac{-9.85}{\rho(\text{BBOL})} \times \frac{1.004}{\text{CF(FBU)}} = \frac{-9.9}{\rho(\text{boron})} \text{ } \Delta k/k$$

Where:

$$\frac{1535}{\text{B(RCS)}} \times \frac{.96}{\text{CF(B10)}} = \frac{1473}{\text{B(ROCB)}} \text{ ppmB}$$

 $\rho(\text{BBOL})$  is Boron Worth at Beginning of Life from Figure 3 based on B(ROCB) (Critical curve)

CF(FBU) is Correction Factor for Fuel Burnup from Figure 4 based on EFPD (Critical curve)

 $\rho(\text{tp})$  is Transient Poison Worth from START program at time of data

$$\rho(\text{temp}) \text{ is Temperature Reactivity} = \frac{-.0096}{\alpha_T} \times \frac{-4}{\Delta T} = \frac{.0384}{\rho(\text{temp})} \text{ } \Delta k/k$$

Where:

 $\alpha_T$  is Temperature Coefficient from Figure 12 based on EFPD and B(ROCB)

$$\Delta T = \text{Tave} - 532^\circ\text{F}$$

R is Control Rod Worth from Figure 10 based on EFPD and stuck rod condition

 $\rho(\text{APSR})$  is APSR Worth from Figure 11A based on EFPD and APSR position

FRP is Flux Redistribution Penalty from Table 1 of ROCB

 $\rho(\text{anom})$  is Reactivity Worth of AnomalyCalculated by Don Bondy Date      Time     Checked by      Date

DAVIS-BESSE NUCLEAR POWER STATION  
JOB PERFORMANCE MEASURE WORKSHEET

---

JPM NO.: Admin 2

Rev. 0

Page 1 of 5

TASK NO.: 331-012-03-0300

TASK DESCRIPTION: Review and Issue a Clearance

K/A REFERENCE: XXX-GEN-2.2.13 3.6/3.8

APPLICABLE METHOD OF TESTING: Actual Performance

TIME FOR COMPLETION: 10 minutes

APPLICABILITY: ☐ RO ☒ SRO

TASK STANDARDS:

Review and Approve a Clearance

REQUIRED MATERIALS:

1. NG-DB-00250, Safety Tagging
2. DB-OP-00018, Inoperable Equipment Tracking Log
2. Work Package
3. Clearance Request
4. Tags
5. Inoperable Equipment Tracking Log sheet

GENERAL REFERENCES:

NG-DB-00250, Safety Tagging, Revision 00, C-3  
DB-OP-00018, Inoperable Equipment Tracking Log, Revision 04, C-4  
DB-DP-00007, Control of Work, Revision 02, C-3

INITIAL CONDITIONS:

You are the Work Support Center SRO. The plant is in Mode 1, 100% power, normal conditions.

INITIATING CUES:

You have been directed to review the work package for HPI pump 1, and authorize and issue the clearance.

**INITIAL CONDITIONS:**

You are the Work Support Center SRO. The plant is in Mode 1, 100% power, normal conditions.

**INITIATING CUES:**

You have been directed to review the work package for HPI pump 1, and authorize and issue the clearance.

PERFORMANCE INFORMATION

NOTE: Critical steps denoted with a "C". Failure to meet any one of these standards for this item constitutes failure. Sequence is NOT critical unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Locate correct procedure and section.

STANDARD: Identifies NG-DB-00250, Safety Tagging, as the correct procedure and section.

CUE: None.

SAT UNSAT

2. PERFORMANCE STEP: Review the Work Package.

STANDARD: Reviews work package for scope of work.

CUE: (If necessary) **Maintenance requires HPI pump 1 be filled with water to perform the checks.**

SAT UNSAT

3. PERFORMANCE STEP: Review the clearance for completeness.  
.....C.....

STANDARD: Compares work package scope of work and to clearance. Reviews clearance and tags for correct information.

COMMENT: The wrong tag information for HPI breaker should be discovered at this time.

CUE: **The Tagging RO has corrected clearance and tag.** (Hand examinee the changed clearance form and the replacement tag for AC 111.)

(If necessary) **The Shift Supervisor directs you to continue.**

SAT UNSAT

4. PERFORMANCE STEP: Enter the Reviewer's name into the clearance.

STANDARD: Logs on to the NOMS system and enters their name as the Reviewer.

CUE: **The NOMS system has been updated and the reviewed block has been filled with your name.**

SAT UNSAT



- 
5. PERFORMANCE STEP: Evaluate the clearance for impact on current plant conditions for authorization.

STANDARD: Obtain the Inoperable Equipment Tracking Log to determine the impact of removing the HPI pump 1 from service and declaring the system inoperable for Tech. Specs.

COMMENT: Hand examinee the attached page from the Inoperable Equipment Tracking Log.

CUE: None.

---

SAT UNSAT

6. PERFORMANCE STEP: Ensure redundant equipment is operable.  
.....C.....

STANDARD: Indentify that HPI Pump 2 is inoperable due to the removed date and time not being filled in.

COMMENT: The evaluator will have to initial the removed block, on the Inoperable Equipment Tracking Log sheet, as ther Shift Supervisor

CUE: The Shift Supervisor has determined that (time) 1445 and (date) 9/29/00 should have been entered in the removed block.

---

SAT UNSAT

7. PERFORMANCE STEP: Enter the data on the Inoperable Equipment Tracking Log sheet.  
.....C.....

STANDARD: Enter in the Document Number block the work order number.  
Enter in the Equipment/Description block " HPI Pump 1: Check coupling alignment and soft foot" or the equivalent.  
Enter in the Tech Spec Entered block " Y" or " Yes."  
Enter in the Date/Time Entered block the current time and date.

COMMENT: The Document Number block entry and Tech Spec Entered block are not critical.

CUE: None.

---

SAT UNSAT

---

8. PERFORMANCE STEP: Enter approve to render the equipment inoperable.

STANDARD: Enter into FEARMS the approve to render the equipment inoperable.

COMMENT: This may be done prior to making the Inoperable Equipment Tracking Log entry.

CUE: The approval to render the equipment inoperable has been entered into FEARMS.

---

SAT UNSAT

9. PERFORMANCE STEP: Assign a qualified individual to place the tags.

STANDARD: Must assign an EO3 or higher.

COMMENT: Only give cue if a qualified individual is assigned.

CUE: An EO-3 has been assigned.

---

SAT UNSAT

TERMINATING CUES: This JPM is complete.

---

END TIME

VERIFICATION OF COMPLETION

Operator _____ Evaluator _____

SSN _____ Date _____

License:     ☐ RO     ☐ SRO     ☐ ONL

Validated Completion Time: _____ minutes

Actual Completion Time: _____ minutes

Acceptable Progress Maintained:                Yes                No                N/A

Result:        ☐ SATISFACTORY     ☐ UNSATISFACTORY

NOTE: An "Unsatisfactory" requires Comment and will require  
subsequent remedial training.

Comments/Feedback: _____

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_____  
Evaluator's Signature_____  
Date

[illegible]

## FEARMS DAVIS-BESSE PLANT

P58-1



Work Order 99-000205-000

Subsystem: SUB052-01

T*

Asset: P58-1 HPI PUMP 1-1  
Problem Locn: AUXL8_105*_545

Action: ROUTINE MAINTENANCE  
WO Type:  
Clearance: Y

Work Class:  
Mat.Acct: 4537.4537.IS.NP13A.DBRX.000000.00  
Printed: 15-AUG-00 15:32 RMP

Clearance number: 052-01-016  
Tech Spec: Y  
Test Requirements: Y  
Lead Craft: MECHANICAL

Quality Class: Q  
Environmental Qualification: N  
ASME Component: ASMEXI  
Repair Tag Number: L077  
Train:

## Permission to Commence Work

SS/SM Authorization: _____

DATE _____

SUPERVISOR _____

DATE _____

Requested by: JOSEPH MADISON  
Planner: KEITH A LUTMAN

Phone: 7311  
Phone: 8327

## Problem Description:

VIBRATION HAS INCREASED ON THE PUMP OUTBOARD BEARING PLEASE CHECK THE COUPLING FOR ADEQUATE LUBRICATION AND PROPER ASSEMBLY AND WEAR. CHECK COUPLING ALIGNMENT AND SOFT FOOT. ADJUST IF NEEDED. CHECK THAT HOLDDOWN BOLTS ARE TIGHT

## Work Description:

CHECK THE COUPLING FOR ADEQUATE LUBRICATION AND PROPER ASSEMBLY AND WEAR. CHECK COUPLING ALIGNMENT AND SOFT FOOT. ADJUST IF NEEDED. CHECK THAT HOLDDOWN BOLTS ARE TIGHT

## Work Order Review

Engineering IST

SRO

ALARA

QC Mechanical

ANI

Lead Shop Review

<u>Don B...</u>	DATE	<u>7/10/00</u>
<u>Don B...</u>	DATE	<u>7/12/00</u>
<u>Don B...</u>	DATE	<u>7/12/00</u>
<u>N/A</u>	DATE	
<u>Don B...</u>	DATE	<u>7/14/00</u>
<u>Don B...</u>	DATE	<u>7/19/00</u>

## Special Instructions:



P58-1

Work Order 99-000205-000

T*

Subsystem: SUB052-01

**Test Requirements:**

Test Type	Test Function	Test Procedure	Craft	Signature	Date
3	TSC	DB-SP-03218 (Note 1)	OPER	_____	_____
3	PMT	DB-MM-05003	MECH	_____	_____

**Test Requirements Comments:**

TEST REQUIREMENT DB-MM-05003 COMPLETED UNDER SP03218.

note 1: Test codes 'PMT' and 'IST' also apply.

**Technical Specifications****Equipment Rendered Inoperable:**

P58-1, HIGH PRESSURE INJECTION PUMP #1.

**Redundant Equipment to Verify:**

P58-2, HIGH PRESSURE INJECTION PUMP #2

**Effect on Equipment/System**

#1 HIGH PRESSURE INJECTION PUMP WILL BE INOPERABLE DURING PERFORMANCE OF THIS WO.

01 Tech Spec/Applicable Modes: 3.5.2 (1,2,3).

02 Tech Spec/Applicable Modes: 4.0.5 (1,2,3,4,5,6)

Approval to render equipment inoperable

SS/SM _____

DATE _____

Comments: _____

Operability Testing Complete and Satisfactory

SS/SM _____

DATE _____

**Related Documents**

DB-MM-05003

DB-MM-09046

**Permits**

RWP

RWP Comments

1999-0081

Other Permits Required

99-0886



## Steps

<u>Craft</u>	<u>Crew Size</u>	<u>Crew Name</u>	<u>Hrs</u>
1 MECHANICAL	2	DB MECH UNIT TEAM 1	8
STEP DESCRIPTION: ALIGNMENT AND COUPLING CHECK.			
* CONTACT JOE MADISON PRIOR TO START OF WORK.			
* DOCUMENT ALL AS FOUND CONDITIONS.			
* CHECK COUPLING MATCH MARKING PRIOR TO DISASSEMBLY TO VERIFY PROPER PREVIOUS ASSEMBLY.			
* DISASSEMBLE COUPLING AND CHECK FOR ADEQUATE LUBRICATION.			
* CLEAN AND INSPECT COUPLING FOR WEAR.			
* REPAIR OR REPLACE PARTS AS DIRECTED.			
* RELUBE AND REASSEMBLE COUPLING, ENSURING MATCH MARKS LINE UP.			
* PERFORM/CHECK SHAFT ALIGNMENT.			
* CHECK MOTOR/PUMP FOR SOFT FOOT, ADJUST IF NEEDED.			
* CHECK THAT HOLDDOWN BOLTS ARE TIGHT.			
SIGNATURE: _____ DATE: _____			
2 RADIATION TEST	1		1
SUPPORT CRAFT.			
SIGNATURE: _____ DATE: _____			

## Notes

MLD 12-JAN-99 MDT  
1 TAG HUNG ON PUMP  
WALDDOWN PERFORMED BY MICHAEL DISTEL  
APPROVED BY TERRY PLOEGER  
FAILURE DATE 1/11/99  
System 13-AUG-99 PRINT HISTORY  
15-AUG-00 15:28 RMP CLOSED  
13-AUG-99 07:30 MHS WSC TAGS  
JNP 14-MAY-99 ROCK  
HPI #1  
MLD 12-JAN-99 WALKDOWN  
MMTM REVIEWED NEED TO CHECK COUPLING LUBRICATION AND ALIGNMENT FORWARD TO SHOP

## Closeout

Lead Shop / MDT Removed	_____	Date: _____
SS/SM Authorization	_____	Date: _____
QC Mechanical	_____	Date: _____
Planner Review	_____	Date: _____

FEARMS DAVIS-BESSE PLANT



P58-1

Work Order 99-000205-000

T*

Subsystem: SUB052-01

Completion Date: __/__/__ Completed By: _____

Notes: _____  
_____



[illegible]

## Equipment ID:

P58-1

## Description /Reason

Check coupling for proper lubrication and alignment.

## Placement Notes

## Cautions

## Completion Instructions

Attribute Description	Attribute Value
Containment Penetration?	No
Tagout Type	Non-Outage

Number	Equipment ID	Description
99-000205-000	P58-1	Check coupling for proper lube and alignment

Status	Description	User	Verification Date
Prepared	Prepared By	Howard, Bob	08/16/2000 08:00
Reviewed	Reviewed By		00/00/0000 00:00
Second Reviewed	Second Reviewed By		00/00/0000 00:00
Approved	Approved By		00/00/0000 00:00
Issued for Work	Issued for Work By		00/00/0000 00:00
Restoration Review	Restoration Review By		00/00/0000 00:00
Removal Authorized	Removal Authorized By		00/00/0000 00:00
Clearance Closed	Clearance Closed By		00/00/0000 00:00

Equipment ID	Equipment Description	Equipment Location	Tag Serial	Tag Type	Place. Config.	Place. Seq.	Rest. Config.	Rest. Seq.	Notes
HIS1524	HPI PUMP 1	AUXL7-623-505*_CTRM Panel C5716		Danger Tag	TAGGED	1	UNTAGGED	2	
NP581	HPI PUMP 1	AUXL7-545-105*_		Danger Tag	TAGGED	1	UNTAGGED	2	
AD111	HP INJ PMP 1-2 MP-582	AUXL6-585-323*_(D1) #2 High Voltage Switchgear Room		Danger Tag	RACKED OUT	2	UNTAGGED	1	

# Tag List for SUB052-01-016

08/16/2000 08:04

Davis Besse DB-2000-01-07005

Page 1 of 1

Equipment ID	Equipment Description	Equipment Location	Tag Serial	Tag Type	Place. Config.	Place. Seq.	Rest. Config.	Rest. Seq.	Notes
HIS1524	HPI PUMP 1	AUXL7-623-505*_CTRM Panel C5716		Danger Tag	TAGGED	1	UNTAGGED	2	
NP581	HPI PUMP 1	AUXL7-545-105*_		Danger Tag	TAGGED	1	UNTAGGED	2	
AC111	HP INJ PMP 1-1 MP-581	AUXL6-585-325*_(C1) #1 High Voltage Switchgear Room		Danger Tag	RACKED OUT	2	RACKED IN	1	

Component	Print Number
AC111	OS-3,G-8
AC111	E3,

DAVIS-BESSE NUCLEAR POWER STATION  
JOB PERFORMANCE MEASURE WORKSHEET

---

JPM NO.: Admin 3

Rev. 0

Page 1 of 5

TASK NO.: 333-008-01-0300

TASK DESCRIPTION: Review a Waste Gas Release with No Radiation Monitors Available

K/A REFERENCE: XXX-GEN-2.3.08 2.3/3.2

APPLICABLE METHOD OF TESTING: Actual Performance  
Simulator  
Control Room  
Classroom

TIME FOR COMPLETION: 12 minutes

APPLICABILITY: ☐ RO ☒ SRO

TASK STANDARDS:

1. Review a Waste Gas Release with no REs operable.
2. Deny approval of a Waste Gas Release due to the release Rate.

REQUIRED MATERIALS:

1. DB-OP-03012, Radioactive Gaseous Batch Release
  - a. Sections 4.1, 4.12, 4.13, 4.15 completed accordingly for RE 1822 A and B being out of service.
  - b. On attachment 1 enter a release rate of 15 in item 9.a and a tenth value of 0.65 in item 9.b
2. ODCM

GENERAL REFERENCES:

INITIAL CONDITIONS:

The plant is at 100% power, Waste Gas REs 1822A and 1822B are inoperable.

INITIATING CUES:

You are directed to review and approve a Waste Gas Release Permit. RE's 4598AA and 4598AB should be used for the release.

**INITIAL CONDITIONS:**

The plant is at 100% power, Waste Gas REs 1822A and 1822B are inoperable.

**INITIATING CUES:**

You are directed to review and approve a Waste Gas Release Permit.RE's 4598AA and 4598AB should be used for the release .

**PERFORMANCE INFORMATION**

NOTE: Critical steps denoted with a "C". Failure to meet any one of these standards for this item constitutes failure. Sequence is NOT critical unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Locate the correct procedure.

STANDARD: Determine that DB-OP-03012, Radioactive Gaseous Batch Release Procedure, is the correct procedure.

COMMENT: Hand Examinee a copy of DB-OP-03012 with Section 4.1 completed, and Attachment 1 completed up to 4.h.

CUE: None.

SAT UNSAT

2. PERFORMANCE STEP: Verify that the permit is approved.  
.....C.....

STANDARD: Verify that item 4.h. of Attachment 1 has been signed.

CUE: None.

SAT UNSAT

3. PERFORMANCE STEP: Verify that surveillance requirements are current.

STANDARD: Verify that the surveillances in Step 4.2.2 are completed.

CUE: All surveillances are current except for REs 1822A and 1822B.

SAT UNSAT

4. PERFORMANCE STEP: Determine RE operability.

STANDARD: Circle unsat in item 4.i due to 1822A&B being inoperable.

CUE: None.

SAT UNSAT

***

*****

2000 06:01:33.01

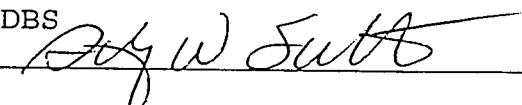
CAS

DAVIS-BESSE STATION

*****

SAMPLE TITLE : CHEM - ECASS  
 SAMPLE ID : 200005241002 * SAMPLE TIME  
 SAMPLE GEOMETRY : CHARCART * SHELF HEIGHT : ABS  
 SAMPLE TYPE : CHEMISTRY * SAMPLE QUANTITY : 3.82000E+06 CC  
 *****

ACQ DATE & TIME : -2000 05:51 * DEADTIME (%) : 0.4%  
 PRESET LIVE TIME : 0 00:10:00 * DETECTOR : DETECTOR 2  
 ELAPSED REAL TIME : 602.33 Secs * DECAY TIME : 0 00:11:14.24  
 ELAPSED LIVE TIME : 600.00 Secs * LIBRARY : 211  
 QC CHECK DATE/TIME : 02:20  
 *****

COLLECTED BY : JN  
 COUNTED BY : DBS  
 REVIEWED BY :   
 COMMENTS :

*****

## Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
	77.11	150	1278	0.88	205.81	200	29	76.1	2.30E+00	BI-214
										PB-214
3	80.34	879	1659	1.35	214.41	200	29	19.4		I-131
1	249.57	257	1059	1.26	665.47	660	11	50.3	2.48E+00	
1	284.36	1001	1102	1.24	758.22	753	12	14.7	2.18E+00	I-131
										I-132
1	288.61	386	1307	2.34	769.54	765	16	43.1	2.34E+00	I-135
1	294.77	513	1048	2.04	785.97	780	13	27.0	7.19E+00	PB-214
1	351.99	555	1197	1.43	938.49	931	16	29.3	1.92E+00	I-134
										PB-214
1	364.51	10291	949	1.17	971.86	965	14	2.3	3.73E-01	CS-138
										I-131
										CS-138
1	417.46	122	394	1.18	1112.99	1107	10	63.9	2.12E+00	I-132
										I-133
										I-135
										I-133
1	462.95	544	488	1.54	1234.26	1226	16	20.2	1.95E+00	PB-214
										CS-138
1	479.52	259	602	7.17	1278.43	1269	23	50.7	2.18E+00	W-187
										PB-214
1	511.07	3327	778	2.81	1362.51	1352	28	6.0	1.69E+00	
1	526.60	169	259	1.47	1403.91	1399	23	37.2	1.09E+00	I-135
1	530.02	11268	240	1.32	1413.04	1399	23	2.0		I-133
1	546.81	387	331	1.39	1457.79	1451	16	23.3	1.64E+00	I-135
										CS-138
										I-132
1	554.45	102	198	0.98	1478.14	1474	10	55.4	2.14E-01	



- 
5. PERFORMANCE STEP: Verify status of RE monitor source check being satisfactory .

STANDARD: Determine that RE's 1822A and 1822B are inoperable per the initial conditions .

CUE: All other RE's monitor source checks were satisfactory .

---

SAT UNSAT

6. PERFORMANCE STEP: Circle the operable monitors to be used for the release in item 5.b .

STANDARD: Circle RE's 4598AA and 4598AB in item 5.b based on initial conditions

CUE: NONE .

---

SAT UNSAT

7. PERFORMANCE STEP: Return the permit to the Control Room .

STANDARD: Return the permit to the Control Room .

CUE: The permit is now returned to the Control Room, you are directed to continue with approval of the Waste Gas Release Permit.

---

SAT UNSAT

8. PERFORMANCE STEP: Check the tenth value of the maximum release rate .  
.....C.....

STANDARD: Identify that item 9.b is less than 1 SCFM and deny approval of the Waste Gas Release permit.

NOTE: The tenth value in item 9.b is .65 the release should not be performed .

CUE: NONE .

---

SAT UNSAT

TERMINATING CUES: This JPM is complete.

---

END TIME

VERIFICATION OF COMPLETION

Operator _____ Evaluator _____

SSN _____ Date _____

License:    ☐ RO    ☐ SRO    ☐ ONL

Validated Completion Time: _____ minutes

Actual Completion Time: _____ minutes

Acceptable Progress Maintained:            Yes            No            N/A

Result:        ☐ SATISFACTORY    ☐ UNSATISFACTORY

NOTE: An "Unsatisfactory" requires Comment and will require  
subsequent remedial training.

