Admin JPM
RO A1.1

Facility: Davis-Besse **Task No:** 115-016-01-0100

Task Title: Manually Calculate a Shutdown Value

K/A Reference: 2.1.37 (4.3) **Job Performance Measure No**: RO A1.1 (JPM 259)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Manually Calculate a Shutdown Value between -6.5 and -7.5 %ΔK/K

Required Materials:
DB-NE-06202, Reactivity Balance Calculations Rev 10
DB-NE-06201, Reactor Operator Curve Book Procedure Rev 15
Straight edge, Calculator

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
No

Alternate Path:
No

Validation Time:
29 minutes

EVALUATOR COPY

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: 60 EFPD
Xenon: No Xenon
Boron Conc: 1875 ppmB
Tave: 520°F
APSRs at 29.5%
Control Rod Group 1 at 100%
The Reactor Engineer reports values for the following:
Transient poison worth is -1.5% ΔK/K
Correction factor for boron 10 depletion is 0.96
Reactivity Anomaly is zero.

INITIATING CUES:

The Unit Supervisor directs you to manually calculate a shutdown value per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book.

(Provide examinee a copy of DB-NE-06202 and DB-NE-06201)

CANDIDATE COPY

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: 60 EFPD
Xenon: No Xenon
Boron Conc: 1875 ppmB
Tave: 520°F
APSRs at 29.5%
Control Rod Group 1 at 100%
The Reactor Engineer reports values for the following:
Transient poison worth is -1.5% ΔK/K
Correction factor for boron 10 depletion is 0.96
Reactivity Anomaly is zero.

INITIATING CUES:

The Unit Supervisor directs you to manually calculate a shutdown value per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book.

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 required unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Locate correct procedure section.

   STANDARD: Identifies Section 9 and Attachment 5 of DB-NE-06202, Reactivity Balance Calculations, as the correct section/attachment and enters the data from the initial conditions.

   CUE: **None**

SAT UNSAT

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

   STANDARD: From Figure 2, determine value of 12.1 to 12.2 %ΔK/K and enter this value on Attachment 5.

   COMMENT: Actual value is 12.13 %ΔK/K.

   CUE: **None.**

SAT UNSAT

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

STANDARD: From Figure 3, determine value Boron Worth %ΔK/K for boron based on B10 correction factor of 0.96.

Multiply RCS boron by correction factor and by uncertainty, 1875 x 0.96 x 0.99 = 1782 ppm B (ROCB)

From Figure 4 determine value of 0.997 to 0.999 for the BCF.

From Figure 3 determine ρ(BBOL). Value should be between -12.15 and -12.25%ΔK/K.

Multiply these two values to obtain between -12.11 and -12.24 %ΔK/K.

COMMENT: Actual values: Boron is -12.22 %ΔK/K, BCF is 0.9978 and total boron reactivity worth is –12.193 %ΔK/K.

CUE: **None.**

SAT UNSAT

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

STANDARD: Determine from initial conditions (-1.5 %ΔK/K).

CUE: **None.**

SAT UNSAT

5. PERFORMANCE STEP: Determine the reactivity worth due to excess Pu-239.

STANDARD: From Figure 20B, determine value of 0.1465 to 0.1475 %ΔK/K for maximum excess Pu-239 worth.

COMMENT: Actual value: 0.1469 %ΔK/K.

CUE: **None.**

SAT UNSAT

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

   STANDARD: From Figure 12, determine value of -0.0075 to -0.0085 %ΔK/K/°F for temperature coefficient.

   ΔT = 520 – 532 = -12

   Multiply these two values to obtain between 0.09 and 0.102 %ΔK/K.

   COMMENT: Actual values: temperature coefficient is -0.0078 (%ΔK/K)/°F; ΔT is -12°F; temperature reactivity worth is 0.0936 %ΔK/K.

   CUE: **None.**

   SAT UNSAT

7. PERFORMANCE: STEP: Determine Safety Rod worth.
   .....C.....

   STANDARD: From Table 1, determine Safety worth of -2.624 %ΔK/K.

   COMMENT:Actual value is -2.624 %ΔK/K.

   CUE: **None.**

   SAT UNSAT

8. PERFORMANCE STEP: Determine Control Rod 5-7 worth.
   .....C.....

   STANDARD: From Figure 9A, determine Regulating Rod worth of -2.8 to -2.95 %ΔK/K.

   COMMENT:Actual value is -2.877 %ΔK/K.