Comments/Feedback: _____

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_____  
Evaluator's Signature_____  
Date

Unidentified Energy Lines  
Sample ID : 200005241002

Page : 4  
Acquisition date : -2000 05:51:14

	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	249.57	257	1059	1.26	665.47	660	11	4.28E-01	50.3	4.07E+00	
1	511.07	3327	778	2.81	1362.51	1352	28	5.54E+00	6.0	2.00E+00	ANN
1	554.45	102	198	0.98	1478.14	1474	10	1.70E-01	55.4	1.84E+00	T
1	<del>776.64</del>	<del>111</del>	<del>138</del>	<del>1.74</del>	<del>2070.42</del>	<del>2054</del>	<del>26</del>	<del>1.85E-01</del>	<del>49.8</del>	<del>1.30E+00</del>	<del>140/24</del>
1	2118.74	32	14	2.92	5648.29	5640	18	5.40E-02	62.3	5.31E-01	74
1	2217.80	80	21	3.30	5912.40	5902	22	1.33E-01	36.8	5.20E-01	CS-13
1	2254.71	20	5	1.86	6010.80	6004	12	3.38E-02	63.1	5.17E-01	
1	2639.14	28	0	1.71	7035.76	7025	17	4.65E-02	42.4	4.96E-01	CS-13
1	2677.79	55	6	2.60	7138.82	7129	18	9.20E-02	32.0	4.95E-01	RB-88
1	2753.87	215	3	2.47	7341.65	7332	20	3.58E-01	14.3	4.95E-01	Na-24

Flags: "T" = Tentatively associated

**PROCEDURE DEVELOPMENT FORM**  
ED 7635-14

SHEET

/ of /

PROCEDURE ACTIVITY TRACKING NO.

TA00-0315

**SECTION 1 - IDENTITY**

PROCEDURE NO. / CURRENT REVISION

DB-OP-03012 / R02

PROPOSED  
REVISION NO.

PROPOSED  
CHANGE NO.

☐ NEW

☐ REVISION

☐ CHANGE

☒ TEMPORARY

☐ CANCELLATION

☐ INACTIVATION

☐ REACTIVATION

☐ APPROVAL

☐ RESTRICTED

ESTIMATED EXPIRATION

(DATE / EVENT)

PROCEDURE TITLE

Radioactive Gaseous Batch Release

PROCEDURE CLASSIFICATION

☒ SR ☐ QR ☐ N-QR CHANGE TO? ☐ YES ☒ NO

PAT / PCR NOS. CLOSED OUT

None

☐ CONTINUED

ACTIVITY SUMMARY / PURPOSE

Remove references to specific portions of gamma spectral analysis computer printouts which no longer exist with new gamma spectroscopy software.

DOCUMENTATION MANAGEMENT  
CONTROL COPY

☐ CONTINUED

**SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS**

☐ CONTINUED

DOCUMENT NO. / REVISION

DOCUMENT TITLE

PAT NO. / CHANGE REQUEST

**SECTION 3 - REVIEW ORGANIZATIONS**

REQUIRED

REQUESTED

☐ CONTINUED

☐ CONTINUED

PROCEDURE PREPARER

DATE

2/10/00

QUALIFIED REVIEWER

DATE

2/10/00

**SECTION 4 - ATTACHMENTS**

YES N/A

☐ ☒ VALIDATION CHECKLIST

☐ ☒ COMMITMENT VERIFICATION SUMMARY

☐ ☒ SAFETY EVALUATION NO.

YES N/A

☒ ☐ SAFETY REVIEW

☐ ☒ DOCUMENT REVIEW SHEETS

YES N/A

☐ ☒ REVISED CROSS REFERENCES LIST

☐ ☒ PCRs

☐ ☒ OTHER

FINAL QUALIFIED REVIEWER CONCURRENCE

DATE

2/11/00

**SECTION 5 - TEMPORARY APPROVAL**

MANAGEMENT SRO

DATE

2/10/00

APPROVAL AUTHORITY

N/A

DATE

**SECTION 6 - CONCURRENCE / FINAL APPROVAL**

PROCEDURE SPONSOR

DATE

2/16/00

☐ MANAGER - BUSINESS SERVICES (BSA)

DATE

N/A

☐ DIRECTOR - SUPPORT SERVICES (NA)

DATE

☐ SRB

DATE

N/A

☐ DIRECTOR - TECHNICAL SERVICES (E&S)

DATE

☐ PLANT MANAGER

DATE

N/A

☐ DIRECTOR - WORK MANAGEMENT (WMD)

DATE

APPROVAL AUTHORITY

DATE

2/16/00

**SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY**

TRAINING COMPLETE

☐ YES ☐ N/A

ALTERATION EFFECTIVE DATE

PROCEDURE SPONSOR

DATE

**SECTION 1 - IDENTITY (CONTINUED)**

**SECTION 2 - QUALIFIED PROCEDURE REVIEW (CONTINUED)**

**SECTION 7 - TRAINING/PROCEDURE EFFECTIVITY (CONTINUED)**

	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	2639.14	28	0	1.71	7035.76	7025	17	42.4	6.36E-01	
1	2677.79	55	6	2.60	7138.82	7129	18	32.0	7.05E-01	
1	2753.87	215	3	2.47	7341.65	7332	20	14.3	7.70E-01	

SECTION 1 - IDENTITY

PROCEDURE NO. / CURRENT REVISION DB-OP-03012 / R02	PROPOSED REVISION NO.	PROPOSED CHANGE NO. C-5	<input type="checkbox"/> NEW <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> CHANGE <input type="checkbox"/> TEMPORARY APPROVAL	<input type="checkbox"/> CANCELLATION <input type="checkbox"/> INACTIVATION <input type="checkbox"/> REACTIVATION <input type="checkbox"/> APPROVAL	<input type="checkbox"/> RESTRICTED ESTIMATED EXPIRATION (DATE / EVENT)
SUPERSEDES					

PROCEDURE TITLE  
Radioactive Gaseous Batch Release

PROCEDURE CLASSIFICATION  
☒ SR ☐ QR ☐ N-QR CHANGE TO? ☐ YES ☒ NO

PAT / PCR NOS. CLOSED OUT  
CR99-0104, PCR 99-0621

ACTIVITY SUMMARY / PURPOSE  
☐ CONTINUED

This change only will incorporate CR99-0104, and as such constitutes an editorial change to this procedure.

*CHANGE*  
*This incorporation in response to condition report 1999-0009*  
*Action Item*

DOCUMENTATION MANAGEMENT  
**CONTROL COPY**

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS

DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST
DB-OP-03012 / R02	Radioactive Gaseous Batch Release	CR99-0104-Cancellation

SECTION 3 - REVIEW ORGANIZATIONS

REQUIRED	REQUESTED
<i>NONE</i>	<i>NONE</i>

PROCEDURE PREPARER <i>F.P. Brown</i>	DATE 12/20/99	QUALIFIED REVIEWER <i>F.P.E.</i>	DATE 12/20/99
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SECTION 4 - ATTACHMENTS

YES N/A	COMPLETED AND ATTACHED	YES N/A
<input type="checkbox"/> <input checked="" type="checkbox"/> VALIDATION CHECKLIST <input checked="" type="checkbox"/> <input type="checkbox"/> COMMITMENT VERIFICATION SUMMARY <input checked="" type="checkbox"/> <input type="checkbox"/> SAFETY EVALUATION NO. <i>SER 88-0539</i>	<input type="checkbox"/> <input checked="" type="checkbox"/> SAFETY REVIEW <input type="checkbox"/> <input checked="" type="checkbox"/> DOCUMENT REVIEW SHEETS	<input type="checkbox"/> <input checked="" type="checkbox"/> REVISED CROSS REFERENCES LIST <input checked="" type="checkbox"/> <input type="checkbox"/> PCRs <i>99-0621</i> <input type="checkbox"/> <input checked="" type="checkbox"/> OTHER

FINAL QUALIFIED REVIEWER CONCURRENCE <i>[Signature]</i>	DATE 12/20/99
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SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE

SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR <i>[Signature]</i>	DATE 12/22/99	<input type="checkbox"/> MANAGER - BUSINESS SERVICES (BSA) <input type="checkbox"/> SRB <input type="checkbox"/> PLANT MANAGER	DATE
<input type="checkbox"/> DIRECTOR - SUPPORT SERVICES (NA) <input type="checkbox"/> DIRECTOR - TECHNICAL SERVICES (E&S) <input type="checkbox"/> DIRECTOR - WORK MANAGEMENT (WMD)	DATE	APPROVAL AUTHORITY <i>[Signature]</i>	DATE 12/22/99

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A	ALTERATION EFFECTIVE DATE 12/24/99	PROCEDURE SPONSOR <i>[Signature]</i>	DATE 12/23/99
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SECTION 1 - IDENTITY (CONTINUED)

SECTION 2 - QUALIFIED PROCEDURE REVIEW (CONTINUED)

SECTION 7 - TRAINING PROCEDURE EFFECTIVITY (CONTINUED)



	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	609.57	566	225	1.36	1625.09	1619	12	13.5	6.20E-01	BI-214
1	637.11	514	251	1.27	1698.50	1692	14	15.8	5.20E-01	I-131
1	668.13	220	290	1.57	1781.18	1774	14	35.5	2.97E+00	I-132
1	686.09	76	159	1.26	1829.06	1824	11	69.1	2.35E+00	W-187
1	706.43	128	276	1.69	1883.27	1875	16	60.5	4.39E-01	I-133
										I-134
										I-133
1	722.94	66	172	1.52	1927.29	1923	10	78.3	8.57E-01	I-131
1	768.35	108	143	2.17	2048.33	2041	13	49.6	2.67E+00	BI-214
										I-133
										I-133
1	772.62	237	116	1.74	2059.70	2054	26	22.6	7.11E-01	I-132
										W-187
										CS-138
1	776.64	111	138	1.74	2070.42	2054	26	49.8		
1	810.72	613	294	1.49	2161.27	2152	19	15.7	6.43E-01	I-132
										CO-58
1	836.55	188	172	2.14	2230.13	2222	18	35.9	1.05E+00	I-134
										I-135
1	847.23	166	138	1.84	2258.59	2251	14	33.9	9.49E-01	MN-56
										I-134
1	857.20	89	167	0.99	2285.17	2277	16	69.1	6.98E+00	I-133
										I-134
	875.37	355	190	1.62	2333.60	2326	16	20.6	2.34E+00	I-133
	898.02	1043	183	1.57	2393.97	2385	17	8.6	8.07E-01	RB-88
										Y-88
1	1009.75	280	101	1.83	2691.84	2685	14	19.4	9.72E-01	CS-138
1	1039.06	133	134	1.79	2769.97	2763	16	43.7	1.85E+00	I-135
1	1120.26	103	113	1.93	2986.41	2978	25	50.1	1.45E+00	BI-214
1	1123.68	68	122	1.93	2995.53	2978	25	74.6		I-135
1	1131.43	293	148	1.53	3016.21	3009	16	22.1	1.75E+00	I-135
1	1237.54	259	101	1.35	3299.05	3292	17	20.1	4.78E+01	I-133
										BI-214
1	1260.43	432	67	1.66	3360.08	3350	19	13.3	1.52E+00	I-135
1	1298.16	121	90	1.71	3460.66	3450	18	41.5	9.89E-01	I-132
										I-132
										I-133
1	1318.20	188	85	2.65	3514.09	3503	24	27.0	3.02E+01	I-132
1	1368.55	455	79	1.77	3648.31	3641	20	13.6	7.15E-01	I-135
										NA-24
1	1435.69	503	34	1.89	3827.30	3819	17	10.5	2.40E+00	CS-138
1	1457.67	83	112	1.76	3885.90	3881	21	68.4	1.14E+00	I-135
1	1678.60	99	39	2.07	4474.87	4465	17	35.2	2.22E+00	I-135
1	1707.28	49	55	1.03	4551.33	4539	22	80.8	4.78E+00	I-135
1	1764.58	72	21	1.86	4704.09	4695	17	38.7	1.45E+00	BI-214
1	1791.69	81	25	2.23	4776.38	4767	17	36.4	8.36E-01	I-135
1	1836.08	865	21	2.06	4894.70	4884	21	7.4	1.47E+00	RB-88
										Y-88
1	2118.74	32	14	2.92	5648.29	5640	18	62.3	7.72E-01	
	2217.80	80	21	3.30	5912.40	5902	22	36.8	1.23E+00	
1	2254.71	20	5	1.86	6010.80	6004	12	63.1	2.01E-01	

SECTION 1 - IDENTITY

PROCEDURE NO. / CURRENT REVISION

DB-OP-03012 / R02

PROPOSED  
REVISION NO.

PROPOSED  
CHANGE NO.

☐ NEW

☐ REVISION

☐ CHANGE

☒ TEMPORARY

☐ CANCELLATION

☐ INACTIVATION

☐ REACTIVATION

APPROVAL

☐ RESTRICTED

EXPIRES

(DATE / EVENT)

PROCEDURE TITLE

Radioactive Gaseous Batch Release

PROCEDURE CLASSIFICATION

☒ SR ☐ QR ☐ N-QR ☐ CHANGE TO? ☐ YES ☒ NO

PAT / PCR NOS. CLOSED OUT

None

☐ CONTINUED

ACTIVITY SUMMARY / PURPOSE

Update calculation sections due to new software.

Eliminate hand calculations for dose and reference the corm. for calculations.

DOCUMENTATION MANAGEMENT

☐ CONTINUED

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS

☐ CONTINUED

DOCUMENT NO. / REVISION

PAT NO. / CHANGE REQUEST

CONTROL COPY  
NO. 1324

SECTION 3 - REVIEW ORGANIZATIONS

REQUIRED

REQUESTED

☐ CONTINUED

☐ CONTINUED

PROCEDURE PREPARER

DATE

10/6/99

QUALIFIED REVIEWER

W. A. Ph

DATE

10/11/99

SECTION 4 - ATTACHMENTS

YES N/A

YES N/A

COMPLETED AND ATTACHED

YES N/A

☒ ☐ VALIDATION CHECKLIST

☒ ☐ SAFETY REVIEW

☐ ☒ REVISED CROSS REFERENCES LIST

☐ ☒ COMMITMENT VERIFICATION SUMMARY

☐ ☒ DOCUMENT REVIEW SHEETS

☐ ☒ PCRs

☐ ☒ SAFETY EVALUATION NO.

☐ ☒ OTHER

FINAL QUALIFIED REVIEWER CONCURRENCE

W. A. Ph

DATE

12/16/99

SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO

R. A. Ph

DATE

12/14/99

APPROVAL AUTHORITY

N/A

DATE

SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR

D. A. Ph

DATE

12/21/99

☐ MANAGER - BUSINESS SERVICES

DATE

☐ DIRECTOR - NA

DATE

☐ SRB

DATE

☐ DIRECTOR - E&S

DATE

☐ PLANT MANAGER

DATE

☐ DIRECTOR - NSS

DATE

APPROVAL AUTHORITY

W. A. Ph

DATE

12/21/99

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE

☐ YES ☐ N/A

ALTERATION EFFECTIVE DATE

PROCEDURE SPONSOR

DATE

**SECTION 1 - IDENTITY (CONTINUED)**

**SECTION 2 - QUALIFIED PROCEDURE REVIEW (CONTINUED)**

**SECTION 7 - TRAINING/PROCEDURE EFFECTIVITY (CONTINUED)**

Summary of Nuclide Activity  
Sample ID : 200005241001

Acquisition date :

Page : 2  
2000 01:49:04

Total number of lines in spectrum 11  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 8 72.73%

Nuclide Type : FISSION GAS

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/CC	Wtd Mean Decay Corr uCi/CC	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
R-41	109.62M	1.17	1.317E-06	1.547E-06	0.010E-05	6.45	
R-85M	4.48H	1.07	4.806E-08	5.134E-08	1.809E-08	35.24	
E-133	5.25D	1.00	4.017E-06	4.027E-06	0.116E-06	2.87	
E-133M	2.19D	1.01	1.560E-07	1.569E-07	1.688E-07	107.60	
E-135	9.11H	1.03	1.139E-06	1.177E-06	0.041E-06	3.49	
Total Activity :			6.677E-06	6.958E-06			

Grand Total Activity : 6.677E-06 6.958E-06

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

SECTION 1 - IDENTITY

PROCEDURE NO. / CURRENT REVISION DB-OP-03012/R02	PROPOSED REVISION NO.	PROPOSED CHANGE NO. C-4	<input type="checkbox"/> NEW <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> CHANGE <input type="checkbox"/> TEMPORARY	<input type="checkbox"/> CANCELLATION <input type="checkbox"/> INACTIVATION <input type="checkbox"/> REACTIVATION <input type="checkbox"/> APPROVAL	<input type="checkbox"/> RESTRICTED EXPIRES _____ (DATE / EVENT)
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PROCEDURE TITLE

RADIOACTIVE GASEOUS BATCH RELEASE

PROCEDURE CLASSIFICATION

☒ SR ☐ QR ☐ N-QR ☐ CHANGE TO? ☐ YES ☒ NO

PAT / PCR NOS. CLOSED OUT CR 98-2205

PCR'S: 98-1771, 98-1957, 98-1313, 98-2617

☐ CONTINUED

ACTIVITY SUMMARY / PURPOSE

Changed referenced procedures for Instrument Cal checks to reflect new procedure numbers. Made Editorial enhancements by moving some steps in the procedure to more appropriate locations, in order to allow evolution to flow more smoothly. Added step to all release sections to review concurrent steps prior to performance. Made various other editorial enhancements and updates to reflect current plant status.

☐ CONTINUED

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS

☐ CONTINUED

DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST
DB-OP-03012/R02	RADIOACTIVE GASEOUS BATCH RELEASE	CR99-0104-ACTIVATION
DB-OP-03012/R02	RADIOACTIVE GASEOUS BATCH RELEASE	CR98-2205-CANCELLATION

DOCUMENTATION MANAGEMENT  
REQUIRED  
**CONTROL COPY**  
NO. 1324

SYME	CHEM	RP	REQUESTED
_____	_____	_____	_____

PROCEDURE PREPARED <i>[Signature]</i>	DATE 12/12/98	QUALIFIED REVIEWER <i>[Signature]</i>	DATE 12/12/98
------------------------------------------	------------------	------------------------------------------	------------------

SECTION 4 - ATTACHMENTS

YES N/A <input checked="" type="checkbox"/> <input type="checkbox"/> VALIDATION CHECKLIST <input checked="" type="checkbox"/> <input type="checkbox"/> COMMITMENT VERIFICATION SUMMARY <input type="checkbox"/> <input checked="" type="checkbox"/> SAFETY EVALUATION NO. <u>N/A</u>	YES N/A <input checked="" type="checkbox"/> <input type="checkbox"/> SAFETY REVIEW <input checked="" type="checkbox"/> <input type="checkbox"/> DOCUMENT REVIEW SHEETS <u>1/28/99</u>	YES N/A <input type="checkbox"/> <input checked="" type="checkbox"/> REVISED CROSS REFERENCES LIST <input checked="" type="checkbox"/> <input type="checkbox"/> PCRs <input type="checkbox"/> <input checked="" type="checkbox"/> OTHER _____
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FINAL QUALIFIED REVIEWER CONCURRENCE

*[Signature]*

DATE  
1/28/99

SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE
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SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR <i>[Signature]</i>	DATE <u>2/10/99</u>	<input type="checkbox"/> MANAGER - BUSINESS SERVICES	DATE
<input type="checkbox"/> DIRECTOR - NA	DATE	<input type="checkbox"/> SRB	DATE
<input type="checkbox"/> DIRECTOR - E&S	DATE	<input type="checkbox"/> PLANT MANAGER	DATE
<input type="checkbox"/> DIRECTOR - NSS	DATE	APPROVAL AUTHORITY <i>[Signature]</i>	DATE <u>2/10/99</u>

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A	ALTERATION EFFECTIVE DATE <u>2/18/99</u>	PROCEDURE SPONSOR <i>[Signature]</i>	DATE <u>2/10/99</u>
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SECTION 1 - IDENTITY (CONTINUED)

[illegible][illegible]

Total number of lines in spectrum  
Number of unidentified lines

54

8

Number of lines tentatively identified by NID

46

85.19%

Nuclide Type : ACTIVATION

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC			
NA-24	15.00H	1.01	7.306E-10	7.398E-10	1.009E-10	13.63	
IN-56	2.58H	1.08	1.666E-10	1.792E-10	0.608E-10	33.93	
CO-58	70.80D	1.00	5.868E-10	5.869E-10	0.921E-10	15.70	
N-187	23.83H	1.01	2.085E-10	2.102E-10	1.452E-10	69.11	
Total Activity :			1.693E-09	1.716E-09			

Nuclide Type : FISSION

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC			
B-88	17.80M	1.87	8.231E-09	1.540E-08	0.113E-08	7.36	
<del>B-88</del>	<del>106.60D</del>	<del>1.00</del>	<del>1.772E-09</del>	<del>1.773E-09</del>	<del>0.130E-09</del>	<del>7.36</del>	<del>RB-88</del>
S-138	32.20M	1.42	1.105E-09	1.565E-09	0.165E-09	10.52	
Total Activity :			1.111E-08	1.874E-08			

Nuclide Type : IODINE

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC			
-131	8.04D	1.00	5.287E-09	5.293E-09	0.124E-09	2.35	
-132	2.30H	1.08	1.734E-10	1.881E-10	0.669E-10	35.54	
-133	20.80H	1.01	7.973E-09	8.045E-09	0.158E-09	1.96	
-134	52.60M	1.24	1.728E-10	2.139E-10	0.726E-10	33.93	
-135	6.61H	1.03	2.243E-09	2.308E-09	0.307E-09	13.31	
Total Activity :			1.585E-08	1.605E-08			

Nuclide Type : NATURAL

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC			
I-214	19.90M	1.75	8.628E-10	1.512E-09	0.205E-09	13.53	
B-214	26.80M	1.52	6.015E-10	9.133E-10	2.673E-10	29.26	
Total Activity :			1.464E-09	2.426E-09			

Grand Total Activity : 3.011E-08 3.893E-08

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abundance limit

PROCEDURE DEVELOPMENT FORM  
ED 7635-12-(W)

SHEET 1 OF 1 PROCEDURE ACTIVITY TRACKING NO. C97-1325

PROCEDURE NO. DB-OP-03012 <u>R02</u>		PROPOSED REVISION NO.	PROPOSED CHANGE NO. C-3	<input type="checkbox"/> NEW <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> CHANGE <input type="checkbox"/> TEMPORARY APPROVAL	<input type="checkbox"/> CANCELLATION <input type="checkbox"/> INACTIVATION <input type="checkbox"/> REACTIVATION	<input type="checkbox"/> RESTRICTED EXPIRES _____ (DATE/EVENT)
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PROCEDURE TITLE  
RADIOACTIVE GASEOUS BATCH RELEASE

PROCEDURE CLASSIFICATION <input checked="" type="checkbox"/> SR <input type="checkbox"/> QR <input type="checkbox"/> N-QR CHANGE TO? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	PAT/PCR NOS. CLOSED OUT PCR97-1365, PCR97-1657, PCR97-2898, PCR980163 <u>TA 98-0205</u>	<input type="checkbox"/> CONTINUED
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ACTIVITY SUMMARY / PURPOSE

DELETED REFERENCE TO EQUIPMENT LOG  
 REWROTE CTMT PRESS RELEASE SECTION TO ALLOW RELEASES >24 HRS  
 CORRECTED VARIOUS TYPOS  
 ENHANCED CHEMISTRY ATTACHMENTS  
 VARIOUS EDITORIAL ENHANCEMENTS  
 Incorporated TA 98-0205

SECTION 2 - CONCURRENTLY DEVELOPED DOCUMENTS		
DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST

SECTION 3 - REVIEW ORGANIZATIONS	
REQUIRED CHEM _____ SYME _____ RP _____	REQUESTED _____
<input type="checkbox"/> CONTINUED	<input type="checkbox"/> CONTINUED

PROCEDURE PREPARER <u>F. P. Burr</u>	DATE 2-11-98	QUALIFIED REVIEWER <u>F. P. Burr</u>	DATE 2-11-98
-----------------------------------------	-----------------	-----------------------------------------	-----------------

SECTION 4 - ATTACHMENTS			
COMPLETED AND ATTACHED			
YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> VALIDATION CHECKLIST YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> COMMITMENT VERIFICATION SUMMARY YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> SAFETY EVALUATION NO. _____	YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> SAFETY REVIEW YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> DOCUMENT REVIEW SHEETS YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> P COMMITMENT DOCUMENTATION	YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> REVISED CROSS REFERENCES LIST YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/> PCRs YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> OTHER _____	

FINAL QUALIFIED REVIEWER CONCURRENCE <u>[Signature]</u>	DATE 3/2/98
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SECTION 5 - TEMPORARY APPROVAL			
MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE

SECTION 6 - CONCURRENCE / FINAL APPROVAL			
PROCEDURE SPONSOR <u>[Signature]</u>	DATE 3/2/98	<input type="checkbox"/> SRB	DATE
<input type="checkbox"/> DIRECTOR - NA	DATE	<input type="checkbox"/> PLANT MANAGER	DATE
<input type="checkbox"/> DIRECTOR - E&S	DATE	APPROVAL AUTHORITY <u>[Signature]</u>	DATE 3/3/98
<input type="checkbox"/> DIRECTOR - NSS	DATE		

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY			
TRAINING COMPLETE <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A	ALTERATION EFFECTIVE DATE 3/10/98	PROCEDURE SPONSOR <u>[Signature]</u>	DATE 3/5/98



SECTION 1 - IDENTITY (CONTINUED)

SECTION 2 - QUALIFIED PROCEDURE REVIEW (CONTINUED)

SECTION 7 - TRAINING PROCEDURE EFFECTIVITY (CONTINUED)

INDICATIVE GASEOUS BATCH RELEASE

Release Status: Post-Release  
Critical Path(s): Vegetables, Inhalation, Ground Plane  
Critical Individual: Child

Number: 00-000126

Date:

Release Source:

Total Release Duration: 780 MIN

Noble Gas Total Body Dose Release Rate Limit: 3.38E+07 CFM

Noble Gas Skin Dose Release Rate Limit: 1.25E+08 CFM

Iodine and Particulates Release Rate Limit: 4.80E+08 CFM

Total Curies Released: 4.02E-02

RELEASE CONCENTRATIONS ( $\mu\text{Ci/ml}$ )

<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>
R41	1.55E-06	CO58	5.87E-10	CS138	1.56E-09
B	2.30E-06	I131	5.29E-09	I132	1.88E-10
33	8.04E-09	I134	2.14E-10	I135	2.31E-09
R85M	5.13E-08	MN56	1.79E-10	NA24	7.40E-10
B88	1.54E-08	W187	2.10E-10	XE133	4.03E-06
E133M	1.57E-07	XE135	1.18E-06		

Total Concentration: 1.58E-06  $\mu\text{Ci/ml}$  (excluding H3 and Noble Gases)

X/Q: 3.01E-07

X/Q: 4.80E-09

RADIOIODINE, TRITIUM, PARTICULATE DOSE COMMITMENT (mRem)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
dy	6.11E-07	2.41E-04	4.20E-04	4.21E-04
	6.52E-07	2.47E-04	4.30E-04	4.31E-04
dney	7.35E-07	2.50E-04	4.36E-04	4.37E-04
ne	3.39E-07	1.42E-05	2.47E-05	2.47E-05
thyroid	4.79E-05	2.94E-03	5.11E-03	5.12E-03
ng	5.18E-07	2.36E-04	4.12E-04	4.13E-04
-LLI	5.82E-07	2.37E-04	4.13E-04	4.14E-04

Noble Gas X/Q: 1.83E-06

Noble Gas Dose Commitment (mRad)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
ta Air	3.15E-06	1.91E-03	3.32E-03	3.56E-03
mma Air	4.57E-06	5.50E-04	9.58E-04	1.02E-03

PROCEDURE DEVELOPMENT FORM  
ED 7635-11

SHEET 1 OF 1

PROCEDURE ACTIVITY TRACKING NO.  
C97-0877

SECTION 1 - IDENTITY

PROCEDURE NO. <u>DB-OP-03012/R2</u> OLD NO. (For No. Change)	PROPOSED REVISION NO.	PROPOSED CHANGE NO. <u>C-2</u>	<input type="checkbox"/> NEW <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> CHANGE <input type="checkbox"/> TEMPORARY APPROVAL	<input type="checkbox"/> CANCELLATION <input type="checkbox"/> INACTIVATION <input type="checkbox"/> REACTIVATION	<input type="checkbox"/> RESTRICTED EXPIRES _____ (DATE/EVENT)
PROCEDURE TITLE <u>RADIOACTIVE GASEOUS BATCH RELEASE</u>					
PROCEDURE CLASSIFICATION <input checked="" type="checkbox"/> SR <input type="checkbox"/> OR <input type="checkbox"/> N-OR CHANGE TO? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			PAT/PCR NOS. CLOSED OUT <u>NONE</u>		
ACTIVITY SUMMARY / PURPOSE					

- add guidance on disposition of unidentified peaks in analysis report
- add additional reports to be attached to test
- update dose factors

DOCUMENTATION MANAGEMENT

CONTROL COPY

NO. 1324

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS

DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST

SECTION 3 - REVIEW ORGANIZATIONS

DUE:

CH	REQUIRED	RP	REQUESTED

PROCEDURE PREPARED BY <u>Rich Edwards</u>	DATE <u>4/18/97</u>	QUALIFIED REVIEWER <u>Richard Edwards</u>	DATE <u>4/18/97</u>
----------------------------------------------	------------------------	----------------------------------------------	------------------------

SECTION 4 - ATTACHMENTS

COMPLETED AND ATTACHED

YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/>	YES <input checked="" type="checkbox"/> N/A <input type="checkbox"/>	YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> VALIDATION CHECKLIST	<input checked="" type="checkbox"/> SAFETY REVIEW	<input type="checkbox"/> REVISED CROSS REFERENCES LIST
<input type="checkbox"/> COMMITMENT VERIFICATION SUMMARY	<input type="checkbox"/> DOCUMENT REVIEW SHEETS	<input type="checkbox"/> PCRs
<input type="checkbox"/> SAFETY EVALUATION		<input checked="" type="checkbox"/> OTHER

FINAL QUALIFIED REVIEWER CONCURRENCE <u>[Signature]</u>	DATE <u>4/22/97</u>
------------------------------------------------------------	------------------------

SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE

SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR <u>David May</u>	DATE <u>4/22/97</u>	<input type="checkbox"/> SRB	DATE
<input type="checkbox"/> DIRECTOR - NA	DATE	<input type="checkbox"/> PLANT MANAGER	DATE
<input type="checkbox"/> DIRECTOR - E&S	DATE	APPROVAL AUTHORITY <u>Dave [Signature]</u>	DATE <u>4/22/97</u>

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A	ALTERATION EFFECTIVE DATE <u>4/25/97</u>	PROCEDURE SPONSOR <u>[Signature]</u>	DATE <u>4/23/97</u>
-------------------------------------------------------------------------------------------	---------------------------------------------	-----------------------------------------	------------------------

SECTION 1 - IDENTITY (CONTINUED)

[illegible]

SECTION 3 - REVIEW ORGANIZATIONS (CONTINUED)					
<u>REQUIRED</u>			<u>REQUESTED</u>		
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

RADIOACTIVE GASEOUS BATCH RELEASE

Release Status: Pre-Release  
Critical Path(s): Vegetables, Inhalation, Ground Plane  
Critical Individual: Child

Permit Number: 00-000120

Date: / /

Source: 00000000

Noble Gas Total Body Dose Release Rate Limit: 3.38E+07 CFM

Noble Gas Skin Dose Release Rate Limit: 1.25E+08 CFM

Radon and Particulates Release Rate Limit: 4.80E+08 CFM

Initial Curies Released: 1.16E-01

RELEASE CONCENTRATIONS (μCi/ml)

Radionuclide	Concentration	Nuclide	Concentration	Nuclide	Concentration
	2.30E-06	AR41	1.55E-06	KR85M	5.13E-08
I133	4.03E-06	XE133M	1.57E-07	XE135	1.18E-06
24	7.40E-10	MN56	1.79E-10	CO58	5.87E-10
87	2.10E-10	RB88	1.54E-08	CS138	1.56E-09
1	5.29E-09	I132	1.88E-10	I133	8.04E-09
4	2.14E-10	I135	2.31E-09		

Initial Concentration: 1.58E-06 μCi/ml (excluding H3 and Noble Gases)

X/Q: 3.01E-07

Q: 4.80E-09

DIOIODINE, TRITIUM, PARTICULATE DOSE COMMITMENT (mRem)

	This Release	31-Day	Quarter	Annual
Initial Body	1.76E-06	2.42E-04	4.21E-04	4.22E-04
	1.88E-06	2.48E-04	4.31E-04	4.32E-04
	2.11E-06	2.51E-04	4.37E-04	4.38E-04
Radon	9.76E-07	1.45E-05	2.53E-05	2.53E-05
Radon	1.38E-04	2.99E-03	5.20E-03	5.21E-03
Radon	1.49E-06	2.37E-04	4.13E-04	4.14E-04
Radon	1.67E-06	2.38E-04	4.14E-04	4.15E-04

Noble Gas X/Q: 1.83E-06

Noble Gas Dose Commitment (mRad)

	This Release	31-Day	Quarter	Annual
Radon Air	9.05E-06	1.91E-03	3.32E-03	3.57E-03
Radon Air	1.31E-05	5.55E-04	9.67E-04	1.03E-03

PROCEDURE DEVELOPMENT FORM  
ED 7635-11

SHEET 1 OF 1

PROCEDURE ACTIVITY TRACKING NO.  
C.96-2159

SECTION 1 - IDENTITY

PROCEDURE NO. <u>IDB-OP-03012 R02</u> OLD NO. (For No. Change)	PROPOSED REVISION NO.	PROPOSED CHANGE NO. <u>1</u>	<input type="checkbox"/> NEW <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> CHANGE <input type="checkbox"/> TEMPORARY APPROVAL	<input type="checkbox"/> CANCELLATION <input type="checkbox"/> INACTIVATION <input type="checkbox"/> REACTIVATION	<input type="checkbox"/> RESTRICTED EXPIRES _____ (DATE/EVENT)
----------------------------------------------------------------------	-----------------------	---------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------

PROCEDURE TITLE <u>RADIOACTIVE GASEOUS BATCH RELEASE</u>	
PROCEDURE CLASSIFICATION <input checked="" type="checkbox"/> SR <input type="checkbox"/> QR <input type="checkbox"/> N-QR CHANGE TO? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ACTIVITY SUMMARY / PURPOSE <u>Incorporated TA 96-1563 and PCR 1328 which updated Attachment 8, Tritium, Iodine, Particulate Release Rate Data Sheet</u>	PAT/PCR NOS. CLOSED OUT <u>PCR 96-1828</u> <u>TA 96-1563</u> <input type="checkbox"/> CONTINUED

DOCUMENTATION MANAGEMENT

CONTROL COPY

NO. 1324

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS

DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST

SECTION 3 - REVIEW ORGANIZATIONS

DUE: _____

REQUIRED	REQUESTED
<u>RP</u> <u>SYS M/C</u>	

PROCEDURE PREPARER <u>Eric Horvath</u>	DATE <u>11/7/96</u>	QUALIFIED REVIEWER <u>[Signature]</u>	DATE <u>11/7/96</u>
-------------------------------------------	------------------------	------------------------------------------	------------------------

SECTION 4 - ATTACHMENTS

COMPLETED AND ATTACHED		REVISD CROSS REFERENCES LIST	
YES	N/A	YES	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/> VALIDATION CHECKLIST	<input checked="" type="checkbox"/>	<input type="checkbox"/> SAFETY REVIEW
<input type="checkbox"/>	<input type="checkbox"/> COMMITMENT VERIFICATION SUMMARY	<input type="checkbox"/>	<input type="checkbox"/> DOCUMENT REVIEW SHEETS
<input type="checkbox"/>	<input checked="" type="checkbox"/> SAFETY EVALUATION	<input type="checkbox"/>	<input type="checkbox"/> OTHER _____

FINAL QUALIFIED REVIEWER CONCURRENCE <u>[Signature]</u>	DATE <u>11/25/96</u>
------------------------------------------------------------	-------------------------

SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE

SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR <u>[Signature]</u>	DATE <u>11-26-96</u>	<input type="checkbox"/> SRB	DATE
<input type="checkbox"/> DIRECTOR - NA	DATE	<input type="checkbox"/> PLANT MANAGER	DATE
<input type="checkbox"/> DIRECTOR - E&S	DATE	APPROVAL AUTHORITY <u>[Signature]</u>	DATE <u>11-26-96</u>

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A	ALTERATION EFFECTIVE DATE <u>12-3-96</u>	PROCEDURE SPONSOR <u>[Signature]</u>	DATE <u>11-26-96</u>
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**SECTION 1 - IDENTITY (CONTINUED)**

**SECTION 2 - QUALIFIED PROCEDURE REVIEW (CONTINUED)**

**SECTION 7 - TRAINING PROCEDURE EFFECTIVITY (CONTINUED)**

***

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2000 06:01:33.01

CAS

DAVIS-BESSE STATION

*****

SAMPLE TITLE : CHEM - ECASS

SAMPLE ID : 200005241002

SAMPLE GEOMETRY : CHARCART

SAMPLE TYPE : CHEMISTRY

* SAMPLE TIME

* SHELF HEIGHT : ABS

* SAMPLE QUANTITY : 3.82000E+06 CC

*****

ACQ DATE &amp; TIME : -2000 05:51

PRESET LIVE TIME : 0 00:10:00

ELAPSED REAL TIME : 602.33 Secs

ELAPSED LIVE TIME : 600.00 Secs

QC CHECK DATE/TIME : 02:20

* DEADTIME (%)

: 0.4%

* DETECTOR

: DETECTOR 2

* DECAY TIME

: 0 00:11:14.24

* LIBRARY

: 211

*****

COLLECTED BY : JN

COUNTED BY : DBS

REVIEWED BY :

COMMENTS :

*****

## Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
	77.11	150	1278	0.88	205.81	200	29	76.1	2.30E+00	BI-214
										PB-214
3	80.34	879	1659	1.35	214.41	200	29	19.4		I-131
1	249.57	257	1059	1.26	665.47	660	11	50.3	2.48E+00	
1	284.36	1001	1102	1.24	758.22	753	12	14.7	2.18E+00	I-131
										I-132
1	288.61	386	1307	2.34	769.54	765	16	43.1	2.34E+00	I-135
1	294.77	513	1048	2.04	785.97	780	13	27.0	7.19E+00	PB-214
1	351.99	555	1197	1.43	938.49	931	16	29.3	1.92E+00	I-134
										PB-214
1	364.51	10291	949	1.17	971.86	965	14	2.3	3.73E-01	CS-138
										I-131
										CS-138
1	417.46	122	394	1.18	1112.99	1107	10	63.9	2.12E+00	I-132
										I-133
										I-135
										I-133
1	462.95	544	488	1.54	1234.26	1226	16	20.2	1.95E+00	PB-214
										CS-138
1	479.52	259	602	7.17	1278.43	1269	23	50.7	2.18E+00	W-187
										PB-214
1	511.07	3327	778	2.81	1362.51	1352	28	6.0	1.69E+00	
1	526.60	169	259	1.47	1403.91	1399	23	37.2	1.09E+00	I-135
1	530.02	11268	240	1.32	1413.04	1399	23	2.0		I-133
1	546.81	387	331	1.39	1457.79	1451	16	23.3	1.64E+00	I-135
										CS-138
										I-132
1	554.45	102	198	0.98	1478.14	1474	10	55.4	2.14E-01	



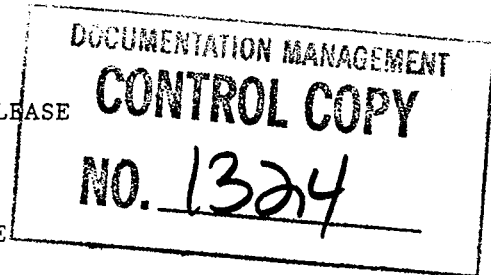
Davis-Besse Nuclear Power Station

SURVEILLANCE TEST PROCEDURE

DB-OP-03012

RADIOACTIVE GASEOUS BATCH RELEASE

REVISION 02/TOTAL REWRITE



Prepared by: Eric A. Howarth 3/20/96  
Date

Sponsor: David Imley 4/13/96  
Superintendent - Operations Date

Approved by: Steve Boehman 4/17/96  
Manager - Plant Operations Date

Effective Date: 7/23/96

TA00-0315  
C 99-1360  
TA 99-1778  
C 98-2481  
C 97-1325  
C 97-0877  
C 96-2159

Procedure Classification:

X  Safety Related  
  Quality Related  
  Non-Quality Related

## RADIOACTIVE GASEOUS BATCH RELEASE

LIST OF EFFECTIVE PAGES

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1	
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3	TA00-0315
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5	TA99-1770
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8	C-4
9	C-4
10	C-4
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12	
13	
14	C-3
15	
16	
17	C-4
18	C-4
19	C-4
20	
21	
22	

Page	Change No.
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24	C-3
25	
26	
27	
28	C-4
29	C-4
30	
31	
32	C-4
33	C-4
34	C-4
35	C-4
36	C-4
37	C-4
38	C-4
39	C-4
40	C-4
41	C-4
42	C-3
43	C-4
44	C-4

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46	C-3
47	C-3
48	C-5
49	C-5
50	C-4
51	C-4
52	C-4
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54	C-5
55	C-4
56	C-3
57	C-3
58	C-4
59	
60	
61	C-3
62	C-4
63	C-4
64	
65	C-3
66	

Unidentified Energy Lines  
Sample ID : 200005241002

Page : 4  
Acquisition date : -2000 05:51:14

	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	249.57	257	1059	1.26	665.47	660	11	4.28E-01	50.3	4.07E+00	
1	511.07	3327	778	2.81	1362.51	1352	28	5.54E+00	6.0	2.00E+00	ANN
1	554.45	102	198	0.98	1478.14	1474	10	1.70E-01	55.4	1.84E+00	T
<del>1</del>	<del>776.64</del>	<del>111</del>	<del>138</del>	<del>1.74</del>	<del>2070.42</del>	<del>2054</del>	<del>26</del>	<del>1.85E-01</del>	<del>49.8</del>	<del>1.30E+00</del>	<del>Na-24</del>
1	2118.74	32	14	2.92	5648.29	5640	18	5.40E-02	62.3	5.31E-01	Na
1	2217.80	80	21	3.30	5912.40	5902	22	1.33E-01	36.8	5.20E-01	CS-138
1	2254.71	20	5	1.86	6010.80	6004	12	3.38E-02	63.1	5.17E-01	
1	2639.14	28	0	1.71	7035.76	7025	17	4.65E-02	42.4	4.96E-01	CS-13
1	2677.79	55	6	2.60	7138.82	7129	18	9.20E-02	32.0	4.95E-01	RB-88
1	2753.87	215	3	2.47	7341.65	7332	20	3.58E-01	14.3	4.95E-01	Na-24

Flags: "T" = Tentatively associated

LIST OF EFFECTIVE PAGES (Continued)

[illegible]

## RADIOACTIVE GASEOUS BATCH RELEASE

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	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	2639.14	28	0	1.71	7035.76	7025	17	42.4	6.36E-01	
1	2677.79	55	6	2.60	7138.82	7129	18	32.0	7.05E-01	
1	2753.87	215	3	2.47	7341.65	7332	20	14.3	7.70E-01	

## RADIOACTIVE GASEOUS BATCH RELEASE

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## 1.0 PURPOSE

This test will be performed when batch releases of radioactive gaseous material are required. This test will document the reviews involved with the sampling, analysis, and release of the following radioactive gaseous batch release:

- o WGDТ releases
- o Containment Purges
- o Containment Pressure Releases
- o ILRT
- o Other

Completion of this test will fulfill the requirements of Offsite Dose Calculation Manual (ODCM) Sections 3.3.1, 3.7.1, 3.8.1, 3.9 and Table 3-1.

This revision is a total rewrite of the procedure.