   CUE: **None.**

   SAT UNSAT

9. PERFORMANCE STEP: Determine Total Rod worth.
.....C.....

STANDARD: Add Safety Rod worth and Control Rod worth. Range from -5.424 to -5.574%ΔK/K

COMMENT:Actual value is -5.501%ΔK/K.

CUE: **None.**

SAT UNSAT

10. PERFORMANCE STEP: Determine APSR worth.

STANDARD: From Figure 11A, determine APSR worth of -0.084 to -0.090 %ΔK/K.

COMMENT:Actual value is -0.085 %ΔK/K.

CUE: **None.**

SAT UNSAT

11. PERFORMANCE STEP: Determine reactivity anomaly worth.

STANDARD: Determine zero from Initial Conditions.

CUE: **None.**

SAT UNSAT

12. PERFORMANCE STEP: Determine the value for shutdown value.
.....C.....

STANDARD: Determine that shutdown value is a value between -6.70 and -7.10%ΔK/K.

COMMENT: Actual value is -6.9085 %ΔK/K.

CUE: **None.**

SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by examinee). See next page for Answer Key.

END TIME: _____

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

Page 1 of 2

ANSWER KEY

EFPD=__**60**____ CF(B10) =_**0.96**__ B(RCS)=_**1875**_ppmB Tave=__**520**_°F

Rod Index=__**0**___RI APSR=_**29.5**__%wd Data: Date_**today**_ Time__**now**_

Is Control Rod Group 1 withdrawn? _____No _√___Yes

Use the **critical reference condition** for all data.
This calculation is valid only with the reactor subcritical and Tave ≥ 500°F.
If a stuck rod exists contact a Reactor Engineer.

Shutdown Value (SDV)

12.1-12.2	**(-)12.11-(-)12.24**	**-1.5**	**0.1469**	**0.0936**	**(-)5.424-(-)5.574**	**(-)0.085**	**0**	=	**(-)6.70 - (-)7.10**%Δk/k
ρ (fuel)	ρ (boron)	ρ (tp)	ρ (Pu-max)	ρ (temp)	ρ (CRG 1-7)	ρ (APSR)	ρ (anom)		SDV

ρ(fuel) is fuel Worth from Figure 2 based on EFPD

ρ(boron) is Boron Worth = __**-12.22**____ x __**0.9978**___ = __**-12.193**___%Δk/k
ρ (BBOL) CF(FBU) ρ (boron)

Where:

ρ(BBOL) is Boron Worth at Beginning of Life from Figure 3 based on B(ROCB) (Critical curve)

__**1875**___ x __**0.96**___ x (1 - .01) = __**1782**___ppmB
B(RCS) CF(B10) B(ROCB)

Where: .01 is the Boron Concentration Measurement Uncertainty

(1 - .01) is the Boron Concentration Measurement Correction Factor

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

ρ(tp) is Transient Poison Worth from START program for time of data

ρ (Pu-max) is Maximum Excess Pu-239 Worth from Figure 20B based on EFPD

ρ(temp) is Temperature Reactivity = _**-0.0078**__ x __**-12**___ = _**0.0936**___%Δk/k
α_T ΔT ρ (temp)

Where:

α_T is Temperature Coefficient from Figure 12 based on EFPD and B(ROCB)

ΔT = Tave - 532°F

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

ANSWER KEY

ρ (CRG 1-7) is Control Rod Groups 1-7 Worth = **-2.624** (ρ (CRG 1-4)) + **-2.877** (ρ (CRG 5-7)) = **-5.501** (ρ (CRG 1-7)) %Δk/k

Where:

ρ(CRG 1-4) is Safety Rod Worth from Table 1 of ROCB based on Control Rod Group 1 position

ρ(CRG 5-7) is Control Rod Groups 5-7 Worth from Figure 9* based on EFPD, ρ(tp), and Rod Index

ρ(APSR) is APSR Worth from Figure 11A based on EFPD and APSR position

ρ(anom) is Reactivity Worth of HFP Anomaly from the Reactor Operating Guidance (For conservatism, a value of 0 may be used in place of a negative HFP anomaly for calculations of Shutdown Value. See Step 4.2.8.)

* Use Figure 9A if the absolute value of ρ(tp) < 2.0%Δk/k.
Use Figure 9B if the absolute value of ρ(tp) ≥ 2.0%Δk/k.

Calculated by **Candidate** Date **Today** Time **Now**

Checked by _____ Date _____

Admin JPM
RO A1.2

Facility: Davis-Besse **Task No:** 115-033-01-0100

Task Title: Perform 1/M Plot

K/A Reference: 2.1.43 (4.1) **Job Performance Measure No**: RO A1.2 (JPM 276)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Perform the calculations and 1/M Plot and recommend no further rod withdrawal

Required Materials:
DB-OP-06912, Approach to Criticality Rev 19
Straight edge, Calculator

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
No

Alternate Path:
No

Validation Time:
15 minutes

EVALUATOR COPY

INITIAL CONDITIONS:
The Plant is in Mode 2.
A reactor startup is in progress.
Group 1-4 rods are withdrawn
Regulating Rods are pulled to 100 index

INITIATION CUE:
The Shift Manager directs you to perform a peer check of the Reactor Engineer performing the 1/M Plot by performing a separate 1/M Plot using the Source Range count rate data provided on Attachment 1 of DB-OP-06912, Approach to Criticality. Compare the 1/M data with the predicted ECP data and make a recommendation for further rod withdrawal.

Document recommendation below.

(Hand Candidate a copy of DB-OP-06912, Approach to Criticality, Calculator and a Straight Edge)

CANDIDATE COPY

INITIAL CONDITIONS:
The Plant is in Mode 2.
A reactor startup is in progress.
Group 1-4 rods are withdrawn
Regulating Rods are pulled to 100 index

INITIATION CUE:
The Shift Manager directs you to perform a peer check of the Reactor Engineer performing the 1/M Plot by performing a separate 1/M Plot using the Source Range count rate data provided on Attachment 1 of DB-OP-06912, Approach to Criticality. Compare the 1/M data with the predicted ECP data and make a recommendation for further rod withdrawal.

Document recommendation below:

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 required unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Refer to data on Attachment 1

   STANDARD: Refer to data on Attachment 1 for count rate data

   CUE: **None**

SAT UNSAT

2. PERFORMANCE STEP: Plots data SR data on 1/M Plot
   C

   STANDARD: Evaluates count rate data on attachment 1 and plots this data on the 1/M Plot for 25, 50, 75, and 100 Rod Index

   COMMENTS: 1/M points are critical
   See attached answer key for 1/M plot values
   Predicted Critical Positions on Answer Key are not critical
   Candidate may apply Note 11 on page 34 of DB-OP-06912 which would average the 4 1/M points while the answer key only uses last two 1/M points

   CUE: **None**

SAT UNSAT

3. PERFORMANCE STEP: Evaluate 1/M Plot data
   C

   STANDARD: Determines that the 1/M Plot predicts criticality before reaching the Lower Rod Index limit of the ECP listed as 121.7 (- 0.5%Δk/k)

   CUE: **None – Verify that the candidate makes the recommendation for no further rod withdrawal or ask a follow-up question.**

SAT UNSAT

4. PERFORMANCE STEP: **C** Notify SRO that the 1/M Plot predicts criticality before reaching the Lower Rod Index limit of the ECP and recommend no further rod withdrawal.

STANDARD: Notify SRO that the 1/M Plot predicts criticality before reaching the Lower Rod Index limit of the ECP and recommend no further rod withdrawal.

CUE: **None**

SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by examinee). See next page for Answer Key.

END TIME: _____

Admin JPM
RO-A2

Facility: Davis-Besse **Task No:** 119-016-03-0100

Task Title: Review a safety clearance for CC210 with eSOMS unavailable

K/A Reference: 2.2.13 (4.1) **Job Performance Measure No**: RO-A2 (JPM-302)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Review clearance and identify errors

Required Materials:
NOP-OP-1001, Clearance/Tagging Program, Rev 24
NOBP-OP-1001, Manual Clearance Generation, Rev 4
Forms NOP-OP-1001-07, Rev 5 and NOP-OP-1001-09, Rev 2
Operations Schematic, OS-21, SH2 (Component Cooling Water System)

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task: No

Alternate Path: No

Validation Time: 16 minutes

EXAMINER COPY

INITIAL CONDITIONS:
The plant is currently operating at 100%.

eSOMS is currently out of service and return to service is indeterminate.

CC211, CCW to Make-Up Pump Lube Oil Cooler 2 Supply Header Drain, is leaking and requires replacement.