## 2.0 LIMITS AND PRECAUTIONS

### 2.1 Administrative

- 2.1.1 All samples shall be handled as radioactive.
- 2.1.2 All radiological controls restrictions shall be followed when performing required actions.
- 2.1.3 Fuel movement or heavy load movement over the spent fuel pool should not be accomplished while performing containment pressure reduction release via the "Containment Pressure Release Skid".
- 2.1.4 ODCM Section 3.1 states that the gaseous effluent monitoring instruments with the minimum channels operable shown in Table 3-1 shall be operable with the alarm trip setpoints set to ensure that the limits of Section 3.3 are not exceeded. Channel operability is verified per the following surveillance tests:
  - a. RE 1822A or RE 1822B, Waste Gas System Radiation Monitors shall be operable during radioactive waste gas releases via this pathway.
    - o DB-SC-03200, Shift Channel Check of the Radiation Monitoring System

(Continued)



	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	609.57	566	225	1.36	1625.09	1619	12	13.5	6.20E-01	BI-214
1	637.11	514	251	1.27	1698.50	1692	14	15.8	5.20E-01	I-131
1	668.13	220	290	1.57	1781.18	1774	14	35.5	2.97E+00	I-132
1	686.09	76	159	1.26	1829.06	1824	11	69.1	2.35E+00	W-187
1	706.43	128	276	1.69	1883.27	1875	16	60.5	4.39E-01	I-133
										I-134
										I-133
1	722.94	66	172	1.52	1927.29	1923	10	78.3	8.57E-01	I-131
1	768.35	108	143	2.17	2048.33	2041	13	49.6	2.67E+00	BI-214
										I-133
										I-133
1	772.62	237	116	1.74	2059.70	2054	26	22.6	7.11E-01	I-132
										W-187
										CS-138
1	776.64	111	138	1.74	2070.42	2054	26	49.8		
1	810.72	613	294	1.49	2161.27	2152	19	15.7	6.43E-01	I-132
										CO-58
1	836.55	188	172	2.14	2230.13	2222	18	35.9	1.05E+00	I-134
										I-135
1	847.23	166	138	1.84	2258.59	2251	14	33.9	9.49E-01	MN-56
										I-134
1	857.20	89	167	0.99	2285.17	2277	16	69.1	6.98E+00	I-133
										I-134
	875.37	355	190	1.62	2333.60	2326	16	20.6	2.34E+00	I-133
	898.02	1043	183	1.57	2393.97	2385	17	8.6	8.07E-01	RB-88
										Y-88
1	1009.75	280	101	1.83	2691.84	2685	14	19.4	9.72E-01	CS-138
1	1039.06	133	134	1.79	2769.97	2763	16	43.7	1.85E+00	I-135
1	1120.26	103	113	1.93	2986.41	2978	25	50.1	1.45E+00	BI-214
1	1123.68	68	122	1.93	2995.53	2978	25	74.6		I-135
1	1131.43	293	148	1.53	3016.21	3009	16	22.1	1.75E+00	I-135
1	1237.54	259	101	1.35	3299.05	3292	17	20.1	4.78E+01	I-133
										BI-214
1	1260.43	432	67	1.66	3360.08	3350	19	13.3	1.52E+00	I-135
1	1298.16	121	90	1.71	3460.66	3450	18	41.5	9.89E-01	I-132
										I-132
										I-133
1	1318.20	188	85	2.65	3514.09	3503	24	27.0	3.02E+01	I-132
1	1368.55	455	79	1.77	3648.31	3641	20	13.6	7.15E-01	I-135
										NA-24
1	1435.69	503	34	1.89	3827.30	3819	17	10.5	2.40E+00	CS-138
1	1457.67	83	112	1.76	3885.90	3881	21	68.4	1.14E+00	I-135
1	1678.60	99	39	2.07	4474.87	4465	17	35.2	2.22E+00	I-135
1	1707.28	49	55	1.03	4551.33	4539	22	80.8	4.78E+00	I-135
1	1764.58	72	21	1.86	4704.09	4695	17	38.7	1.45E+00	BI-214
1	1791.69	81	25	2.23	4776.38	4767	17	36.4	8.36E-01	I-135
1	1836.08	865	21	2.06	4894.70	4884	21	7.4	1.47E+00	RB-88
										Y-88
1	2118.74	32	14	2.92	5648.29	5640	18	62.3	7.72E-01	
	2217.80	80	21	3.30	5912.40	5902	22	36.8	1.23E+00	
1	2254.71	20	5	1.86	6010.80	6004	12	63.1	2.01E-01	

## 2.1.4 (Continued)

- DB-SC-03225, Qtrly Funct Test of  
RE 1822A Waste Gas Sys Disch to STA Vent  
Rad Monitor
- DB-SC-03226, Qtrly Funct Test of  
RE 1822B Waste Gas Sys Disch to STA Vent  
Rad Monitor
- DB-MI-03401, Radiation Monitoring System  
Channel Calibration for RE 1822A
- DB-MI-03404, Radiation Monitoring System  
Channel Calibration for RE 1822B.

IF both radiation monitors are inoperable,  
THEN the WGDT release may proceed if the  
following actions are performed:

1. Two independent samples are analyzed for  
each batch release.
2. Two independent verifications of the  
release rate calculations are performed.
3. Two independent verifications of the  
discharge valve lineup.

- b. RE 4598AA or RE 4598BA, Station Vent Stack  
Monitors, shall be operable during radioactive  
waste gas releases via this pathway.

1. Noble gas activity monitor:

- DB-SC-03200, Shift Channel Check of  
the Radiation Monitoring System
- DB-MI-03413, Channel Calibration of  
Radiation Monitors
- DB-SC-03216 and DB-SC-03218, Quarterly  
Functional Test of RE 4598AA  
(RE 4598BA) Station Vent Normal Range  
Radiation Monitor

IF both noble gas activity monitors are  
inoperable,  
THEN releases via this pathway may continue  
provided that grab samples are taken at  
least once per 8 hours and are analyzed for  
gross activity within 24 hours.

(Continued)

## 2.1.4.b (Continued)

## 2. Iodine and Particulate Samplers.

- DB-SC-03200, Shift Channel Check of the Radiation Monitoring System

IF both station vent monitors iodine sampler cartridge and particulate sampler filter are inoperable,  
THEN releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment for the analysis of I-131, principal gamma emitters, gross alpha, Sr-89 and Sr-90.

## 3. System Effluent Flow Rate Measurement Device.

- DB-OP-03007, Miscellaneous Instrument Daily Checks:
- DM-MI-03442, Channel Calibration of 32C-ISF-5090 Station Vent Flow
- DB-MI-03444, Channel Calibration of 32C-ISF-5090A Station Vent Flow

IF both flow indicators are inoperable,  
THEN releases via this pathway may continue provided the flow rate is estimated at least once per 12 hours.

## 4. Sampler Flow Rate Measurement Device.

- DB-MI-03413, Channel Calibration of RE 4597AA, RE 4598AA, RE 4597BA and RE 4598BA, Normal Range Radiation Monitors
- DB-CH-03008, Station Vent Releases, Weekly Radiological Monitoring Sampling and Analysis

IF both flow indicators are inoperable,  
THEN releases via this pathway may continue provided the flow rate is estimated at least once per 12 hours.

(Continued)

Total number of lines in spectrum 11  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 8 72.73%

Nuclide Type : FISSION GAS

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/CC	Wtd Mean Decay Corr uCi/CC	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
R-41	109.62M	1.17	1.317E-06	1.547E-06	0.010E-05	6.45	
R-85M	4.48H	1.07	4.806E-08	5.134E-08	1.809E-08	35.24	
E-133	5.25D	1.00	4.017E-06	4.027E-06	0.116E-06	2.87	
E-133M	2.19D	1.01	1.560E-07	1.569E-07	1.688E-07	107.60	
E-135	9.11H	1.03	1.139E-06	1.177E-06	0.041E-06	3.49	
Total Activity :			6.677E-06	6.958E-06			

Grand Total Activity : 6.677E-06 6.958E-06

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

## 2.1.4 (Continued)

- c. RE 5052 Channel C, Containment Purge System Radiation Monitor, shall be operable during radioactive waste gas releases via this pathway.

- DB-SC-03200, Shift Channel Check of the Radiation Monitoring System
- DB-SC-03227, Quarterly Functional Test of RE 5052A, B, and C, CTMT Purge Exhaust Radiation Monitor
- DB-MI-03413, Channel Calibration of RE 4597AA, RE 4598AA, RE 4597BA and RE 4598BA, Normal Range Radiation Monitors

IF the radiation monitor Channel C is inoperable,  
THEN the Containment Purge may proceed if the following action is performed:

1. Grab samples are taken at least once per 8 hours AND these samples are analyzed for gross activity within 24 hours.
- d. FIC 1821 or FIC 1821A, Waste Gas System Effluent Flow Indicator Controller, shall be operable during radioactive waste gas releases via this pathway.
- DB-MI-03428, Channel Calibration of 72C-ISF 1821 Waste Gas System Outlet Flow, 1.0"
  - DB-MI-03430, Channel Calibration of 72C-ISF 1821A Waste Gas System Outlet Flow 3/4"
  - DB-SP-03419, Waste Gas System Effluent Flow Transmitters Quarterly Channel Functional Test
  - DB-SC-03200, Shift Channel Check of the Radiation Monitoring System

IF both flow indicators are inoperable,  
THEN the WGDT gaseous release operation may continue if the flow rate is estimated at least once per 12 hours.

(Continued)

## 2.1.4 (Continued)

- e. Containment Purge flowrate is based on the maximum flowrate of the supply and exhaust fans, at a value of 50,000 CFM. Capacity tests are run, typically on a refueling cycle basis, to ensure that these fans actual flowrate does not exceed 50,000 CFM. These tests are performed and documented by MWO's.
- f. Containment Pressure Release flowrate is based on the capacity of the skid fan (305 CFM).

2.2 Equipment

- 2.2.1 Maintenance shall be notified, via a Work Request, when the following filter differential pressure limits are met or exceeded in the CTMT Purge Exhaust Unit:

Pre Filter	PDI 5012B	Limit Inches H ₂ O - 1"
Absolute Filter	PDI 5012A	Limit Inches H ₂ O - 3"

NOTE 2.2.2

IF these valves are opened, THEN they shall be tested prior to entering MODE 4.

- 2.2.2 Each time the Containment Purge Supply and Exhaust Isolation valves are opened, a special test shall be performed within 72 hours after valve closure or prior to entering MODE 4 from MODE 5, whichever is later. The special test is conducted by pressurizing the piping section, including one valve inside and one valve outside the Containment, to a pressure  $\geq 20$  psig. The leakage rate per penetration shall not exceed  $0.15 L_a$ . (Technical Specification 4.6.1.2.g).
- 2.2.3 The special test, as defined in Surveillance Requirement 4.6.1.2.g, shall be performed for the Containment Purge Supply and Exhaust Isolation valves when the Plant has been in any combination of MODES 3, 4, 5, or 6 for more than 72 hours provided that the tests required by Surveillance Requirements 4.6.1.2.g has not been performed in the previous six months. (Technical Specification 4.6.1.2.h)

Total number of lines in spectrum  
Number of unidentified lines

54  
8

Number of lines tentatively identified by NID

46

85.19%

Nuclide Type : ACTIVATION

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC		%Error	
NA-24	15.00H	1.01	7.306E-10	7.398E-10	1.009E-10	13.63	
IN-56	2.58H	1.08	1.666E-10	1.792E-10	0.608E-10	33.93	
CO-58	70.80D	1.00	5.868E-10	5.869E-10	0.921E-10	15.70	
N-187	23.83H	1.01	2.085E-10	2.102E-10	1.452E-10	69.11	
Total Activity :			1.693E-09	1.716E-09			

Nuclide Type : FISSION

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC		%Error	
B-88	17.80M	1.87	8.231E-09	1.540E-08	0.113E-08	7.36	
<del>B-88</del>	<del>106.60D</del>	<del>1.00</del>	<del>1.772E-09</del>	<del>1.773E-09</del>	<del>0.130E-09</del>	<del>7.36</del>	<del>RB-88</del>
S-138	32.20M	1.42	1.105E-09	1.565E-09	0.165E-09	10.52	
Total Activity :			1.111E-08	1.874E-08			

Nuclide Type : IODINE

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC		%Error	
-131	8.04D	1.00	5.287E-09	5.293E-09	0.124E-09	2.35	
-132	2.30H	1.08	1.734E-10	1.881E-10	0.669E-10	35.54	
-133	20.80H	1.01	7.973E-09	8.045E-09	0.158E-09	1.96	
-134	52.60M	1.24	1.728E-10	2.139E-10	0.726E-10	33.93	
-135	6.61H	1.03	2.243E-09	2.308E-09	0.307E-09	13.31	
Total Activity :			1.585E-08	1.605E-08			

Nuclide Type : NATURAL

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/CC	Decay Corr uCi/CC		%Error	
I-214	19.90M	1.75	8.628E-10	1.512E-09	0.205E-09	13.53	
B-214	26.80M	1.52	6.015E-10	9.133E-10	2.673E-10	29.26	
Total Activity :			1.464E-09	2.426E-09			

Grand Total Activity : 3.011E-08 3.893E-08

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abundance limit

## 2.2.4 For WGDT releases:

- WHEN a tank pressure is approximately 140 PSIG,  
THEN the tank should be isolated  
AND a release permit should be started.
- Operations should keep the permit until the tank is ready for release.
- WHEN a second WGDT gets to 110 psi,  
THEN the release permit should be sent to Chemistry for sample AND release approval of the first decay tank.
- Recommended decay time for a WGDT is at least thirty (30) days.  
IF the tank activity is lower than the level calculated for 1% Failed Fuel after 30 days of decay,  
THEN a shorter decay period may be justified.
- When possible, the first WGDT to be isolated should be released prior to a second WGDT reaching a pressure of approximately 140 PSIG. This will avoid possible mixing of oxygen and hydrogen into the remaining WGDT.
- It may be possible to reduce the WGDT fill rate by limiting gas generation until the first WGDT is released and/or investigating why WGDT is increasing in pressure.

3.0 PREREQUISITESNOTE 3.1

All references in the body of the procedure to Item numbers are for locations on, Attachment 1, Radioactive Gaseous Batch Release Permit.

3.1 AdministrativeINITIALSDB

- 3.1.1 Initiate the release by placing the name of the on-shift Shift Supervisor and completing Item 4.a.

DB

- 3.1.2 Indicate the type of release to be performed by checking the appropriate box in Item 1.



DB

3.1.3

Designate the operational sections to be performed by placing an "X" in front of the listed sections below.

X DB

Waste Gas Decay Tank (Sections 4.1 through 4.3)

N/A DB

Containment Pressure Reduction (Sections 4.4 through 4.6)

Containment Purge (Sections 4.7 through 4.9)

Containment Integrated Leak Rate Test (ILRT) Pressure Reduction (Section 4.10)

Gas Space Releases from Tanks to Atmospheric Pressure for Maintenance Work (Section 4.11). For example, depressurizing CFT or SG etc.

DB

3.1.4

Remove the operational sections for any tank/vessel NOT being released from this procedure package.

Prerequisites completed by

Don BondyDate 8/31/00

RADIOACTIVE GASEOUS BATCH RELEASE

Release Status: Post-Release  
Critical Path(s): Vegetables, Inhalation, Ground Plane  
Critical Individual: Child

Number: 00 000120

Date:

Release Source:

Total Release Duration: 780 MIN

Noble Gas Total Body Dose Release Rate Limit: 3.38E+07 CFM

Noble Gas Skin Dose Release Rate Limit: 1.25E+08 CFM

Aerosol and Particulates Release Rate Limit: 4.80E+08 CFM

Total Curies Released: 4.02E-02

RELEASE CONCENTRATIONS (μCi/ml)

<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>
R41	1.55E-06	CO58	5.87E-10	CS138	1.56E-09
B	2.30E-06	I131	5.29E-09	I132	1.88E-10
B3	8.04E-09	I134	2.14E-10	I135	2.31E-09
R85M	5.13E-08	MN56	1.79E-10	NA24	7.40E-10
B88	1.54E-08	W187	2.10E-10	XE133	4.03E-06
E133M	1.57E-07	XE135	1.18E-06		

Total Concentration: 1.58E-06 μCi/ml (excluding H3 and Noble Gases)

X/Q: 3.01E-07

X/Q: 4.80E-09

RADIOIODINE, TRITIUM, PARTICULATE DOSE COMMITMENT (mRem)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
thy	6.11E-07	2.41E-04	4.20E-04	4.21E-04
	6.52E-07	2.47E-04	4.30E-04	4.31E-04
kidney	7.35E-07	2.50E-04	4.36E-04	4.37E-04
bone	3.39E-07	1.42E-05	2.47E-05	2.47E-05
thyroid	4.79E-05	2.94E-03	5.11E-03	5.12E-03
lung	5.18E-07	2.36E-04	4.12E-04	4.13E-04
total	5.82E-07	2.37E-04	4.13E-04	4.14E-04

Noble Gas X/Q: 1.83E-06

Noble Gas Dose Commitment (mRad)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
in Air	3.15E-06	1.91E-03	3.32E-03	3.56E-03
in Ground	4.57E-06	5.50E-04	9.58E-04	1.02E-03

4.0 PROCEDURE4.1 Preparing a Waste Gas Decay Tank (WGDT) for ReleaseINITIALSNOTE 4.1.1

Normally two Waste Gas Decay Tanks (WGDT's) will be in service with one lined up to the "SURGE TANK" position and one lined up to the "NITROGEN" position. In some instances if two WGDT's are isolated for release the remaining in service WGDT would be lined up in the "BOTH" position.

## 4.1.1 Perform the following:

PB

- a. Denote the WGDT to be released below:

Decay Tank to be released # 2DB

- b. Circle the WGDT's that will be left in service and the controller position below:

WGDT  
(Circle WGDT's  
in service)

Controller

Controller Position  
(Circle the controller  
position)

#1

HS 1823A, WST GAS  
DECAY TANK 1 IN  
SELECT

SURGE TANK/NITROGEN/BOTH

#2

HS 1825A, WST GAS  
DECAY TK 2 IN  
SELECT

SURGE TANK/NITROGEN/BOTH

#3

HS 1827A, WST GAS  
DECAY TK 3 IN  
SELECT

SURGE TANK/NITROGEN/BOTH4.1.2 IF WGDT 1 is to be isolated and released,  
THEN perform the following:U/MPB

- a. Place HS 1823A, WST GAS DECAY TK 1 IN SELECT, at the RWCP in the OFF position.

(Continued)

## 4.1.2.d (Continued)

N/A ^{DB}  
↓

- b. Verify WG 1835, WASTE GAS DECAY TANK 1-1 TO CLEAN WASTE RECEIVER TANKS CONTROL VALVE is closed.
- c. Verify WG 1836, WASTE GAS DECAY TANK 1-1 TO STATION VENT CONTROL VALVE is closed.
- d. Place an Information Tag stating "This WGDT is isolated and will be released" on the following controllers at the RWCP. Refer to DB-OP-00010, Operational Information Tags.

N/A ^{DB}  
↓

- HS 1823A, WST GAS DECAY TK 1 IN SELECT.
- HIS 1835, DECAY TK 1 TO CLN WST REC TK.
- HIS 1836, DECAY TK 1 TO A FLT VLV.

4.1.3 IF WGDT 2 is to be isolated and released,  
THEN perform the following:

- DB a. Place HS 1825A, WST GAS DECAY TK 2 IN SELECT, at the RWCP in the OFF position.
- DB b. Verify WG 1837, WASTE GAS DECAY TANK 1-2 TO CLEAN WASTE RECEIVER TANKS CONTROL VALVE is closed.
- DB c. Verify WG 1838, WASTE GAS DECAY TANK 1-2 TO STATION VENT CONTROL VALVE is closed.
- d. Place an Information Tag stating "This WGDT is isolated and will be released" on the following controllers at the RWCP. Refer to DB-OP-00010, Operational Information Tags.

DB

- HS 1825A, WST GAS DECAY TK 2 IN SELECT.

DB

- HIS 1837, DECAY TK 2 TO CLN WST REC TK.

DB

- HIS 1838, DECAY TK 2 TO A FLT VLV.

4.1.4 IF WGDT 3 is to be isolated and released,  
THEN perform the following:

- N/A ^{DB} a. Place HS 1827A, WST GAS DECAY TK 3 IN SELECT, at the RWCP in the OFF position.

(Continued)

Release Status: Pre-Release  
 Critical Path(s): Vegetables, Inhalation, Ground Plane  
 Critical Individual: Child

Permit Number: 00-000120

Date:

Source: Unknown

Noble Gas Total Body Dose Release Rate Limit: 3.38E+07 CFM

Noble Gas Skin Dose Release Rate Limit: 1.25E+08 CFM

Radon and Particulates Release Rate Limit: 4.80E+08 CFM

Total Curies Released: 1.16E-01

RELEASE CONCENTRATIONS (μCi/ml)

<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>	<u>Nuclide</u>	<u>Concentration</u>
	2.30E-06	AR41	1.55E-06	KR85M	5.13E-08
I133	4.03E-06	XE133M	1.57E-07	XE135	1.18E-06
24	7.40E-10	MN56	1.79E-10	CO58	5.87E-10
87	2.10E-10	RB88	1.54E-08	CS138	1.56E-09
I	5.29E-09	I132	1.88E-10	I133	8.04E-09
4	2.14E-10	I135	2.31E-09		

Total Concentration: 1.58E-06 μCi/ml (excluding H3 and Noble Gases)

X/Q: 3.01E-07

X/Q: 4.80E-09

DIOIODINE, TRITIUM, PARTICULATE DOSE COMMITMENT (mRem)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
Total Body	1.76E-06	2.42E-04	4.21E-04	4.22E-04
	1.88E-06	2.48E-04	4.31E-04	4.32E-04
	2.11E-06	2.51E-04	4.37E-04	4.38E-04
Ne	9.76E-07	1.45E-05	2.53E-05	2.53E-05
roid	1.38E-04	2.99E-03	5.20E-03	5.21E-03
g	1.49E-06	2.37E-04	4.13E-04	4.14E-04
LLI	1.67E-06	2.38E-04	4.14E-04	4.15E-04

Noble Gas X/Q: 1.83E-06

Noble Gas Dose Commitment (mRad)

	<u>This Release</u>	<u>31-Day</u>	<u>Quarter</u>	<u>Annual</u>
Air	9.05E-06	1.91E-03	3.32E-03	3.57E-03
ma Air	1.31E-05	5.55E-04	9.67E-04	1.03E-03

## 4.1.4.d (Continued)

- N/A ^{DB} ↓
- b. Verify WG 1839, WASTE GAS DECAY TANK 1-3 TO CLEAN WASTE RECEIVER TANKS CONTROL VALVE is closed.
  - c. Verify WG 1840, WASTE GAS DECAY TANK 1-3 TO STATION VENT CONTROL VALVE is closed.
  - d. Place an Information Tag stating "This WGDT is isolated and will be released" on the following controllers at the RWCP. Refer to DB-OP-00010, Operational Information Tags.
- N/A ^{DB} ↓
- HS 1827A, WST GAS DECAY TK 3 IN SELECT.
  - HIS 1839, DECAY TK 3 TO A CLN WST REC TK.
  - HIS 1840, DECAY TK 3 TO A FLT VLV.

DB 4.1.5 Complete Item 4.b.

NOTE 4.1.6

This permit shall be maintained in the Control Room until the WGDT is ready for release. Recommended decay time is at least thirty days.

DB 4.1.6 Return this permit to the Control Room.

$$\text{WGDT volume} = \frac{(\text{WGDT pressure} + 14.7 \text{ psig})}{14.7 \text{ psi}} \times 1013 \text{ ft}^3$$

volume B - volume at end of period

[illegible]

NOTE 4.1.7

The pressure of the tank is documented on the permit prior to sampling for release of the tank. The tank pressure shall be provided to Chemistry when requesting the sample to be collected.

- 4.1.7 Request a sample of the isolated WGDТ to estimate the decay time for proposed release scheduling AND oxygen/hydrogen concentrations.

DB

- o Request RP Management to review tank curie content to determine if decay time will be greater than 30 days.

10/2/2000

Proposed date of release

N/A

- o IF isolated WGDТ sample results indicate a 4% hydrogen concentration with greater than 2% oxygen concentration, THEN the Shift Supervisor should evaluate if actions to purge the WGDТ with N₂ prior to being released are necessary. REFER TO DB-OP-06131, Gaseous Radioactive Waste System.

- 4.1.8 WHEN the isolated WGDТ is ready to be sampled for release, THEN perform the following:

DB

- a. Prepare DNO tags for the WGDТ to be released in accordance with Attachment 2, DNO Tagging List for Gaseous Waste Release. Refer to DB-OP-00015, Safety Tagging.

DB

- b. Hang the DNO tags on the WGDТ to be released. Refer to DB-OP-00015, Safety Tagging.

DB

- c. Complete Item 4.c.