INITIATION CUE:
A manual clearance has been generated. The Shift Manager directs you review the copy of manual clearance per NOBP-OP-1001, step 4.1.6 for tagging points (4.1.6.1), tag type (4.1.6.5), placement configuration (4.1.6.6) and placement sequence (4.1.6.7) only. An SRO will complete the formal review and has the original clearance package including preparation checklist and prepared tags. Review of the tags is not required.

Return to Shift Manger with concurrence or list any deficiencies identified below on this sheet.

(Provide Candidate a copy of NOP-OP-1001 Clearance Tagging Program, NOBP-OP-1001, Manual Clearance Generation, and copies of the Clearance Package Form NOP-OP-1001-07, Form NOP-OP-1001-09 and OS-21 SH 2, Component Cooling Water)

CANDIDATE COPY

INITIAL CONDITIONS:
The plant is currently operating at 100%.

eSOMS is currently out of service and return to service is indeterminate.

CC211, CCW to Make-Up Pump Lube Oil Cooler 2 Supply Header Drain, is leaking and requires replacement.

INITIATION CUE:
A manual clearance has been generated. The Shift Manager directs you review the copy of manual clearance per NOBP-OP-1001, step 4.1.6 for tagging points (4.1.6.1), tag type (4.1.6.5), placement configuration (4.1.6.6) and placement sequence (4.1.6.7) only. An SRO will complete the formal review and has the original clearance package including preparation checklist and prepared tags. Review of the tags is not required.

Return to Shift Manger with concurrence or list any deficiencies identified below on this sheet.

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: Review provided material

   STANDARD: Reviews provided material

   CUE: **(Provide Candidate a copy of NOP-OP-1001 Clearance Tagging Program, NOBP-OP-1001, Manual Clearance Generation, and copies of the Clearance Package Form NOP-OP-1001-07, Form NOP-OP-1001-09 and OS-21 SH 2, Component Cooling Water)**

   _____
   SAT UNSAT

2. PERFORMANCE STEP: Review Manual Clearance Tag List, NOP-OP-1001-9

   STANDARD: Identifies Makeup Pump 2 should be protected since lube oil cooling will be isolated

   COMMENT: **Candidate determination of Makeup Pump method of protection is not required for the purpose of this JPM**

   Step sequence not required for this JPM

   CUE: **None**

   _____
   SAT UNSAT

3. PERFORMANCE STEP: Review Manual Clearance Tag List, NOP-OP-1001-9
   .....C.....

   STANDARD: Identifies CC211 hang sequence is out of order and should not be opened until boundary is established

   COMMENT:

   CUE: **None**

   _____
   SAT UNSAT

4. PERFORMANCE STEP: Review Manual Clearance Tag List, NOP-OP-1001-9
.....C.....

   STANDARD: Identifies CC211 should not have a tag since it will be removed from system

   CUE: **None**

_____
SAT UNSAT

5. PERFORMANCE STEP: Review Manual Clearance Tag List, NOP-OP-1001-9
.....C.....

   STANDARD: Identifies CC221 is incorrect and should be CC212

   CUE: **None**

_____
SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by the examinee)

_____
END TIME

MANUAL CLEARANCE GENERATION

Effective Date: **10/10/12**

Approved: Scott Plymale 9-26-12
Program Manager Date

TABLE OF CONTENTS

1.0 PURPOSE

This document contains information, practices, and detailed guidance on how to generate a Manual Clearance if the computer program is not available. All program requirements of NOP-OP-1001 Clearance/Tagging Program remain applicable.

2.0 SCOPE

2.1 Applicability

This NOBP is applicable to all FENOC employees and adherence is mandatory.

3.0 DEFINITIONS

Definitions used within this business practice are contained in NOP-OP-1001, Clearance/Tagging Program.

4.0 DETAILS

4.1 Manual Clearance Generation

This section provides guidance for generation of Clearances when the clearance database is unavailable.

NOTE
Steps and actions within NOP-OP-1001, Clearance/Tagging Program, that are specific to the computer program and not applicable to this manual clearance process will not be performed.

4.1.1 The newly created Number will be logged into NOP-OP-1001-08, Manual Clearance Tracking Index.

4.1.3 For the duration that the clearance database is unavailable, a temporary Manual Clearance numbering format will be Unit and Plant (UBV, DB, PY)-SYS-QQQ, where;

- U – Unit number (1 or 2).
- BV (DB,PY) – Designation at which FENOC plant the Clearance will used.
- SYS – System designation (i.e. 06, 016-01, B33, etc…).
- QQQ – Sequential Number (Sequential for ALL Clearances, no matter which cycle the Clearance will be placed in).