DB

- 4.1.9 Record the pressure for the WGDТ to be released in Item 3.a.



Circle Release Radiation Element used.

[illegible]

DB

- 4.1.10 IF the release will be through the absolute and charcoal filter  
THEN verify Attachments 1 & 2 of DB-OP-06131, Gaseous Radioactive Waste System, are current.

DB

- 4.1.11 IF the release will be through the absolute and charcoal filters,  
THEN check "YES" in Item 3.c.  
OTHERWISE check "NO" in Item 3.c.

- 4.1.12 IF "NO" is checked in item 3.c,  
THEN bypass both filters:

- a. To bypass the absolute filter perform the following:

N/A DB  
↓

- Verify WG 48, WASTE GAS ABSOLUTE FILTER BYPASS VALVE, is open.
- Verify WG 45, WASTE GAS ABSOLUTE FILTER OUTLET ISOLATION VALVE, is closed.
- Verify WG 8, WASTE GAS ABSOLUTE FILTER 1 INLET ISOLATION VALVE, is closed.

- b. To bypass the charcoal filter perform the following:

N/A DB  
↓

- Verify WG 49, WASTE GAS CHARCOAL FILTER BYPASS VALVE, is open.
- Verify WG 46, WASTE GAS CHARCOAL FILTER INLET ISOLATION VALVE, is closed.
- Verify WG 47, WASTE GAS CHARCOAL FILTER OUTLET ISOLATION VALVE, is closed.

[illegible]

NOTE 4.1.13

The pre-sample RE operability check conducted by the Shift Supervisor or Assistant Shift Supervisor may be performed by verifying RE status from the Status Board, Turnover Checklist or Unit Log. This check is performed to determine if two samples are required (ODCM Table 3-1). If desired, then verification that the associated surveillance tests are current may also be utilized to help determine operability. It is not necessary to verify surveillance tests at this time. The tests should be re-verified prior to approving the release to ensure RE operability.

- 4.1.13 Perform a pre-sample RE operability check on the following radiation monitors.

CIRCLE STATUS OF RE

<u>DB</u>	•	RE 1822A	OPERABLE/INOPERABLE
<u>DB</u>	•	RE 1822B	OPERABLE/INOPERABLE
<u>DB</u>	•	RE 4598AA	OPERABLE/INOPERABLE
<u>DB</u>	•	RE 4598BA	OPERABLE/INOPERABLE

- DB 4.1.14 IF the pre-sample RE operability check determines that at least one Station Vent Radiation Monitor (RE 4598AA or RE 4598BA) AND at least one of the Waste Gas Treatment System Radiation Monitors (RE 1822A or RE 1822B) are operable, THEN complete Item 4.d. by circling "SAT" AND record any inoperable RE in Item 5.a. OTHERWISE complete Item 4.d. by circling "UNSAT" AND record the required ODCM action statements in Item 5.a.

- DB 4.1.15 Deliver this procedure to Chemistry and inform them of any required ODCM action statements recorded in Item 5.a.

Section 4.1 completed by

Don Bondy

Date

8/31/00

ATTACHMENT 2: DNO TAGGING LIST FOR RADIOACTIVE GASEOUS WASTE RELEASENOTE ATTACHMENT 2

Valves shall be tagged in the CLOSED position.

NA

## 1. Waste Gas Decay Tank 1:

- o WG 34, WASTE GAS DECAY TANK 1-1 INLET ISOLATION VALVE
- o WG 113, WASTE GAS DECAY TANK 1-2 TO STATION VENT ISOLATION
- o WG 114, WASTE GAS DECAY TANK 1-3 TO STATION VENT ISOLATION.
- o WG 115, WASTE GAS DECAY TANK 1-1 TO CLEAN WASTE RECEIVER TANKS ISOLATION

DB

## 2. Waste Gas Decay Tank 2:

- o WG 35, WASTE GAS DECAY TANK 1-2 INLET ISOLATION VALVE
- o WG 112, WASTE GAS DECAY TANK 1-1 TO STATION VENT ISOLATION
- o WG 114, WASTE GAS DECAY TANK 1-3 TO STATION VENT ISOLATION
- o WG 116, WASTE GAS DECAY TANK 1-2 TO CLEAN WASTE RECEIVER TANKS ISOLATION

NA

## 3. Waste Gas Decay Tank 3:

- o WG 36, WASTE GAS DECAY TANK 1-3 INLET ISOLATION VALVE
- o WG 112, WASTE GAS DECAY TANK 1-1 TO STATION VENT ISOLATION
- o WG 113, WASTE GAS DECAY TANK 1-2 TO STATION VENT ISOLATION
- o WG 117, WASTE GAS DECAY TANK 1-3 TO CLEAN WASTE RECEIVER TANKS ISOLATION

4.2 Approving a Waste Gas Decay Tank (WGDT) ReleaseINITIALS

- _____ 4.2.1 Verify the permit has been approved for release as designated by completion of Item 4.h.

NOTE 4.2.2

- The Shift Supervisor or Assistant Shift Supervisor shall verify instrument operability based on satisfactory completion of the latest surveillance test on the instruments, with the instrument being in service and declared operable. All ODCM action statements shall be recorded in Item 5.a.
- Entering "6.8.4.d***" in the Surveillance Requirement Section of the Routine Test Selection Inquiry on DBMMS gives a convenient listing of release STs.

- 4.2.2 Verify the following surveillance requirements are current.

- _____ • DB-MI-03413, RMS Channel Calibration, for RE 4598AA and/or RE 4598BA
- _____ • DB-MI-03401, RMS Channel Calibration, for RE 1822A
- _____ • DB-MI-03404, RMS Channel Calibration for RE 1822B
- _____ • DB-MI-03428, Channel Calibration of 72C-ISF 1821, Waste Gas System Outlet Flow 1.0", for FT 1821
- _____ • DB-MI-03430, Channel Calibration of 72C-ISF 1821A, Waste Gas System Outlet Flow 3/4", for FT 1821A
- _____ • DB-MI-03442, Channel Calibration of 32C-ISF 5090, Station Vent Flow, for FT 5090
- _____ • DB-MI-03444, Channel Calibration of 32C-ISF 5090A, Station Vent Flow, for FT 5090A

(Continued)

ATTACHMENT 1: RADIOACTIVE GASEOUS BATCH RELEASE PERMIT (Continued)

## 17. TOTAL CURIES IN THIS RELEASE*

Total Curies _____ curies

## 18. DOSE COMMITMENT FOR THIS RELEASE*

Gamma Air Dose _____ mRad Beta Air Dose _____ mRad

Iodines &amp; Particulates Dose _____ mRem

19.

Intentionally Left Blank

20. TO DATE  
DOSE COMMITMENT*

## QUARTERLY DOSE

## ANNUAL DOSE

Estimated

Estimated

Noble Gas Gamma _____ mRad _____ mRad

Noble Gas Beta _____ mRad _____ mRad

Iodines and Particulates _____ mRem _____ mRem

21.

31 DAY PERIOD DOSE  
COMMITMENT

- a. This Item is NOT APPLICABLE as the release was processed through either the Waste Gas Treatment or Ventilation Exhaust Treatment Systems.

_____/_____  
Signature Date

Estimated Actual

Estimated Actual

*b. Noble Gas Gamma _____ mRad _____ mRad Iodine and  
Noble Gas Beta _____ mRad _____ mRad Particles _____ mRem _____ mRem

*These items may be marked "N/A" if RETSCode printouts are available.

## 4.2.2 (Continued)

- _____ • DB-OP-03007, Miscellaneous Instrument Daily Checks
- _____ • DB-SC-03200, Shift Channel Check of the Radiation Monitoring System
- _____ • DB-SC-03216, Quarterly Functional Test of RE-4598AA Station Vent Normal Range Radiation Monitor
- _____ • DB-SC-03218, Quarterly Functional Test of RE 4598BA Station Vent Normal Range Radiation Monitor
- _____ • DB-SC-03225 and/or DB-SC-03226, Quarterly Functional Test of RE 1822A (RE 1822B), Waste Gas System Discharge to Station Vent Radiation Monitor
- _____ • DB-SP-03419, Waste Gas System Effluent Flow Transmitter Quarterly Channel Functional Test, for FT 1821 and/or FT 1821A
- _____ • DB-CH-03008, Station Vent Releases, Weekly Radiological Monitoring, Sampling and Analysis

_____ 4.2.3 IF the release instrument operability checks are satisfactory,  
THEN complete Item 4.i by circling "SAT".  
OTHERWISE complete Item 4.i by circling "UNSAT",  
AND verify the required ODCM action statement is recorded in Item 5.a.

4.2.4 IF RE 1822A and/or RE 1822B are OPERABLE,  
THEN perform the following monitor source check(s)  
for the OPERABLE monitor(s):

- _____ a. Depress and hold the ALARM ACK button.
- _____ b. Depress the CHECK SOURCE (C.S.) button.
- _____ c. Check for an upscale meter response.
- _____ d. Release the C.S. button.
- _____ e. Wait for the meter to indicate below the WARN setpoint.
- _____ f. Release the ALARM ACK button.



ATTACHMENT 1: RADIOACTIVE GASEOUS BATCH RELEASE PERMIT (Continued)

11. GASEOUS RELEASE*		RATE LIMITS	
Noble Gas Total Body Dose Release Rate Limit _____		SCFM 1	
Noble Gas Skin Dose Release Rate Limit _____		SCFM 2	
Iodine & Particulates Release Rate Limit _____		SCFM 3	

12.	13.	14.	15.	16.
NUCLIDE	$\mu\text{Ci/ml}$	% ERROR ONE SIGMA	ESTIMATED CURIES RELEASED	ACTUAL CURIES RELEASED
H-3				
Kr-83M				
Kr-85M				
Kr-85				
Kr-87				
Kr-88				
Kr-89				
Xe-131M				
Xe-133M				
Xe-133				
Xe-135				
Xe-137				
Xe-138				
Xe-135M				

*Items 13 through 16 are not required to be completed if computer printout of analysis is available.

*These items may be marked N/A if RETSCode printouts are available.

- _____ 4.2.5 IF the monitor source check was satisfactory for each operable RE,  
THEN complete Item 4.j.  
OTHERWISE N/A Item 4.j  
AND notify the Shift Supervisor.
- _____ 4.2.6 Circle the OPERABLE monitors in Item 5.b which will be used for the release.
- _____ 4.2.7 Return the release permit to the Control Room.
- _____ 4.2.8 IF the tenth value of the maximum release rate as recorded on Item 9.b is less than 1 SCFM,  
THEN do NOT perform this release  
AND notify the Radiation Protection Management.
- _____ 4.2.9 IF the instrument checks were satisfactory, as indicated by the completion of Items 4.d, 4.i and 4.j on the permit  
OR the required ODCM action statements are recorded in Item 5.a  
AND have or will be performed as required,  
THEN Item 4.k may be signed by the Shift Supervisor to approve the release valve lineup.
- _____ 4.2.10 IF the permit is approved,  
THEN return the permit to an assigned operator to perform the release.

Section 4.2 completed by _____ Date _____

ATTACHMENT 1: RADIOACTIVE GASEOUS BATCH RELEASE PERMIT (Continued)

i.	Release instrumentation operability check performed SAT/UNSAT		
j.	Monitor source check performed by		
k.	RELEASE VALVE LINEUP APPROVED by SHIFT SUPERVISOR		
l.	RELEASE APPROVED by SHIFT SUPERVISOR		
m.	RE Channel Check Performed		
n.	FI Channel Check Performed		

5.

a. Remarks: ODCM table 3-1 action A

1. At least two independent samples are analyzed in accordance with table 3-3 for analyses with each batch

2. At least two independent verifications of the release rate calculations are performed.

3. At least two independent verifications of the discharge valving are performed.

b. Circle Instruments used:

RE 1822A RE 1822B RE 5052 RE 4598AA RE 4598BA^{#10} FIC1821 FIC 1821A ILRT

6. RELEASE STARTED _____  
date _____ time _____ pressure or psid _____

7. RELEASE STOPPED _____  
date _____ time _____ pressure or psid _____

8. RELEASE TIME _____ MINUTES Delta P _____ psig or psid

9. WASTE GAS DECAY TANK

a. Maximum Release Rate 15 SCFM

b. Tenth Value of Maximum Release Rate .65 SCFM

10. CONTAINMENT RELEASES

a. Maximum Containment Purge rate N/A DA SCFM

b. Maximum Purge Time N/A Ps hours

4.3 Performing a Waste Gas Decay Tank (WGDT) ReleaseINITIALS

- _____ 4.3.1 Verify that no other radioactive gaseous batch release is in progress.
- _____ 4.3.2 Inform the Chemistry Laboratory a radioactive gaseous batch release is going to be initiated and that sampling of the Station Ventilation System should not be permitted for other than required action items during the release.

NOTE 4.3.3

In the event both RE's 1822A and 1822B are inoperable the ODCM Table 3-1 requires that two independent verifications of the discharge valving is performed. However the procedure already has independent verifications on valves in the discharge flowpath so no further action is required.

- 4.3.3 IF RE 1822A AND RE 1822B are INOPERABLE, THEN perform the following:
- _____ o Verify required ODCM actions are recorded in Item 5.a.
- _____ o Mark Step 4.3.4 N/A.

ATTACHMENT 1: RADIOACTIVE GASEOUS BATCH RELEASE PERMITDAVIS-BESSE NUCLEAR POWER STATION  
RADIOACTIVE GASEOUS BATCH RELEASE PERMITRELEASE  
2. NUMBER 2000-041. Type of ReleaseWGDT #1 _____ WGDT #2 X WGDT #3 _____ CONTAINMENT PURGE _____

CONTAINMENT PRESSURE RELEASE _____ ILRT _____ OTHER _____

IF OTHER IS CHECKED PLEASE SPECIFY TANK NAME _____

3. Release Statistics

- a. For WGDT, Other Tank Releases, CTMT Purge Release or ILRT Pressure Reduction:

Pressure 125 psig

For CTMT Pressure Reductions Releases:

CTMT to Annulus diff. pressure _____ inches H₂O

- b. Volume _____ cu. ft.

- c. Release will be processed through the Gaseous Radwaste or Ventilation Exhaust Treatment Systems Yes
- X
- No _____

## 4.

	Signature	Date/Time
a. Release initiated by	Don Bondy	8/31/00 0700
b. WGDT isolated by	Don Bondy	8/31/00 0900
c. Tank DNO tags hung	Don Bondy	8/31/00 0900
d. Pre-sample RE operability check performed SAT/UNSAT	Don Bondy	8/31/00 1300
e. Release sampled by	Don Bondy / Brian Young	10/2/00 0700 / 10/2/00 1300
f. Release analyzed by	Don Bondy / Brian Young	10/2/00 0800 / 10/2/00 1400
g. Dose commitment calc. performed by	Don Bondy / Brian Young	10/2/00 1100 / 10/2/00 1700
h. Release approved by RP Supervisor	Jim Feckley	10/3/00 0700

NOTE 4.3.4

The preferred method is to have both RE 1822A AND RE 1822B in service during the release.

NOTE 4.3.4 through 4.3.6

The intent of these steps are to have an operator lineup the RE, then to have a second operator independently verify the lineup where necessary.

## 4.3.4 Lineup the operable radiation monitors as follows:

- a. IF RE 1822A is OPERABLE,  
THEN perform the following:

_____ 1. Verify WG 140, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

_____ 2. Verify WG 139, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

_____ 3. Verify WG 138, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

_____ 4. Verify WG 137, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

_____ 5. Verify WG 131, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is closed.

_____  
(IV)

(Continued)

- 7.2.14 DB-MI-04500, Radiation Monitoring System Channel Calibration
- 7.2.15 DB-OP-00008, Operation and Control of Locked Valves
- 7.2.16 DB-OP-00015, Safety Tagging Procedure
- 7.2.17 DB-OP-00018, Inoperable Equipment Tracking Log
- 7.2.18 DB-OP-06131, Gaseous Radioactive Waste System
- 7.2.19 DB-OP-06412, Process and Area Radiation Systems
- 7.2.20 DB-OP-06502, Containment H2 Dilution and H2 Purge System
- 7.2.21 DB-OP-06503, Containment Purge System
- 7.2.22 DB-OP-06512, Auxiliary Building Radioactive Ventilation System Procedure
- 7.2.23 DB-PF-03009, Containment Integrated Leak Rate Testing (ILRT)
- 7.2.24 DB-SC-03227, Quarterly Functional Test of RE 5052 A, B, and C, CTMT Purge Exhaust Radiation Monitor
- 7.2.25 DB-SC-03200, Shift Channel Check of the Radiation Monitoring System
- 7.2.26 DB-SC-03216, Quarterly Functional Test of RE 4598AA, Station Vent Normal Range Radiation Monitor
- 7.2.27 DB-SC-03218, Quarterly Functional Test of RE 4598BA, Station Vent Normal Range Radiation Monitor
- 7.2.28 DB-SP-03419, Waste Gas System Effluent Flow Transmitters Quarterly Channel Functional Test
- 7.2.29 DB-SC-03225, Quarterly Functional Test of RE 1822A, Waste Gas System Discharge to Station Vent Radiation Monitor
- 7.2.30 DB-SC-03226, Quarterly Functional Test of RE 1822B, Waste Gas System Discharge to Station Vent Radiation Monitor
- 7.2.31 Technical Specification Section 3.9.12, Spent Fuel Pool Emergency Ventilation System

## 4.3.4.a (Continued)

- _____ 6. Verify WG 129, RADIATION MONITOR SAMPLE  
FT 1822 RETURN ISOLATION VALVE, is open.

_____  
(IV)

Independent Verification by _____ Date _____

- b. IF RE 1822B is OPERABLE,  
THEN perform the following:

- _____ 1. Verify WG 133, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

- _____ 2. Verify WG 134, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

- _____ 3. Verify WG 142, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

- _____ 4. Verify WG 141, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is open.

_____  
(IV)

- _____ 5. Verify WG 132, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is closed.

_____  
(IV)

- _____ 6. Verify WG 129, RADIATION MONITOR SAMPLE  
FT 1822 RETURN ISOLATION VALVE is open:

_____  
(IV)

Independent Verification by _____ Date _____

- 4.3.5 IF RE 1822A is INOPERABLE,  
THEN perform the following:

- _____ a. Verify WG 140, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed..

_____  
IV

(Continued)



- 7.1.3 Technical Specifications Sections: 3.11.2.5, 3.6.1.4 and 4.6.1.2 Containment Ventilation System.
- 7.1.4 Nuclear Quality Assurance Manual
- 7.1.5 Offsite Dose Calculation Manual (ODCM)
- 7.1.6 M-038 A, B, and C, Gaseous Radioactive Waste System
- 7.1.7 M-029 E, Containment and Penetration Rooms Ventilation, Sheet 4
- 7.1.8 M-029B, Containment and Penetration Rooms Ventilation, Sheet 2
- 7.1.9 M-028A Aux. Bldg. Radwaste Fuel Handling and Access Control Areas, Sheet 1.
- 7.1.10 OS-030, Sh 1&2, Operation Schematic Gaseous Radwaste System.

## 7.2 Implementation

- 7.2.1 NG-NL-00807, Regulatory Reports
- 7.2.2 DB-CH-00006, Radioactive Gaseous Release Program
- 7.2.3 DB-CH-01334, Liquid Scintillation Detector Model 4430
- 7.2.4 DB-CH-01801, Radiochemistry Gamma Spectral Analysis
- 7.2.5 DB-CH-01804, Tritium Determination
- 7.2.6 DB-CH-03008, Station Vent Releases, Weekly Radiological Monitoring, Sampling and Analysis
- 7.2.7 DB-CH-03009, Secondary Coolant System Radiochemistry
- 7.2.8 DB-CH-04004, Containment Atmosphere Sampling and Analysis
- 7.2.9 DB-CH-06002, Sampling System Nuclear Areas
- 7.2.10 DB-MI-03428, Channel Calibration of 72C-ISF 1821 Waste Gas System Outlet Flow 1.0"
- 7.2.11 DB-MI-03430, Channel Calibration of 72C-ISF 1821A Waste Gas System Outlet Flow 3/4"
- 7.2.12 DB-MI-03442, Channel Calibration of 32C-ISF 5090 Station Vent Flow
- 7.2.13 DB-MI-03444, Channel Calibration of 32C-ISF 5090A Station Vent Flow

## 4.3.5 (Continued)

- _____ b. Verify WG 137, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.

_____  
IV

- _____ c. Verify WG 132, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.

_____  
IV

- _____ d. Verify WG 131, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is open.

_____  
IV

- _____ e. Verify WG 129, RADIATION MONITOR SAMPLE FT 1822  
RETURN ISOLATION VALVE is open.

_____  
IV

Independent Verification by _____ Date _____

4.3.6 IF RE 1822B is INOPERABLE,  
THEN perform the following:

- _____ a. Verify WG 133, WASTE GAS TO STATION UNIT  
RADIATION ELEMENT ISOLATION, is closed.

_____  
IV

- _____ b. Verify WG 141, WASTE GAS TO STATION UNIT  
RADIATION ELEMENT ISOLATION, is closed.

_____  
IV

- _____ c. Verify WG 131, WASTE GAS TO STATION UNIT  
RADIATION ELEMENT ISOLATION, is closed.

_____  
IV

- _____ d. Verify WG 132, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is open.

_____  
IV

- _____ e. Verify WG 129, RADIATION MONITOR SAMPLE FT 1822  
RETURN ISOLATION VALVE is open.

_____  
IV

Independent Verification by _____ Date _____

- 5.5 The Gaseous Radwaste Treatment System was used to reduce radioactive materials in this batch release prior to discharge OR the air dose to areas at and beyond the SITE BOUNDARY does NOT exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation in a 31 day period.

Verified by Jim Feckley Date 10/3/00

- 5.6 The VENTILATION EXHAUST TREATMENT SYSTEM was used to reduce radioactive materials in this batch release prior to discharge OR the projected doses due to gaseous effluent releases to areas at and beyond the SITE BOUNDARY does NOT exceed 0.3 mrem to any organ in a 31 day period.

Verified by Jim Feckley Date 10/3/00

## 6.0 RECORDS

- 6.1 The Quality Assurance Records generated by this procedure shall be listed on the Nuclear Records List by Nuclear Records Management. The Non-Quality Assurance Records generated by this procedure may be listed on the Nuclear Records List according to NG-PS-00106, Nuclear Records Management, at the discretion of the Division Director with record copy responsibility. All records shall be captured and submitted to Nuclear Records Management by the transmitting organization according to NG-PS-00106, Nuclear Records Management.