4.1.4 Document the following on NOP-OP-1001-07, Manual Clearance Coversheet:

1. Manual Clearance number.

2. Date and Time

3. Equipment ID / Asset Number.

4. Description/Reason for the Clearance (Brief description of the work to be performed).

5. Placement Notes – Procedures and Conditions required to establish the Clearance and create a safe work environment (i.e. Venting / draining requirements), Referenced prints can be placed in this field.

6. Cautions – Potential hazards that may be involved during the Clearance and / or work under the Clearance. Also include any special conditions / considerations that should be considered while the Clearance is active (relates to in the electronic database).

7. Completion Notes – Conditions that should be established / verified prior to the removal of tags, or the directions that should be followed while removal is progressing.

8. Order Number/FLOC/Description – Record the work document number (Order, procedure, test) and the equipment being removed from service by Functional Location alpha-numeric number and the noun name.

    - ONLY ONE Work Order shall be placed on the Manual Clearance, a separate Clearance for each Work Order shall be generated

4.1.5 The following data will be used when the clearance database returns to service and an electronic clearance is generated to capture the information.

Manual Clearance Tracking Index – Transfer clearance number, and reason from the Clearance Cover Sheet to NOP-OP-1001-08, Manual Clearance Tracking Index. Fill in the remaining information as directed.

4.1.6 Fill out the following appropriate data on NOP-OP-1001-09, Manual Clearance Tag List.

1. Equipment ID – Enter the component Identifier for each component to tag. IF the component Identifier is not known, THEN insert a component number and amplify the tag point via notes or Equipment Description.

2. Equipment Description – Enter the equipment noun identifier name.

3. Equipment Location – Enter the Location that the tag will be hung.

4. Tag # - Sequential Numbering of the Tags associated with this Clearance.

5. Tag Type – D for Danger Tags, T for Test Tags, NT for No Tag points, RT for Restoration Points, G for Ground in Place Tag, or AGT for Additional Guidance Tag.

6 Placement Configuration – Enter the desired positioning of the component.

7. Hang Order – enter the desired order of hanging the tags. Enter the number 1 for all the tags that are desired to be hung first, 2 for all those that are hung second, 3 for all those hung third and so on.

8. Restoration Configuration – Enter the desired positioning of the component for restoration.

9. Clear Order – enter the desired order of removing the tags. Enter the number 1 for all the tags that are desired to be cleared first, 2 for all those that are cleared second, 3 for all those cleared third and so on.

4.1.7 Fill out the appropriate data on the Tags to be hung. A normal tag from the Tag Printer is used and the data is Hand written onto the White area of the tag. These tags can be hung on a component that already has a Danger Tag hanging, but cannot be “Shared” with other Clearances. The following information should be written onto the tags:

- Clearance Number – same as the Tracking Index, Cover Sheet and Tag List.
- Equipment ID – From the Tag List.
- Equipment Description – From the Tag List.
- Equipment Location – From the Tag List.
- Tag # - this should be added to the end of the “Clearance Number” (see above).
- Placement Configuration - From the Tag List.

4.1.8 Verify all data entered correctly and all Clearance Numbers match;

- Tracking Index.
- Clearance Cover Sheet.
- Clearance Tag List.
- Clearance Tags.

4.1.9 Print, Sign, Date, & Time the “Prepared By” Status line on the Cover Sheet and Print, Date, & Time the “Prepared By” line on the Tracking Index.

4.1.10 Forward for review.

4.1.11 The review will be conducted in accordance with the Clearance Review section of NOP-OP-1001, Clearance/Tagging Program.

4.1.12 When the review is complete Print, Sign, Date, & Time the “Reviewed By” Status line on the Cover Sheet and Print, Date, & Time the “Reviewed By” line on the Tracking Index.

4.1.13 The authorization will be conducted in accordance with Authorization per NOP-OP-1001, Clearance/Tagging Program.

4.1.14 To Authorize the Clearance, Print, Sign, Date, & Time the “Approved By” Status line on the Cover Sheet.

4.1.15 Place and verify the tags in accordance with NOP-OP-1001. Placement and verification will be documented NOP-OP-1001-09, Manual Clearance Tag List.

1. 1st Verify – Initial for first placement verification of the tag.

2. 2nd Verify – Initial for second verification of tag placement.

4.1.16 When all tags are hung and verified, the Clearance Authority will Print, Sign, Date, & Time the “Issued for Work by” Status line on the Cover Sheet.