- 6.1.1 Quality Assurance Records generated by this procedure are as follows:

- a. Radioactive Gaseous Batch Release Permit
- b. Radioactive Gaseous Batch Release Log
- c. Completed sections of DB-OP-03012

- 6.1.2 Non-Quality Assurance Records generated by this procedure are as follows:

None

## 7.0 REFERENCES

### 7.1 Developmental

- 7.1.1, Regulatory Guide 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquids and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants.
- 7.1.2 USAR Section 11, Radioactive Waste Management

- _____ 4.3.7 IF either RE 1822A or RE 1822B will be used for the release,  
THEN verify the power switch on the electronic readout for FYIS 1822 is ON.
- _____ 4.3.8 Verify WG 1821, WASTE GAS TO STATION VENT FLOW CONTROL VALVE is closed, using FIC 1821 on the Radioactive Waste Control Panel (RWCP).
- IV
- _____ 4.3.9 Verify WG 1821A, WASTE GAS TO STATION VENT FLOW CONTROL VALVE is closed, using FIC 1821A at the RWCP.
- IV

Independent Verification by _____ Date _____

- _____ 4.3.10 IF Action A of ODCM Table 3-1 is required due to RE inoperability,  
THEN "N/A" Step 4.3.11.
- _____ 4.3.11 Request the Control Room perform the following for the OPERABLE RE's:
- a. For RE 1822A:
- _____ 1. Open WG 1819, WASTE GAS TO STATION VENT ISOLATION using HIS 1819 at the RWCP.
  - _____ 2. Open WG 1820, WASTE GAS TO STATION VENT ISOLATION using HIS 1820 at the RWCP.
  - _____ 3. Depress the TEST pushbutton on the Control Room module for RE 1822A.
  - _____ 4. Check annunciator (7-1-C) "WST GAS SYS OUT RAD HI" has alarmed in the Control Room.
  - _____ 5. Check computer alarm R910, "WST GAS SYS OUT RAD" has alarmed in the Control Room.
  - _____ 6. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION closes.
  - _____ 7. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION closes.
  - _____ 8. Depress the ALARM ACK button on the Control Room module for RE 1822A.

(Continued)

5.0 ACCEPTANCE CRITERIA

- 5.1 The release has been sampled and analyzed for tritium and principal gamma emitters.

Verified by Don Bondy / Brian Young Date 10/2/00/10/2/00

- 5.2 The dose rate, due to radioactive materials released in this batch release from the site to areas at and beyond the SITE BOUNDARY, does not cause the following limits to be exceeded:

- For noble gases: Less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin.

AND

- For iodine-131, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrem/year to any organ.

Verified by Jim Feckley Date 10/3/00

- 5.3 The air dose due to noble gases released in this batch release from the site to areas at and beyond the SITE BOUNDARY does not cause the following limits to be exceeded:

- During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation,

AND

- During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

Verified by Jim Feckley Date 10/3/00

- 5.4 The dose to a MEMBER OF THE PUBLIC from iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in this batch release released to areas at and beyond the SITE BOUNDARY does not cause the following limits to be exceeded:

- a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ and,
- b. During any calendar year: Less than or equal to 15 mrem to any organ.

Verified by Jim Feckley Date 10/3/00

## 4.3.11 (Continued)

## b. For RE 1822B:

- _____ 1. Open WG 1819, WASTE GAS TO STATION VENT ISOLATION using HIS 1819 at the RWCP.
- _____ 2. Open WG 1820, WASTE GAS TO STATION VENT ISOLATION using HIS 1820 at the RWCP.
- _____ 3. Lower the Warn Alarm Setpoint to 1.00E01. REFER TO DB-OP-06412, Process and Area Monitor Operating Procedure.
- _____ 4. Lower the High Alarm Setpoint to 2.00E01. REFER TO DB-OP-06412, Process and Area Monitoring Operating Procedure.
- _____ 5. Check annunciator (7-1-C), WST GAS SYS OUT RAD HI has alarmed in the Control Room.
- _____ 6. Check computer alarm R910, WST GAS SYS OUT RAD has alarmed in the Control Room.
- _____ 7. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION closes.
- _____ 8. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION closes.
- _____ 9. Depress the ALARM ACK pushbutton on the Control Room module for RE 1822B.
- _____ 10. Restore the setpoints for the WARN and HIGH alarm to the values listed in the Radiation Monitor Setpoint Manual. REFER TO DB-OP-06412, Process and Area Monitor Operating Procedure.

4.3.12 Select the flow indicating controller (FIC) for this release AND verify the alarm setpoints by performing the following:

- _____ a. IF the tenth value of the maximum release rate as recorded on Item 9.b is greater than or equal to 1 SCFM BUT less than 5 SCFM, THEN use FIC 1821A for the release.

(Continued)

4.17 Completed Release Shift Supervisor ReviewINITIALS

- _____ 4.17.1 Review the release procedure and permit for completeness.
- _____ 4.17.2 Remove any attachments from the package not used during the release.
- _____ 4.17.3 Submit the completed Surveillance Test Procedure to the Technical Specification Planner/Scheduler.

Subsection 4.17 completed by _____ Date _____

## 4.3.12 (Continued)

- _____ b. IF the tenth value of the maximum release rate is greater than OR equal to 5 SCFM BUT less than or equal to 45 SCFM,  
THEN use FIC 1821 for the release.
- c. Request the Control Room perform the following:
- _____ 1. IF FIC 1821A will be used for the release,  
THEN verify computer pt. F910, GASEOUS  
EFFLUENT HIGH FLOW ALARM is set at 5 SCFM.
- _____ 2. IF FIC 1821 will be used for the release,  
THEN verify computer pt. F911, GASEOUS  
EFFLUENT HIGH FLOW ALARM is set at 50 SCFM.

4.3.13 IF the total elapsed time from sample time listed in Item 4.e to time of release is greater than 48 hours,  
THEN perform the following:

- _____ a. Request Chemistry obtain another sample for the tank to be released.
- _____ b. IF this sample indicates a change in activity that invalidates the dose projections of this release,  
THEN void this release and start a new release permit.
- _____ c. Record the reason for voiding the permit in Item 5.a.

_____ 4.3.14 Request the Shift Supervisor approve the release by signing Item 4.1 on the permit.

_____ 4.3.15 Open WG 1819, WASTE GAS TO STATION VENT ISOLATION using HIS 1819 at the RWCP.

_____ IV

_____ 4.3.16 Open WG 1820, WASTE GAS TO STATION VENT ISOLATION using HIS 1820 at the RWCP.

_____ IV

Independent Verification by _____ Date _____





4.16.4 Make two (2) copies of the completed Attachment 1 and computer printouts:

_____ • Place one in counting room release log book.

_____ • Submit one to ALARA Services.

_____ 4.16.5 The Chemistry Supervisor shall submit this test to the Shift Supervisor after review of the Chemistry sections of Attachment 1.

Subsection 4.16 completed by _____ Date _____

## 4.3.17 Perform the following:

- _____ • Record the start time, release permit number, WGDT number and pressure in the Unit Log.
- _____ • Mark Recorder UJR 5092 in the Control Room for RE 1822A AND/OR RE 1822B with date, time and release permit number.
- _____ • Mark the recorder in the Control Room for RE 4598AA AND/OR 4598BA with date, time and release permit number.
- _____ • Record the start time, date and WGDT pressure in Item 6.

4.3.18 OPEN the outlet valve for the WGDT to be released.  
"N/A" the WGDTs not being released.

- _____ a. For WGDT 1, open WG 1836, WASTE GAS DECAY TANK 1-1 TO STATION VENT CONTROL VALVE using HIS 1836 at the RWCP.

IV

- _____ b. For WGDT 2, open WG 1838, WASTE GAS DECAY TANK 1-2 TO STATION VENT CONTROL VALVE using HIS 1838 at the RWCP.

IV

- _____ c. For WGDT 3, open WG 1840, WASTE GAS DECAY TANK 1-3 TO STATION VENT CONTROL VALVE using HIS 1840 at the RWCP.

IV

Independent Verification by _____ Date _____

- _____ 4.3.19 To initiate the release, VERIFY FIC selected in Step 4.3.12 is in AUTO AND adjusted to either the tenth value of the maximum release rate as recorded on Item 9.b OR 45 SCFM, whichever is less, OR at a rate directed by the Shift Supervisor which does not exceed Item 9.b.



## 4.16.1 (Continued)

NOTE 4.16.1.o

1 psi = 27.7 inches of water

- _____ o. IF updating a Containment Purge and there was a reduction in containment pressure, THEN update volume where volume is equal to  $2.834E6 \frac{(14.7 + \Delta P \text{ from Item 8})}{14.7}$
- _____ p. IF updating a Containment Pressure reduction, THEN perform the following:
1. Determine the average flowrate by using Attachment 5, if available, or 305 SCFM if Attachment 5 is not available.
  2. Multiply this flowrate by the actual purge time to obtain the volume purged.
  3. Enter the volume released.
  4. Document all calculations in Item 5, Remarks.
- _____ q. IF updating a Containment Pressure reduction and multiple samples were taken, THEN update isotopic activity to reflect weighed average based on analyses and release volume and attach calculations to this procedure.
- _____ r. Enter duration of release for Item 8.
- _____ s. Select Compute.
- _____ t. Select Save.
- _____ u. Select Print.
- _____ 4.16.2 Review the completed computer printout for agreement with the reported nuclides and activities.
- _____ 4.16.3 Attach the printout to this procedure.

## 4.3.20 Perform the following at the start of the release.

- a. IF either RE 1822A or RE 1822B are OPERABLE,  
THEN perform a channel check for each OPERABLE  
radiation monitor as follows:
1. For RE 1822A.
    - _____ a) Verify the ON/OFF switch is in the ON position.
    - _____ b) Check all ALARM lights are off
    - _____ c) Check the CHECK SOURCE light is off
    - _____ d) Check the digital indicator is responding.
  2. For RE 1822B.
    - _____ a) Verify the ON/OFF switch is in the ON position.
    - _____ b) Check all ALARM lights are off
    - _____ c) Check the CHECK SOURCE light is off
    - _____ d) Check the digital indicator is responding.
  3. IF the channel check for each operable RE  
is NOT satisfactory,  
THEN perform the following:
    - _____ a) Close WG 1819, WASTE GAS TO STATION  
VENT ISOLATION VALVE.
    - _____ b) Close WG 1820, WASTE GAS TO STATION  
VENT ISOLATION VALVE.
    - _____ c) Notify the Shift Supervisor.
  - _____ 4. IF the channel check for each operable RE  
is satisfactory,  
THEN complete Item 4.m.
    - _____ a) IF both RE channels are NOT OPERABLE,  
THEN enter "N/A" in Item 4.m,  
AND record required ODCM actions in  
Item 5a.

(Continued)

4.16 Calculations for a Completed ReleaseINITIALSNOTE 4.16.1

This section should be completed as soon as possible after the release and before the end of the current calendar month.

## 4.16.1 Update RETSCode files as follows:

- _____ a. Select Procedures
- _____ b. Select Gases
- _____ c. Select Batch release
- _____ d. Select Release
- _____ e. Select Open
- _____ f. High-lite release to be updated
- _____ g. Select OK
- _____ h. Select Release
- _____ i. Select Open
- _____ j. High-lite release to be updated
- _____ k. Select OK
- _____ l. Update release date to reflect day release started
- _____ m. Change Release Status to Post-Release
- _____ n. IF updating a WGD T release,  
THEN enter a pressure equal the Delta P as  
record in Item 8.

(Continued)

## 4.3.20 (Continued)

- b. Perform a channel check on the flow meter being used for the release as follows.

IF the flow meter is NOT OPERABLE,  
THEN "N/A" this step AND Item 4.n.

- _____ 1. Verify the indicated flowrate on the meter is in agreement with the flowrate setting on the release flow controller.
- _____ 2. IF the flowrate meter channel check was satisfactory,  
THEN complete Item 4.n.

NOTE 4.3.20.b.3

If the flowmeter for the release is INOPERABLE the ODCM Table 3-1 Action B requires that flowrate be estimated at least once per 12 hours. Since flow is normally estimated once every two hours during the release per Step 4.3.24 no additional action is required.

- _____ 3. IF the flowrate meter channel check was not satisfactory,  
THEN notify the Shift Supervisor.

NOTE 4.15.8

The Shift Supervisor may approve a release that is NOT recommended, if plant conditions require the release, AND the Manager - Radiation Protection, or designee, concurs.

- JF 4.15.8 IF the above conditions can be satisfied, THEN recommend approval of this release by signing Item 4.h.
- N/A JF 4.15.9 IF the release can NOT be recommended for approval, AND this is a CTMT pressure reduction, AND the Shift Supervisor desires, THEN disconnect the pressure reduction skid in accordance with Step 4.6.36.

NOTE 4.15.10

IF this permit is voided, THEN dispose of this procedure. Since NO release was made, NO surveillance testing and documentation is required.

- N/A JF 4.15.10 IF the release can NOT be recommended for approval and the Shift Supervisor AGREES, THEN forward this procedure to Chemistry for record closeout and disposal.
- JF 4.15.11 Verify and signoff Acceptance Criteria 5.2, 5.3, 5.4, 5.5, and 5.6.
- JF 4.15.12 Return this procedure to the Shift Supervisor.

Section 4.15 completed by Jim Feckley Date 10/3/00

4.3.20 Review Steps 4.3.21 thru 4.3.25.

NOTE 4.3.21 through 4.3.25

Steps 4.3.21 through 4.3.25 are performed concurrently during the release and are signed off at the completion of the release.

4.3.21 IF the Main Station Exhaust Fan(s) trip during the release,

THEN terminate the release by performing the following:

- a. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
- b. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed
- c. Notify the Shift Supervisor.

4.3.22 IF a ALERT or HIGH radiation alarm is received from RE 4598AA or RE 4598BA,  
THEN perform the following:

- a. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
- b. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
- c. Notify the Shift Supervisor.

4.3.23 IF RE 1822A and/or RE 1822B are operable,  
THEN perform the following:

- a. Monitor the radiation monitor(s) approximately every hour.

(Continued)



NOTE 4.15.5

A Containment Purge is normally assigned a maximum purge time of 24 hours at greater than 50,000 CFM during which a conservative estimate of all of the airborne activity detected in the sample analysis is released. IF the airborne activity detected in the sample analysis will not permit a 24 hour purge time, THEN the purge time is reduced and the Containment volume ratioed to estimate the activity released.

- N/A JF 4.15.5 IF this release is a Containment Purge and the maximum purge rate recorded in Item 10 is less than or equal to 50,000 CFM, THEN the purge rate is at or above 100% of limit and the Containment Purge approval must be recommended by the Manager - Radiation Protection or his designee only.
- JF 4.15.6 IF the conditions in Steps 4.15.2 - 4.15.4 are NOT met, THEN an investigation shall be conducted by the Radiation Protection Department and documented in Item 5 prior to recommending this release for approval.
- JF 4.15.7 IF an investigation is required, THEN the following guidance should be used in determining if the release should be recommended.
- a. Will plant conditions permit a delay in performing the release to allow for further decay?
  - b. If radioiodines and particulates are the cause of the unacceptable condition, can the release be routed through charcoal and/or HEPA filters to remove the activity prior to release?
  - c. What effect will this release have on the total quarterly and annual limits for the station dose commitment for radioactive gaseous effluent?
  - d. Record the results of the investigation in Item 5.

## 4.3.23 (Continued)

- b. IF a WARN or HIGH radiation alarm is received on RE 1822A or RE 1822B,  
THEN perform the following:

- _____ 1. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
- _____ 2. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
- _____ 3. Notify the Shift Supervisor.

4.3.24 IF annunciator alarm (50-2-I), WST GAS SYS RAD MNTR FLOW is received at the RWCP,  
THEN perform the following:

- _____ a. Increase RE flow by throttling closed WG 130, WASTE GAS TO STATION VENT CONTROL VALVE OUTLET ISOLATION VALVE.
- b. IF the LOW flow alarm can NOT be cleared,  
THEN perform the following:
  - _____ 1. Verify WG 1819, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
  - _____ 2. Verify WG 1820, WASTE GAS TO STATION VENT ISOLATION VALVE, is closed.
  - _____ 3. Notify the Shift Supervisor.

4.3.25 Calculate the estimated flowrate every two hours during the release by performing the following.

- _____ a. Enter the WGDT Gas Volume from Item 3.b of Attachment 1.

$$\sim \frac{\text{ft}^3}{(\text{Initial Volume})}$$

(Continued)

4.15 Recommendation for ApprovalNOTE 4.15

Recommendation of a Gaseous Release for approval shall be performed by authorized management personnel only. IF a permit must be recommended during the hours when the authorized management personnel are not present, THEN review and recommendation by telephone is permitted. Documentation of Tel Com person shall be made in Item 4.h.

INITIALS

- JF 4.15.1 Ensure all sampling and analysis entries are complete.

NOTE 4.15.2 and 4.15.3

The maximum release rate is a calculated value based on the curie content of all the radionuclides in the WGDТ which would result in a release equal to the instantaneous release as defined in the ODCM. The tenth value of the maximum release rate for a WGDТ is a safety factor to ensure that only a fraction of the instantaneous release rate is achieved.

- JF 4.15.2 IF this is a WGDТ release,  
THEN ensure that the tenth value of the maximum release rate as recorded in Item 9b is greater than 25 SCFM.

- JF 4.15.3 IF the maximum release rate as recorded in Item 9a is less than or equal to 25 SCFM,  
THEN the release should be investigated and the investigation documented in Item 5.a.

- JF 4.15.4 Ensure the estimated iodine and particulate dose for this release is less than 2.0 E-2 mrem.

## 4.3.25 (Continued)

- _____ b. Estimate the WGD T gas volume at the time of the calculation.

Estimate Volume ~  $\frac{(\text{WGD T pressure at calculation} + 14.7) \text{ psig} \times 1013 \text{ ft}^3}{14.7 \text{ psi}}$

$$\sim \left( \frac{\quad + 14.7}{14.7 \text{ psi}} \right) \times 1013 \text{ ft}^3$$

$$\sim \frac{\quad \text{ft}^3}{(\text{Estimated Volume})}$$

- _____ c. Calculate the total elapsed release time in minutes.

Time release started _____

Time of calculation _____

Elapsed time _____ minutes

- _____ d. Estimate the release rate.

Estimated Release Rate =  $\frac{(\text{Initial volume} - \text{Estimate volume})}{\text{Minutes elapsed}}$

$$= \left( \frac{\quad - \quad}{\quad} \right) \frac{\text{ft}^3}{\text{minutes}}$$

$$= \quad \text{ft}^3/\text{minute}$$

- _____ e. Record the estimated release rate and time calculated on Attachment 5, Estimated Release Rate.
- _____ f. Verify the estimated release flowrate is less than or equal to the tenth value of the maximum release rate recorded on Item 9.b or 45 SCFM whichever is less by adjusting FIC 1821 or FIC 1821A as necessary.

4.3.26 WHEN the WGD T pressure is less than 10 psig, OR as directed by the Shift Supervisor, THEN stop the release by closing the appropriate WGD T outlet valve:

- _____ a. For WGD T 1, close WG 1836, WASTE GAS DECAY TANK 1 TO STATION VENT CONTROL VALVE, using HIS 1836 at the RWCP.

(Continued)

NOTE 4.14.16

Enter the following values under the appropriate column:

- Estimated values determined before a release
- Actual values determined after a release.

4.14.16 Record in Item 18 the following dose commitments for this release from ODCM calculations:

- _____ a. Iodine and Particulate Dose
- _____ b. Gamma Air Dose
- _____ c. Beta Air Dose

_____ 4.14.17 Record the sums of the dose commitments from this release (Item 18) and the actual dose commitment from current quarter to date releases in Item 20.

_____ 4.14.18 Record the sums of the dose commitments from this release (Item 18) and the actual dose commitment from current year to date releases in Item 20.

_____ 4.14.19 Sign Item 4.g.

_____ 4.14.20 Submit this procedure for release to the Radiation Protection Management for the required recommendation for release.

Section 4.14 completed by _____ Date _____

## 4.3.26 (Continued)

- _____ b. For WGDT 2, close WG 1838, WASTE GAS DECAY TANK 2 TO STATION VENT CONTROL VALVE, using HIS 1838 at the RWCP.
- _____ c. For WGDT 3, close WG 1840, WASTE GAS DECAY TANK 3 TO STATION VENT CONTROL VALVE, using HIS 1840 at the RWCP.

NOTE 4.3.26.d

DO NOT record time release is stopped here as the final time in Item 7 unless the release will not be restarted. Intermediate starts and stops, for purging should be recorded in Item 5a as needed to track total release time.

- _____ d. Record time release stopped for sample in Item 5.a.

NOTE 4.3.27

Chemistry personnel shall determine the need to purge the WGDT after the release has been terminated.

- _____ 4.3.27 Request Chemistry personnel sample the WGDT released for oxygen and hydrogen concentration.

NOTE 4.14

A hand calculation will normally be performed only when the computer is out of service when release calculations are performed prior to the release. The computer should be used for all calculations on completed releases.

4.14 Hand CalculationINITIALS

_____ 4.14.1 IF this is a WGD T release AND BOTH RE's 1822A and 1822B are inoperable  
THEN the ODCM Table 3-1 Action A requires that two independent verifications of the release rate calculations be performed. To document this the person doing the independent verification shall obtain a copy of this section of the procedure and attachments and attach the completed section and attachments to the release package.

4.14.2 Calculate the release volume in cubic centimeters at standard pressure as follows:

_____ a. WGD T Releases

$$cc = \frac{(1013) \times (P + 14.7) \times (28317)}{14.7} = \frac{1013 \times ( ) \times 28317}{14.7}$$

cc = _____

P - WGD T pressure in PSIG

_____ b. Containment Release

$$cc = (ft^3) \times (28317) = ( ) \times (28317) = \underline{\hspace{2cm}}$$

ft³ - release volume in cubic feet from Item 3.b.

- 2.834 E6 ft³ for a Containment Purge
- 4.39 E5 ft³ for a Containment pressure release based on fan capacity of 305 CFM for 24 hours.

4.3.28 IF purging of the WGDT is required,  
THEN perform the following:

a. Perform a Temporary Lift AND open the applicable WGDT inlet isolation valve, refer to DB-OP-00015, Safety Tagging.

- _____ 1. For WGDT 1, open WG 34, Waste Gas Decay Tank 1-1 Inlet Isolation Valve.
- _____ 2. For WGDT 2, open WG 35, Waste Gas Decay Tank 1-2 Inlet Isolation Valve.
- _____ 3. For WGDT 3, open WG 36, Waste Gas Decay Tank 1-3 Inlet Isolation Valve.

b. Line up the WGDT being released to the nitrogen header by performing the following.

- _____ 1. For WGDT 1, open NN 124, N2 SUPPLY TO WGDT 1-1.
- _____ 2. For WGDT 2, open NN 123, N2 SUPPLY TO WGDT 1-2.
- _____ 3. For WGDT 3, open NN 122, N2 SUPPLY TO WGDT 1-3.

_____ c. Open NN 158, N2 REGULATOR OUTLET.

_____ d. Open NN 177, N2 REGULATOR INLET.

NOTE 4.3.28.e

The maximum pressure from NN 1807 is set at 20 psig.

e. WHEN the maximum pressure is attained,  
THEN close the nitrogen supply valve for the WGDT being purged.