4.1.17 The Clearance Holder acceptance will be conducted in accordance with Clearance Holder Sign On per NOP-OP-1001, Clearance/Tagging Program. However, on Manual Clearances, only one Clearance Holder will be permitted for each Clearance. To accept the Clearance, the Clearance Holder will Print, Sign, Date, & Time the “Clearance Holder Acceptance” line on the Cover Sheet.

4.1.18 All Workers will perform the Workers Sign On section of NOP-OP-1001, Clearance/Tagging Program and sign on NOP-OP-1001-06, Clearance Sign On And Sign Off Sheet.

4.1.19 After completion of work being performed under the Manual Clearance and all Workers have signed off NOP-OP-1001-06, Clearance Sign On And Sign Off Sheet, the Clearance Holder will Print, Sign, Date, & Time the “Clearance Holder Release” line on the Cover Sheet.

4.1.20 Authorize removal of the clearance in accordance with Clearance Restoration Review and Authorizing Removal per NOP-OP-1001, Clearance/Tagging Program. Print, Sign, Date, & Time the “Removal Authorized By” Status line on the Cover Sheet.

4.1.21 Tag removal and verification will be in accordance with Tag Removal and Verification of Tag Removal section of NOP-OP-1001, Clearance/Tagging Program.

a. 1st Remove – Initial for first removal verification of the tag.

b. 2nd Remove – Initial for second verification of tag removal.

c. Notes – enter any notes associated with the particular tagging of the component.

4.1.22 When all tags are removed and verified, the Clearance Authority will Print, Sign, Date, & Time the “Clearance Closed by” Status line on the Cover Sheet.

4.1.23 When the computer database is available, transfer all of the data from the Manual Clearance Tracking Index to the computer database for all closed Manual Clearances.

4.1.24 Record the eSOMS Generated Number and the name of the person who transferred the data on the Manual Clearance Tracking Index.

4.1.25 Any Manual Clearance that is not closed when the computer database is available must be closed as a Manual Clearance in accordance with this Business Practice.

4.1.26 All Clearances shall be transferred to the computer database when they are closed and the computer is available.

5.0 RECORDS

All manually generated Clearance forms shall be maintained as required by their classification in NOP-OP-1001, Clearance/Tagging Program.

6.0 REFERENCES

6.1 Discretionary

None

6.2 Obligations

NOP-OP-1001, Clearance/Tagging Program

7.0 SCOPE OF REVISION

All changes made per CA-2012-05794-2.

1. At 4.1.1 added new note describing that steps applicable to NOP-OP-1001 and the computer program are not performed in the manual generation process.
2. At 4.1.6.5 added Tag Type G for for Ground in Place Tag.
3. At 4.1.13 removed ”The authorization will be documented on the cover sheet.”
4. At 4.1.14 added new step “To Authorize the Clearance, Print, Sign, Date, & Time the “Approved By” Status line on the Cover Sheet.
5. At 4.1.17 clarified Clearance Holder Sign On.
6. At 4.1.18 and 4.1.20 clarified wording to correspond with procedure sections of NOP-OP-1001.
7. At 4.1.19 steps were combined for clarity.
8. At 4.1.24 changed NOMS to eSOMS.