- _____ 1. For WGDT 1, close NN 124, N2 SUPPLY TO WGDT 1.
- _____ 2. For WGDT 2, close NN 123, N2 SUPPLY TO WGDT 2.
- _____ 3. For WGDT 3, close NN 122, N2 SUPPLY TO WGDT 3.

(Continued)





- N/A 4.13.9 IF this release is due to ILRT,  
THEN mark Item 10 N/A.
- BY 4.13.10 Sign Item 4.g.
- BY 4.13.11 Verify and sign off Acceptance Criteria 5.1
- BY 4.13.12 Submit this procedure to the Radiation Protection for  
the required recommendation for release per  
Section 4.15.

Subsection 4.13 completed by Brian Young Date 10/2/00

## 4.3.28 (Continued)

- f. Close AND Rehang DNO tag on the applicable WGDТ inlet isolation valve.

- _____ 1. For WGDТ 1, close WG 34, Waste Gas Decay Tank 1-1 Inlet Isolation Valve.
- _____ 2. For WGDТ 2, close WG 35, Waste Gas Decay Tank 1-2 Inlet Isolation Valve.
- _____ 3. For WGDТ 3, close WG 36, Waste Gas Decay Tank 1-3 Inlet Isolation Valve.

NOTE 4.3.28.g

IF the inlet valve for the tank to be purged has NOT been opened, THEN a new release permit is NOT required. IF the inlet valve has been opened, THEN a new release permit shall be initiated AND an investigation shall be conducted to determine when the inlet valve was opened per the requirements of Conduct of Operations, DB-OP-00000.

- g. Reinitiate the release by opening the outlet valve for the WGDТ being released, and purged.

- _____ 1. For WGDТ 1, open WG 1836, WASTE GAS DECAY TANK 2 TO STATION VENT CONTROL VALVE using HIS 1836 at the RWCP.

IV

- _____ 2. For WGDТ 2, open WG 1838, WASET GAS DECAY TANK 2 TO STATION VENT CONTROL VALVE using HIS 1838 at the RWCP.

IV

- _____ 3. For WGDТ 3, open WG 1840, WASTE GAS DECAY TANK 3 TO STATION VENT CONTROL VALVE using HIS 1840 at the RWCP.

IV

- _____ 4. Record time release restarted with tank pressure in Item 5.a.

Independent Verification by _____ Date _____

- _____ h. WHEN the pressure of the WGDТ being purged is less than 10 psig, THEN close the outlet valve opened in Step 4.3.28.g.

(Continued)

NOTE 4.13.7

A Containment Purge is normally assigned a maximum purge time of 24 hours during which a conservative estimate of all of the airborne activity detected in the sample analysis is released.

- N/A 4.13.7 IF the release is a Containment Purge,  
THEN enter the maximum purge time of 24 hours in  
Item 10.b and the maximum purge rate (smallest  
release rate limit) in Item 10.a.  
OTHERWISE mark this step and Items 10.a and 10.b N/A.
- BY 4.13.8 Attach printout of RETSCode to this procedure.

## 4.3.28 (Continued)

- _____ i. Repeat Step 4.3.28.a-h until Chemistry personnel determines the oxygen and hydrogen concentrations are within limits.
- _____ • Record additional start and stop times with corresponding tank pressures in Item 5.a.
- _____ j. Record on Item 5.a that the WGDT was purged with nitrogen following the release to reduce the oxygen concentration.
- _____ k. Close NN 158, N₂ Regulator Outlet
- _____ l. Close NN 177, N₂ Regulator Inlet
- m. IF absolute filter and charcoal filter were bypassed in Step 4.1.11,  
THEN perform the following:
1. For the absolute filter:
- _____ • Verify WG 45, WASTE GAS ABSOLUTE FILTER OUTLET ISOLATION VALVE, is open.
- _____ • WG 8, WASTE GAS ABSOLUTE FILTER 1 INLET ISOLATION, is open.
- _____ • Verify WG 48, WASTE GAS ABSOLUTE FILTER BYPASS VALVE, is closed.
2. For the charcoal filter:
- _____ • Verify WG 46, WASTE GAS CHARCOAL FILTER INLET ISOLATION VALVE, is open.
- _____ • Verify WG 47, WASTE GAS CHARCOAL FILTER OUTLET ISOLATION VALVE, is open.
- _____ • Verify WG 49, WASTE GAS CHARCOAL FILTER BYPASS VALVE, is closed.
- _____ 4.3.29 Close WG 1819, WASTE GAS TO STATION VENT ISOLATION VALVE.
- _____ 4.3.30 Close WG 1820, WASTE GAS TO STATION VENT ISOLATION VALVE.

NOTE 4.13.4

The Radioactive Gaseous Batch release calculation program will now determine the allowable release rate based on the information provided.

184 4.13.4 Review the completed computer printout for agreement with the identified isotopes and associated values.

184 4.13.5 IF this is a WGDТ release,  
THEN record the maximum allowable release rate in Item 9.a.  
OTHERWISE mark this step and Item 9.a N/A.

NOTE 4.13.6

For WGDТ releases the actual release rate will be less than or equal to the tenth value of the maximum release rate or 45 SCFM whichever is less.

CAUTION 4.13.6

IF the result is less than 1 SCFM, THEN the release should be terminated.

184 4.13.6 IF this is a WGDТ release,  
THEN divide the maximum release rate by ten and record the value or 45 SCFM, whichever is less, in Item 9.b.  
OTHERWISE mark this step and Item 9.b N/A.

NOTE 4.3.31

A value of zero is conservative in that it will assume all activity in the tank has been released.

## 4.3.31 Perform the following:

- _____ • Request the Control Room mark the recorder UJR 5092, for RE1822A AND/OR RE1822B, with the Release Permit number and stop time.
- _____ • Request the Control Room mark the Recorder for RE 4598AA AND/OR 4598BA with release permit number and stop time.
- _____ • Record the stop time, release permit number, WGDT number and pressure in the Unit Log.
- _____ • Record the release final stop time and date on Item 7.
- _____ • Record a WGDT pressure of zero on Item 7.

_____ 4.3.32 Remove the DNO tags hung in Section 4.1. Refer to DB-OP-00015, Safety Tagging.

_____ 4.3.33 Remove the Information Tags hung in Section 4.1. Refer to DB-OP-00010, Operational Information Tags

_____ 4.3.34 Remove the radiation monitor(s) used for this release from service as follows:

a. To remove RE 1822A from service perform the following:

- _____ 1. Verify WG 140, WASTE GAS TO STATION VENT RADIATION ELEMENT ISOLATION, is closed.
- _____ 2. Verify WG 139, WASTE GAS TO STATION VENT RADIATION ELEMENT ISOLATION, is closed.
- _____ 3. Verify WG 138, WASTE GAS TO STATION VENT RADIATION ELEMENT ISOLATION, is closed.
- _____ 4. Verify WG 137, WASTE GAS TO STATION VENT RADIATION ELEMENT ISOLATION, is closed.
- _____ 5. Verify WG 132, WASTE GAS TO STATION VENT RADIATION ELEMENT BYPASS, is closed.

(Continued)



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## 4.3.34.a (Continued)

- _____ 6. Verify WG 129, RADIATION MONITOR SAMPLE  
FT 1822 RETURN ISOLATION VALVE, is closed.
- _____ 7. Verify WG 131, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is closed.
- b. To remove RE 1822B from service perform the  
following:
  - _____ 1. Verify WG 133, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.
  - _____ 2. Verify WG 134, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.
  - _____ 3. Verify WG 142, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.
  - _____ 4. Verify WG 141, WASTE GAS TO STATION VENT  
RADIATION ELEMENT ISOLATION, is closed.
  - _____ 5. Verify WG 131, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is closed.
  - _____ 6. Verify WG 129, RADIATION MONITOR SAMPLE  
FT 1822 RETURN ISOLATION VALVE, is closed.
  - _____ 7. Verify WG 132, WASTE GAS TO STATION VENT  
RADIATION ELEMENT BYPASS, is closed.

_____ 4.3.35 IF either RE 1822A or RE 1822B was in service for the  
release,  
THEN turn the power switch on the electronic readout  
for FYIS 1822 to OFF.

4.3.36 Perform the following:

- _____ a. Calculate total release time.

Time recorded in Item 7 - Time Recorded in  
Item 6

*Also subtract start and stop times when purging  
tank as recorded in Item 5.a if performed.

- _____ b. Calculate Delta P.

Pressure recorded in Item 6 - Pressure recorded  
in Item 7

- _____ c. Record calculated values in Item 8.





4.13.3 (Continued)

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k. For volume entry

1. For WGDT, use calculated value
2. For Containment Purge, enter 2.834E+6
3. For Containment Pressure reduction, enter 4.39E+5
4. For ILRT, enter 2.834E+6
5. For Other, enter calculated value as follows:

N/A  
184  
↓

- a) Obtain tank or line pressure from Control Room.
- b) Obtain tank or line volume from Control Room or Plant Engineering.
- c) Determine "corrected volume"  
(Line/tank pressure +14.7) x line/tank volume

$$\frac{(\text{Line/tank pressure} + 14.7) \times \text{line/tank volume}}{14.7}$$

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l. Select yes for processed through Gaseous Radwaste UNLESS this is a ILRT.

184

m. Select Sample Analysis

184

n. Enter nuclides and activities

184

o. Select OK

184

p. Select Compute

184

q. Select Save

184

r. Select Print

(Continued)

- _____ 4.3.37 Verify the selected flow control valve (WG 1821 or WG 1821A) used for the release is closed AND set the controller to zero flow.
- _____ 4.3.38 Return this procedure to the Control Room for processing.
- _____ 4.3.39 Review the operational portion of this procedure for completeness.
- _____ 4.3.40 Return the procedure to the Chemistry Department for processing in accordance with Section 4.16.

Section 4.3 completed by _____ Date _____

4.13 Computer Assisted CalculationsINITIALS

- BY 4.13.1 IF the computer is not available for calculating release rates,  
THEN discard this section and  
GO TO Section 4.14.  
OTHERWISE discard Section 4.14 and Attachments 6 through 8.
- BY 4.13.2 IF this is a WGDT release and BOTH RES 1822A AND 1822B are inoperable  
THEN the ODCM Table 3-1 Action A requires that two independent verifications of the release rate calculations be performed. To document this the person doing the independent verification shall obtain a copy of this section of the procedure and attach the completed section to the Release Package.
- 4.13.3 Run the RETSCode program as follows:
- BY a. Select Procedures
  - BY b. Select Gases
  - BY c. Select Batch release
  - BY d. Select Release
  - BY e. Select New
  - BY f. Enter Sample Date as Release Date
  - BY g. Select Batch as Release Type
  - BY h. Select Pre-Release as Status
  - BY i. Select Source of Release
  - BY j. For Pressure entry
    - 1. For WGDT, enter pressure from Item 3.a.
    - 2. For Containment Purge, enter N/A
    - 3. For Containment Pressure reduction, enter 1
    - 4. For ILRT, enter pressure from item 3.a.
    - 5. For Other, enter N/A

(Continued)

4.4 Preparing a Containment Pressure Reduction ReleaseINITIALS

_____ 4.4.1 Notify the Radiation Protection personnel a Containment pressure reduction is necessary AND the discharge for the pressure release skid will be in the Radioactive Waste Ventilation duct in the Auxiliary Building Train Bay.

4.4.2 Verify the following valves are closed:

_____ ○ CV 138, HYDROGEN RECOMBINER INLET ISOLATION VALVE.

_____ ○ CV 139, HYDROGEN RECOMBINER INLET ISOLATION VALVE.

NOTE 4.4.3

The following will require personnel from the Maintenance, Electrical, Radiation Protection and Operations Departments.

4.4.3 Perform the following:

- _____ a. Perform an operability determination for the SFP EVS for opening FD 1174, Radioactive Waste Ventilation System access port. Access port FD 1174 surface area is 120 in². REFER TO DB-OP-00018, Inoperable Equipment Tracking Log AND TS 3.9.12, SFP EVS.
- _____ b. Remove the blank flange downstream from CV 139, HYDROGEN RECOMBINER INLET ISOLATION VALVE.
- _____ c. Connect the Containment Pressure Release Skid inlet ducting to the flange from which the blank flange was removed.
- _____ d. Open Radioactive Waste Ventilation System access port FD 1174, located above Door 306 in Room 300.
- _____ e. Connect the Containment Pressure Release Skid outlet ducting to the Radioactive Waste Ventilation System duct port FD 1174.

(Continued)

4.12.14 (Continued)

4.12.14 (C)

NOTE 4.12.14.f

Photopeaks which, after visual inspection, are not peaks or photopeaks with 50% error or greater are to be lined out and initialed. Other confirmed photopeaks are to be marked with nuclide's name.

- B4 f. For all unidentified photopeaks, identify those with errors less than 50%.
- B4 g. IF other nuclides are identified from the evaluation of unidentified photopeaks which have NOT already been quantified, THEN determine nuclide's concentration by using the " $\mu\text{Ci/ml}$  for a single peak" calculation and add the nuclide and its concentration to the analysis portion of the printout.
- B4 h. IF a photopeak is identified as a nuclide not included in the computer library, THEN contact Chemistry Management for guidance.
- N/A B4 4.12.15 IF the computer printout is not available, THEN record the results of the spectral analysis and tritium analysis in the appropriate row of Items 13 and 14.

NOTE 4.12.16

The Chemistry "Tester" may sign the "Reviewed by" line on the printout if Chemistry Supervisor is not available.

- B4 4.12.16 IF the computer printout is available, THEN attach a copy of all of the analyses to this procedure.

Subsection 4.12 completed by

Brian YoungDate 10/2/00

- _____ 4.11.13 WHEN the release is completed,  
THEN terminate the release described by the procedure  
or MWO. 4.11.13
- _____ 4.11.14 Record the release stop time, date and tank pressure  
in Item 7.
- _____ 4.11.15 Calculate the total Release Time and Delta P from  
Items 6 and 7 AND record on Item 8.
- _____ 4.11.16 Return this procedure to the Control Room.
- _____ 4.11.17 Review operational portion of this procedure for  
completeness. |
- _____ 4.11.18 Return the procedure to the Chemistry Department for  
processing in accordance with Section 4.16.

Section 4.11 completed by _____ Date _____

NOTE 4.12.14

If the computer system is not available, the the spectrum analysis is performed by hand using DB-CH-01801, Radiochemistry Gamma Spectral Analysis, for guidance. Pay particular attention to the spectrum and the following:

- a. Presence of isotopes determined in comparison to isotopes normally found by computer analysis of a gaseous release gamma spectrum.
- b. Are all of the photopeaks shaped correctly, are they irregular, bent or skewed in one direction?
- c. Attach the Hand Calculation Sheets to this procedure.

4.12.14 Review the gamma spectral analysis computer printout, when available, for the following to ensure its correctness:

- B4
- B9
- B4
- B9
- B7
- a. The sample description includes the type of release and the assigned release number.
  - b. The correct sample volume has been entered.
  - c. All of the photopeaks identified have been matched with a known possible isotope from the current peak ID library or investigated.
  - d. There is no indication of an out of energy calibration condition.
  - e. There are NO isotopes indicated that due to decay time, type of release, or plant operational mode should not be present.

(Continued)

NOTE 4.12

Additional copies of attachments to document  
Action Items may be made as required.

4.12 Sampling and AnalysisINITIALS

- DB 4.12.1 Upon receipt of this procedure from the Shift Supervisor, assign the next sequential release permit number from the Gaseous Release Permit Log, Attachment 3.
- DB 4.12.2 Record the date, type of release, and your name on the Gaseous Release Permit Log, Attachment 3.
- DB 4.12.3 Record the assigned permit number in Item 2.
- DB 4.12.4 IF this is a WGDT release and both RE's 1822A and 1822B are INOPERABLE,  
THEN the ODCM Table 3-1 Action A requires that two independent samples are analyzed in accordance with ODCM Table 3-3 for analyses with each batch. To document this the person doing the independent sample analysis shall obtain a copy of this section of the procedure and attach the completed copy to the release package.



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NOTE 4.12.5

Special sampling techniques (air sampler, etc) may be required for releases with low pressures.

DB

- 4.12.5 Sample the indicated type of release in Item 1 as follows:

NOTE 4.12.5.a

A minimum purge time of at least 5 minutes is required when obtaining the sample. The bypass shall not be used around the sample station. Purge shall be through the gas sample pressure container.

- a. WGD, OTHER and ILRT - Refer to DB-CH-06002, Sampling System Nuclear Areas.
- b. Containment Purges or Pressure Reductions - Refer to DB-CH-04004, Containment Atmosphere Sampling and Analysis.

DB

- 4.12.6 Complete Item 4.e when the sample is taken.

NOTE 4.12.7

Normal sample volume for the 12 cc gas vial is 10 cc.

DB

- 4.12.7 Prepare the required analysis samples.

CAUTION 4.12.8

Maximum sample decay times are as follows:

- 12 cc gas vials - 60 minutes
- 4350 cc marinelli - 120 minutes.

Minimum sample count times are as follows:

- 12 cc gas vials - 5000 seconds at 3 cm
- 4350 cc marinelli - 2000 seconds on the detector.

B4 4.12.8 Perform a gamma spectral analysis in accordance with DB-CH-01801, Radiochemistry Gamma Spectral Analysis.

Performed by Brian Young Date 10/2/00

B4 4.12.9 Perform a tritium analysis in accordance with DB-CH-01804, Tritium Determination.

Performed by Brian Young Date 10/2/00

DB 4.12.10 Record the results of the tritium analysis on the gamma spec computer printout.

B4 NW 4.12.11 IF two independent samples were analyzed AND the difference between nuclide concentration is greater than 25% for nuclides with activities greater than  $1.0E-4 \mu\text{Ci/cc}$ , THEN contact Chemistry Management for resolution.

B4 4.12.12 Complete Item 4.f when all sample analysis are performed.

B4 4.12.13 IF this release is for a WGDT, THEN verify the WGDT pressure is entered in Item 3.a.

CAUTION 4.12.8

Maximum sample decay times are as follows:

- 12 cc gas vials - 60 minutes
- 4350 cc marinelli - 120 minutes.

Minimum sample count times are as follows:

- 12 cc gas vials - 5000 seconds at 3 cm
- 4350 cc marinelli - 2000 seconds on the detector.

DB 4.12.8 Perform a gamma spectral analysis in accordance with  
DB-CH-01801, Radiochemistry Gamma Spectral Analysis.

Performed by Don Baerly Date 10/2/00

DB 4.12.9 Perform a tritium analysis in accordance with  
DB-CH-01804, Tritium Determination.

Performed by Don Baerly Date 10/2/00

DB 4.12.10 Record the results of the tritium analysis on the  
gamma spec computer printout.

N/A DB 4.12.11 IF two independent samples were analyzed  
AND the difference between nuclide concentration is  
greater than 25% for nuclides with activities greater  
than 1.0E-4  $\mu\text{Ci/cc}$ ,  
THEN contact Chemistry Management for resolution.

DB 4.12.12 Complete Item 4.f when all sample analysis are  
performed.

DB 4.12.13 IF this release is for a WGDT,  
THEN verify the WGDT pressure is entered in Item 3.a.

NOTE 4.12.5

Special sampling techniques (air sampler, etc) may be required for releases with low pressures.

By

- 4.12.5 Sample the indicated type of release in Item 1 as follows:

NOTE 4.12.5.a

A minimum purge time of at least 5 minutes is required when obtaining the sample. The bypass shall not be used around the sample station. Purge shall be through the gas sample pressure container.

- a. WGD, OTHER and ILRT - Refer to DB-CH-06002, Sampling System Nuclear Areas.
- b. Containment Purges or Pressure Reductions - Refer to DB-CH-04004, Containment Atmosphere Sampling and Analysis.

By

- 4.12.6 Complete Item 4.e when the sample is taken.

NOTE 4.12.7

Normal sample volume for the 12 cc gas vial is 10 cc.

By

- 4.12.7 Prepare the required analysis samples.

(This page intentionally left blank.)

NOTE 4.12

Additional copies of attachments to document  
Action Items may be made as required.

4.12 Sampling and AnalysisINITIALS

- |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>by</u> | 4.12.1 | Upon receipt of this procedure from the Shift Supervisor, assign the next sequential release permit number from the Gaseous Release Permit Log, Attachment 3.                                                                                                                                                                                                                                                             |
| <u>by</u> | 4.12.2 | Record the date, type of release, and your name on the Gaseous Release Permit Log, Attachment 3.                                                                                                                                                                                                                                                                                                                          |
| <u>by</u> | 4.12.3 | Record the assigned permit number in Item 2.                                                                                                                                                                                                                                                                                                                                                                              |
| <u>by</u> | 4.12.4 | <u>IF</u> this is a WGDT release and both RE's 1822A and 1822B are INOPERABLE,<br><u>THEN</u> the ODCM Table 3-1 Action A requires that two independent samples are analyzed in accordance with ODCM Table 3-3 for analyses with each batch. To document this the person doing the independent sample analysis shall obtain a copy of this section of the procedure and attach the completed copy to the release package. |

NOTE 4.12.14

If the computer system is not available, the the spectrum analysis is performed by hand using DB-CH-01801, Radiochemistry Gamma Spectral Analysis, for guidance. Pay particular attention to the spectrum and the following:

- a. Presence of isotopes determined in comparison to isotopes normally found by computer analysis of a gaseous release gamma spectrum.
- b. Are all of the photopeaks shaped correctly, are they irregular, bent or skewed in one direction?
- c. Attach the Hand Calculation Sheets to this procedure.

4.12.14 Review the gamma spectral analysis computer printout, when available, for the following to ensure its correctness:

- DB a. The sample description includes the type of release and the assigned release number.
- PB b. The correct sample volume has been entered.
- PB c. All of the photopeaks identified have been matched with a known possible isotope from the current peak ID library or investigated.
- DB d. There is no indication of an out of energy calibration condition.
- DB e. There are NO isotopes indicated that due to decay time, type of release, or plant operational mode should not be present.

(Continued)



- _____ 4.11.13 WHEN the release is completed,  
THEN terminate the release described by the procedure  
or MWO.
- _____ 4.11.14 Record the release stop time, date and tank pressure  
in Item 7.
- _____ 4.11.15 Calculate the total Release Time and Delta P from  
Items 6 and 7 AND record on Item 8.
- _____ 4.11.16 Return this procedure to the Control Room.
- _____ 4.11.17 Review operational portion of this procedure for  
completeness.
- _____ 4.11.18 Return the procedure to the Chemistry Department for  
processing in accordance with Section 4.16.

Section 4.11 completed by _____ Date _____

## 4.12.14 (Continued)

NOTE 4.12.14.f

Photopeaks which, after visual inspection, are not peaks or photopeaks with 50% error or greater are to be lined out and initialed. Other confirmed photopeaks are to be marked with nuclide's name.