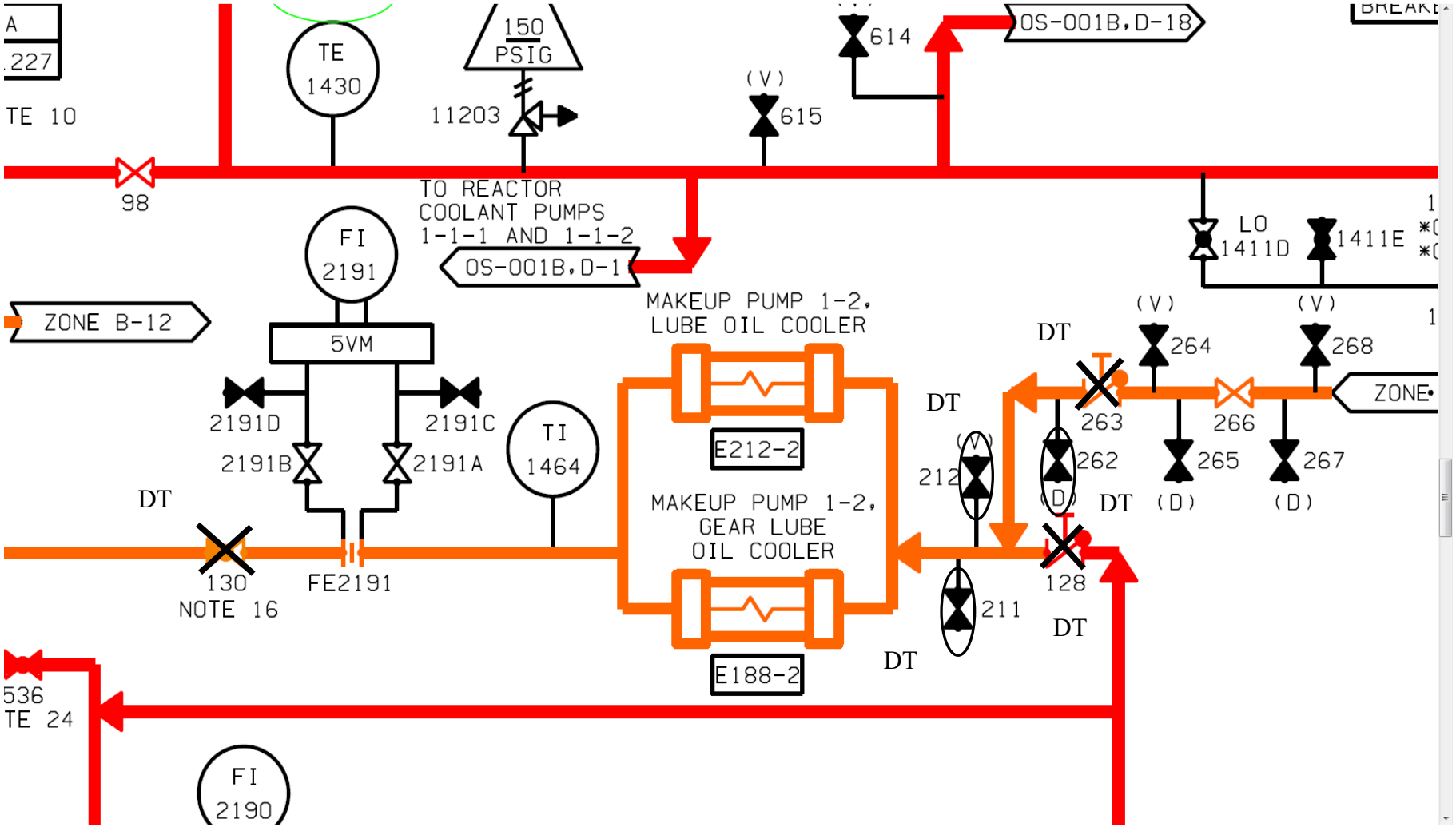
Manual Clearance Tag List

NOP-OP-1001-09 Rev. 02

Sheet 1 Of 1

CLEARANCE No. DB 016-01-001

Equipment ID	Equipment Description	Equipment Location	Tag #	Tag Type	Placement Configuration	Hang order	1st Verify	2nd Verify	Restoration Configuration	Clear Order	1st Remove	2nd Remove	Notes
CC128	MUP 2 CCW Inlet Stop Check to Lube Oil Clr	MUP Pmp RM	1	D	CLOSED	1			OPEN	2			
CC263	CCW Essential Line 2 to MUP 2 Supply Stop Check	DH Cooler Rm	2	D	CLOSED	1			OPEN	2			
CC130	MUP 2 CCW Outlet from Lube Oil Clr	MUP Pmp RM	3	D	CLOSED	2			Throttled	3			
CC211	CCW to MUP Lube Oil Clr 2 Supply Hdr Drain	MUP Pmp RM	4	D	OPEN	2			CLOSED	1			
CC221	CCW to MUP Lube Oil Clr 2 Supply Hdr Vent	MUP Pmp RM	5	D	OPEN	3			CLOSED	1			
CC262	CCW Essential Line 2 to MUP 2 Supply Header Drain	DH Cooler Rm	6	D	OPEN	3			CLOSED	1			


TE 10
98
TE 1430
150 PSIG
11203
(V) 615
614
OS-001B, D-18
TO REACTOR COOLANT PUMPS 1-1-1 AND 1-1-2
OS-001B, D-1
LO 1411D
1411E
FI 2191
ZONE B-12
5VM
2191D
2191C
2191B
2191A
TI 1464
DT
130 NOTE 16
FE2191
MAKEUP PUMP 1-2, LUBE OIL COOLER
E212-2
MAKEUP PUMP 1-2, GEAR LUBE OIL COOLER
E188-2
212
211
DT
263
262
264
265
266
267
268
(V)
(D)
128
ZONE
536
TE 24
FI 2190