- DB f. For all unidentified photopeaks, identify those with errors less than 50%.
- DB g. IF other nuclides are identified from the evaluation of unidentified photopeaks which have NOT already been quantified, THEN determine nuclide's concentration by using the " $\mu\text{Ci/ml}$  for a single peak" calculation and add the nuclide and its concentration to the analysis portion of the printout.
- DB h. IF a photopeak is identified as a nuclide not included in the computer library, THEN contact Chemistry Management for guidance.
- DBNA 4.12.15 IF the computer printout is not available, THEN record the results of the spectral analysis and tritium analysis in the appropriate row of Items 13 and 14.

NOTE 4.12.16

The Chemistry "Tester" may sign the "Reviewed by" line on the printout if Chemistry Supervisor is not available.

- DB 4.12.16 IF the computer printout is available, THEN attach a copy of all of the analyses to this procedure.

Subsection 4.12 completed by Don Bondy Date 10/2/00

NOTE 4.14

A hand calculation will normally be performed only when the computer is out of service when release calculations are performed prior to the release. The computer should be used for all calculations on completed releases.

4.14 Hand CalculationINITIALS

_____ 4.14.1 IF this is a WGDT release AND BOTH RE's 1822A and 1822B are inoperable  
THEN the ODCM Table 3-1 Action A requires that two independent verifications of the release rate calculations be performed. To document this the person doing the independent verification shall obtain a copy of this section of the procedure and attachments and attach the completed section and attachments to the release package.

4.14.2 Calculate the release volume in cubic centimeters at standard pressure as follows:

_____ a. WGDT Releases

$$cc = \frac{(1013) \times (P + 14.7) \times (28317)}{14.7} = \frac{1013 \times ( ) \times 28317}{14.7}$$

cc = _____

P - WGDT pressure in PSIG

_____ b. Containment Release

$$cc = (ft^3) \times (28317) = ( ) \times (28317) = \underline{\hspace{2cm}}$$

ft³ - release volume in cubic feet from  
Item 3.b.

- 2.834 E6 ft³ for a Containment Purge
- 4.39 E5 ft³ for a Containment pressure release based on fan capacity of 305 CFM for 24 hours.

4.13 Computer Assisted CalculationsINITIALS

- OB 4.13.1 IF the computer is not available for calculating release rates,  
THEN discard this section and  
GO TO Section 4.14.  
OTHERWISE discard Section 4.14 and Attachments 6 through 8.
- OB 4.13.2 IF this is a WGDТ release and BOTH REs 1822A AND 1822B are inoperable  
THEN the ODCM Table 3-1 Action A requires that two independent verifications of the release rate calculations be performed. To document this the person doing the independent verification shall obtain a copy of this section of the procedure and attach the completed section to the Release Package.
- 4.13.3 Run the RETSCoде program as follows:
- OB a. Select Procedures
- OB b. Select Gases
- OB c. Select Batch release
- OB d. Select Release
- OB e. Select New
- OB f. Enter Sample Date as Release Date
- OB g. Select Batch as Release Type
- OB h. Select Pre-Release as Status
- OB i. Select Source of Release
- OB j. For Pressure entry
1. For WGDТ, enter pressure from Item 3.a.
  2. For Containment Purge, enter N/A
  3. For Containment Pressure reduction, enter 1
  4. For ILRT, enter pressure from item 3.a.
  5. For Other, enter N/A

(Continued)



- N/AB 4.13.9 IF this release is due to ILRT,  
THEN mark Item 10 N/A.
- AB 4.13.10 Sign Item 4.g.
- AB 4.13.11 Verify and sign off Acceptance Criteria 5.1
- AB 4.13.12 Submit this procedure to the Radiation Protection for  
the required recommendation for release per  
Section 4.15.

Subsection 4.13 completed by Don Bondy Date 10/3/00



4.13.3 (Continued)

DB

k. For volume entry

1. For WGDT, use calculated value
2. For Containment Purge, enter 2.834E+6
3. For Containment Pressure reduction, enter 4.39E+5
4. For ILRT, enter 2.834E+6
5. For Other, enter calculated value as follows:

N/A DB

- a) Obtain tank or line pressure from Control Room.
- b) Obtain tank or line volume from Control Room or Plant Engineering.
- c) Determine "corrected volume"  
(Line/tank pressure +14.7) x line/tank volume

$$\frac{(\text{Line/tank pressure} + 14.7)}{14.7} \times \text{line/tank volume}$$

DB

l. Select yes for processed through Gaseous Radwaste UNLESS this is a ILRT.

DB

m. Select Sample Analysis

DB

n. Enter nuclides and activities

DB

o. Select OK

DB

p. Select Compute

DB

q. Select Save

DB

r. Select Print

(Continued)

NOTE 4.13.7

A Containment Purge is normally assigned a maximum purge time of 24 hours during which a conservative estimate of all of the airborne activity detected in the sample analysis is released.

- 1/4/00 4.13.7 IF the release is a Containment Purge,  
THEN enter the maximum purge time of 24 hours in  
Item 10.b and the maximum purge rate (smallest  
release rate limit) in Item 10.a.  
OTHERWISE mark this step and Items 10.a and 10.b N/A.
- OB 4.13.8 Attach printout of RETSCode to this procedure.



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NOTE 4.13.4

The Radioactive Gaseous Batch release calculation program will now determine the allowable release rate based on the information provided.

- DB 4.13.4 Review the completed computer printout for agreement with the identified isotopes and associated values.
- DB 4.13.5 IF this is a WGDT release,  
THEN record the maximum allowable release rate in Item 9.a.  
OTHERWISE mark this step and Item 9.a N/A.

NOTE 4.13.6

For WGDT releases the actual release rate will be less than or equal to the tenth value of the maximum release rate or 45 SCFM whichever is less.

CAUTION 4.13.6

IF the result is less than 1 SCFM, THEN the release should be terminated.

- DB 4.13.6 IF this is a WGDT release,  
THEN divide the maximum release rate by ten and record the value or 45 SCFM, whichever is less, in Item 9.b.  
OTHERWISE mark this step and Item 9.b N/A.

DAVIS-BESSE NUCLEAR POWER STATION  
JOB PERFORMANCE MEASURE WORKSHEET

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**JPM NO.:** Admin 4

Rev. 0

Page 1 of 7

**TASK NO.:** 334-011-05-0300; 334-004-05-0300; 334-005-05-0300

**TASK DESCRIPTION:** Perform an Off-Site Dose Calculation and Upgrade to a  
General Emergency

**K/A REFERENCE:** XXX-GEN-2.4.41 2.3/4.1

**APPLICABLE METHOD OF TESTING:** Actual Performance  
Control Room  
Simulator  
Time Critical

**TIME FOR COMPLETION:** 30 minutes

**APPLICABILITY:** ☐ RO ☒ SRO

**TASK STANDARDS:**

Determine off-site TEDE dose rates and PARs.  
Identify the proper EAL for upgrading.

**REQUIRED MATERIALS:**

RA-EP-01500, Emergency Classification  
RA-EP-02245, Protective Action Guidelines  
HS-EP-02240, Offsite Dose Assessments  
RA-EP-01900, General Emergency  
RA-EP-02110, Emergency Notification  
Offsite Dose Assessment Nomogram  
E-Plan Implementing Forms envelope

**GENERAL REFERENCES:**

RA-EP-01500, Emergency Classification  
HS-EP-02245, Protective Action Guidelines  
HS-EP-02240, Offsite Dose Assessments  
RA-EP-01900, General Emergency  
RA-EP-02110, Emergency Notification

**INITIAL CONDITIONS:**

You are the Shift Supervisor.

A Site Area Emergency was declared 15 minutes ago based on EAL 2.A.4.  
RA-EP-01800, Site Area Emergency, has been implemented and is complete up  
through Step 6.6. Step 6.7 is in progress.

**INITIATING CUES:**

You are to continue with Step 6.8 of RA-EP-1800.

DADS and SPDS are not available.

The following is an update of plant conditions. (Hand examinee cue sheet of  
plant conditions.)

**INITIAL CONDITIONS:**

You are the Shift Supervisor.

A Site Area Emergency was declared 15 minutes ago based on EAL 2.A.4. RA-EP-01800, Site Area Emergency, has been implemented and is complete up through Step 6.6. Step 6.7 is in progress.

**INITIATING CUES:**

You are to continue with Step 6.8 of RA-EP-1800.

DADS and SPDS are not available.

The following is an update of plant conditions:

CTMT pressure	20.1 psia		
CTMT temperature	214°F		
CTMT RE 4596A/B	5000 R/hr		
CTMT RE 4597AA/BA (uCi/cc)	Ch1=1.7E-02	Ch2=2.2E-02	Ch3=5.0E-08
	Ch4=5.3E-03	Ch5=6.1E-04	
CTMT RE 4597AB/BB (uCi/cc)	Ch1=5.0E+01	Ch2=1.0E+00	Ch3=1.1E-06
	Ch4=0.0E-00	Ch5=0.0E-00	
RCS pressure	1000 psig and stable		
RCS temperature	350°F and stable		
Pressurizer level	0 inches		
RCS SCM	0°F		
Incore thermocouples	800°F and stable		
HPI flow/line	250 gpm/line and stable		
LPI flow/line	0gpm/line		
Main Steam pressure	800 psig in both SGs and stable		
SG level	124 inches in both SGs and stable		
AFWPs	Both running, each aligned to its own SG		
Station Vent RE 4598 AB/BB (uCi/cc)	Ch1=9.00E-02	Ch2=9.00E-02	
	Ch3=2.56E-06	Ch4=0.00E-0	Ch5=0.0E-00
Met Tower Data M006 Wind Speed 612' Elevation		2.5 mph	
M005 Wind Speed 827' Elevation		3.5 mph	
M003 Wind Direction 612' Elevation		310°	
M002 Wind Direction 827' Elevation		355°	
M012 Ambient Temperature 612' Elevation		75°	
M011 Temperature Differential 827'-612'		-0.5°	
M010 Temperature Differential 917'-612'		-0.9°	

**PERFORMANCE INFORMATION**

NOTE: Critical steps denoted with a "C". Failure to meet any one of these standards for this item constitutes failure. Sequence is NOT critical unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Determine offsite dose projection per HS-EP-02240.

STANDARD: Refer to HS-EP-02240, Offsite Dose Assessment, to determine TEDE rate using nomogram.

COMMENT: Hand a copy of the nomogram and HS-EP-02240 to the examinee. PARs are to be made to offsite agencies along with the initial notification.

CUE: None.

SAT UNSAT

2. PERFORMANCE STEP: Plot Station Vent RE reading on Scale B.

STANDARD: Mark  $9E-2$  ( $8E-2$  to  $1E-1$ )  $\mu\text{Ci/cc}$ .

CUE: None.

SAT UNSAT

3. PERFORMANCE STEP: Plot Station Vent flowrate on Scale A.

STANDARD: Mark 146 KCFM.

CUE: None.

SAT UNSAT

4. PERFORMANCE STEP: Determine release rate on line between RE and flow reading.

STANDARD: Mark 6 Ci/sec release rate on scale C (5-7).

CUE: None.

SAT UNSAT

5. PERFORMANCE STEP: Determine stability class.

STANDARD: Mark Class E on scale 1.

CUE: None.

SAT UNSAT

---

6. PERFORMANCE STEP: Plot wind speed.

STANDARD: Mark 2.5 mph (4-6) on Scale 2.

CUE: **None.**

---

SAT UNSAT

7. PERFORMANCE STEP: Determine X/Q on line between stability class and wind speed.

STANDARD: Mark  $2.2E-4$  sec/m³ X/Q on scale 3 ( $1E-4$  to  $4E-4$ ).

CUE: **None.**

---

SAT UNSAT

8. PERFORMANCE STEP: Determine TEDE rate at 0.75 mi on line between  
.....C..... X/Q and release rate.

STANDARD: Mark 2 Rem/hr (1-4) on Scale 4.

CUE: **None.**

---

SAT UNSAT

9. PERFORMANCE STEP: Determine TEDE rates at 2, 5 and 10 by dividing  
0.75 mile value by 5, 15 and 40.

STANDARD: Record 0.4 Rem/hr (0.2-0.8) for 2 mile, 0.133 Rem/hr  
(0.07-0.27) for 5 mile and 0.05 Rem/hr (0.025-0.1).

COMMENT: 2 mile value critical if 0.75 mile value is 2.5 Rem/hr or  
more.

CUE: **None.**

---

SAT UNSAT

10. PERFORMANCE STEP: Using RA-EP-02245, determine the affected subareas  
.....C..... using Attachment 3, using 2-hour duration.

STANDARD: Determine affected subareas to be 1, 2, 6, 7, 8, 9, and 12.

COMMENT: Hand a copy of RA-EP-02245 to examinee.

CUE: **None.**

---

SAT UNSAT

---

11. PERFORMANCE STEP: Determine evacuation of subareas of 1 Rem or more  
.....C..... per Attachment 2.

STANDARD: Determine evacuation of Subareas 1 and 12 for 310° wind  
direction.

COMMENT: For 2 mile TEDE of 1 Rem or more, also determine evacuation of  
Subareas 2 and 6.

CUE: None.

---

SAT UNSAT

12. PERFORMANCE STEP: Classify event per RA-EP-01500, Emergency  
.....C..... Classification.

STANDARD: Event classified as a General Emergency, per EAL 6.D.6 or 9.5.

CUE: None.

---

SAT UNSAT

TERMINATING CUES: This JPM is complete.

---

END TIME

VERIFICATION OF COMPLETION

Operator _____ Evaluator _____

SSN _____ Date _____

License     ☐ RO     ☐ SRO

Validated Completion Time: _____ minutes

Actual Completion Time: _____ minutes

Acceptable Progress Maintained:            Yes            No            N/A

Result:        ☐ SATISFACTORY     ☐ UNSATISFACTORY

NOTE: An "Unsatisfactory" requires Comment and will require  
subsequent remedial training.

Comments/Feedback: _____

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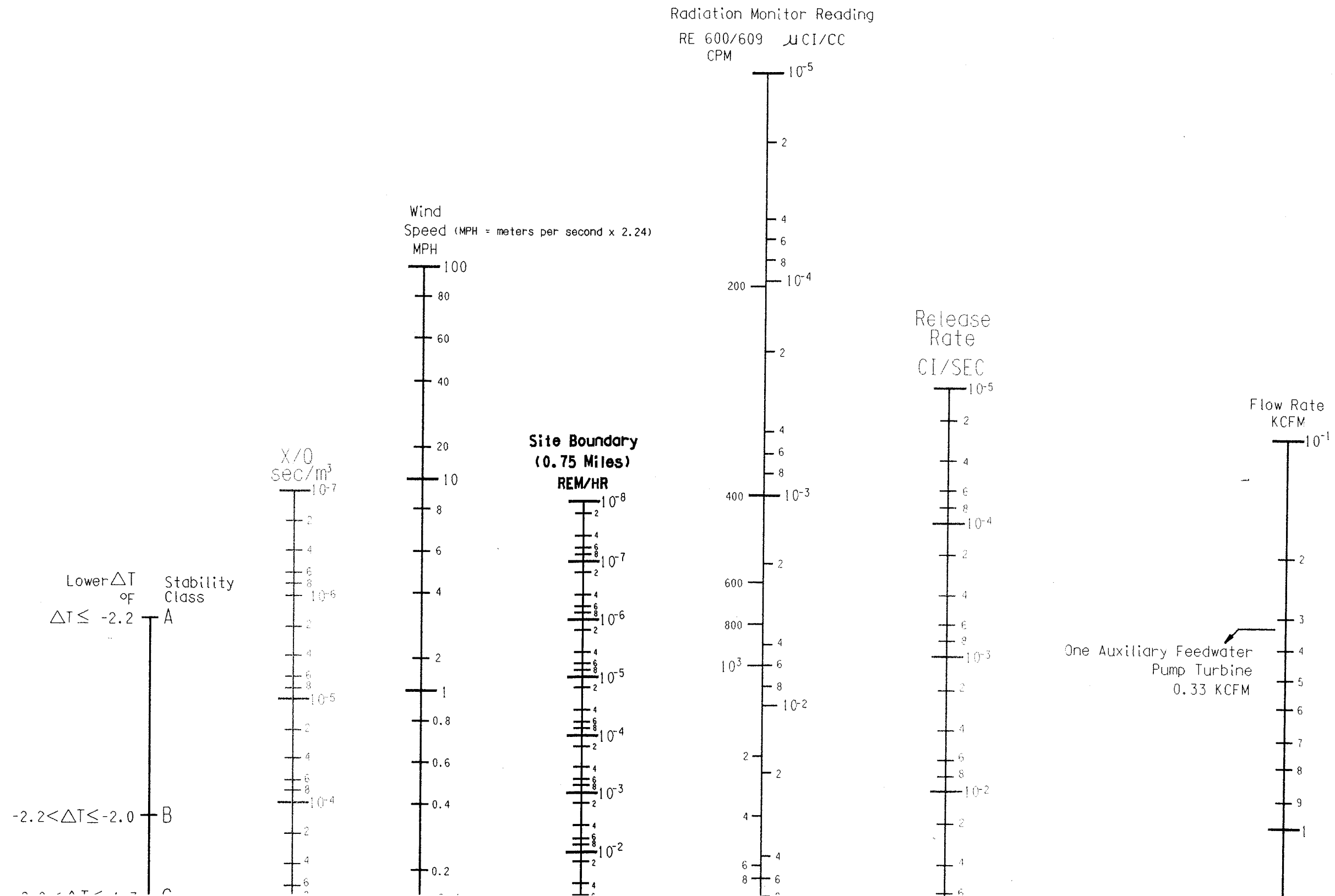
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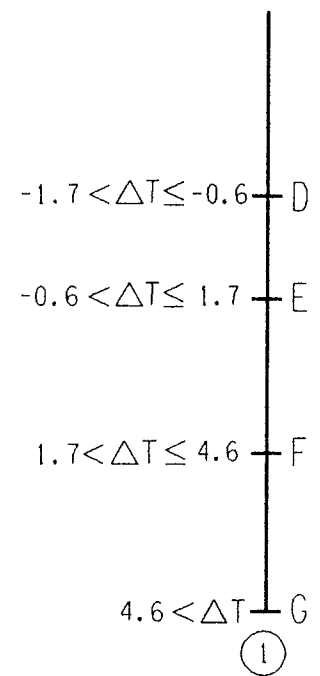
---

_____  
Evaluator's Signature_____  
Date



# Offsite Dose Assessment Nomogram

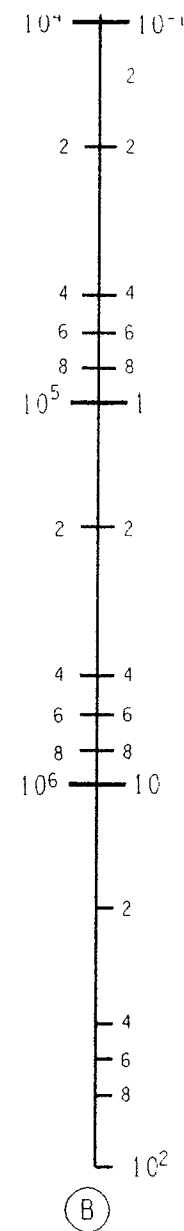
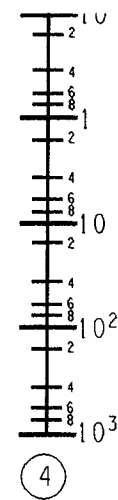
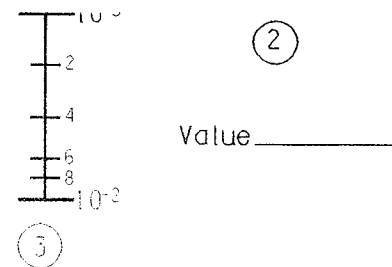




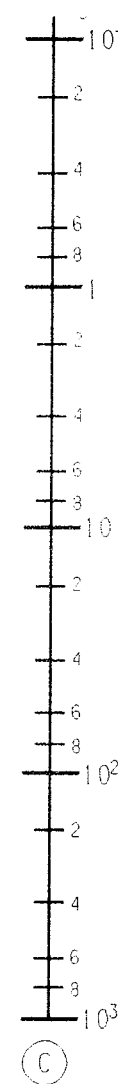
Value _____

Name _____

Date _____ Time _____

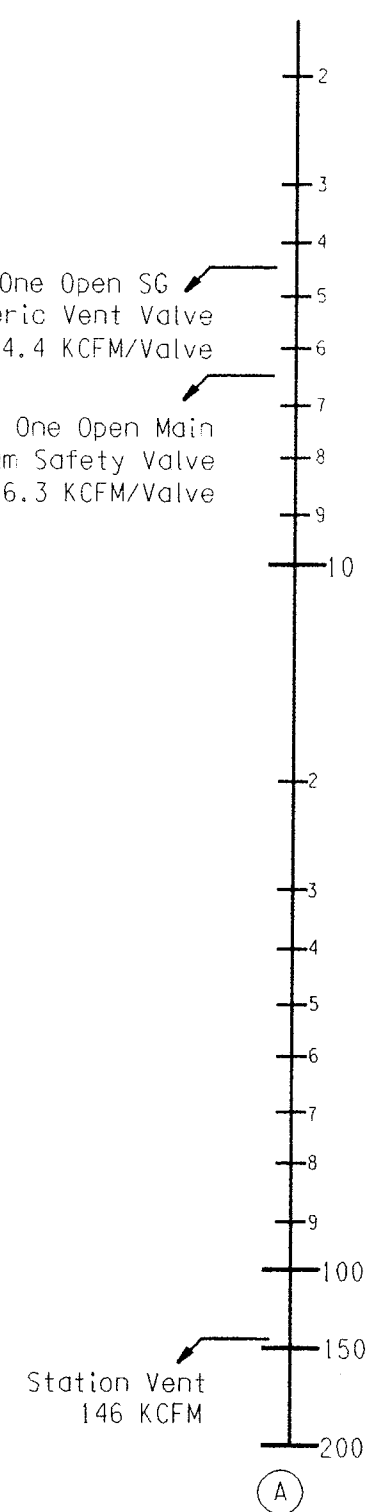


Value _____



One Open SG  
Atmospheric Vent Valve  
4.4 KCFM/Valve

One Open Main  
Steam Safety Valve  
6.3 KCFM/Valve



Station Vent  
146 KCFM

Value _____

### TEDE Rate

SITE BOUNDARY TEDE Rate = _____ REM/HR at 0.75 MILES

SITE BOUNDARY TEDE Rate ÷ 5 = _____ REM/HR at 2 MILES

SITE BOUNDARY TEDE Rate ÷ 15 = _____ REM/HR at 5 MILES

SITE BOUNDARY TEDE Rate ÷ 40 = _____ REM/HR at 10 MILES

Revision 3 January 1994

DBNPS CADD Sched/SKZ724.dgn

724.m plotted by fehr from PEBBLES to Wilma on Wednesday October 20 1999 - 11:51:39 AM EDT