ANSWER KEY

Manual Clearance Tag List

NOP-OP-1001-09 Rev. 02

Sheet 1 Of 1

CLEARANCE No. DB 016-01-001

Equipment ID	Equipment Description	Equipment Location	Tag #	Tag Type	Placement Configuration	Hang order	1st Verify	2nd Verify	Restoration Configuration	Clear Order	1st Remove	2nd Remove	Notes
CC128	MUP 2 CCW Inlet Stop Check to Lube Oil Clr	MUP Pmp RM	1	D	CLOSED	1			OPEN	2			
CC263	CCW Essential Line 2 to MUP 2 Supply Stop Check	DH Cooler Rm	2	D	CLOSED	1			OPEN	2			
CC130	MUP 2 CCW Outlet from Lube Oil Clr	MUP Pmp RM	3	D	CLOSED	2			Throttled	3			
CC211	CCW to MUP Lube Oil Clr 2 Supply Hdr Drain	MUP Pmp RM	4	NT	OPEN	3			CLOSED	1			
CC212	CCW to MUP Lube Oil Clr 2 Supply Hdr Vent	MUP Pmp RM	5	D	OPEN	3			CLOSED	1			
CC262	CCW Essential Line 2 to MUP 2 Supply Header Drain	DH Cooler Rm	6	D	OPEN	3			CLOSED	1			

Admin JPM
RO A3

Facility: Davis-Besse **Task No:** 115-035-01-0100

Task Title: Stay Time Calculation

K/A Reference: 2.3.7 (3.5) **Job Performance Measure No**: RO A3 (JPM New)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Determine the total dose received and the time required to receive an EAD Dose Alarm.

Required Materials:
RAD Pro Survey Map DB-M-2018-TRG
Calculator

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
No

Alternate Path:
No

Validation Time:
20 minutes

EVALUATOR COPY

INITIAL CONDITIONS:
The plant is in procedure DB-OP-02527 Loss of Decay Heat Removal

- Refer to the Decay Heat Pump area Rad Pro Survey Map.
- You are to stage yourself inside the radiologically controlled area where you can minimize your dose while awaiting directions. You are to remain in an area identified on the survey map with the lowest possible dose during the wait period.
- Your task will be to vent Decay Heat Pump 2 using vent valve DH56, DH PUMP 2 CASING VENT
- Your RWP has the following limits:
  - Dose Rate Alarm = 75 mrem/hr
  - Dose Alarm = 40 mrem

Aux Building 545 ECCS Room 2 is posted as a Radiation Area

Time Line:
0800 – You enter the Aux Building 545 ECCS Room 2 room
0830 – You are directed to start venting Decay Heat Pump 2
0855 – Venting complete. You immediately exit the room and report back to the Control Room.

INITIATING CUE:
Based upon the above timeline, the information from your RWP and the Aux Building 545 ECCS Room 2 survey map:

1. Determine the total amount of dose that was received from room entry to exit. Use the highest potential dose rate in the area of the pump in determining your dose for the actual venting portion of the entry.
2. Assuming no dose was received until you entered the Aux Building 545 ECCS Room 2, determine the MAXIMUM time (including the wait time) you could take to vent the Decay Heat Pump 2 until you would receive an EAD Dose Alarm.

You do not have to include any dose received while transiting from the waiting area through the room to and from the pump.

(Provide examinee a copy of Survey Map DB-M-2018-TRG)

CANDIDATE COPY

INITIAL CONDITIONS:
The plant is in procedure DB-OP-02527 Loss of Decay Heat Removal

- Refer to the Decay Heat Pump area Rad Pro Survey Map.
- You are to stage yourself inside the radiologically controlled area where you can minimize your dose while awaiting directions. You are to remain in an area identified on the survey map with the lowest possible dose during the wait period.
- Your task will be to vent Decay Heat Pump 2 using vent valve DH56, DH PUMP 2 CASING VENT
- Your RWP has the following limits:
  - Dose Rate Alarm = 75 mrem/hr
  - Dose Alarm = 40 mrem

Aux Building 545 ECCS Room 2 is posted as a Radiation Area

Time Line:
0800 – You enter the Aux Building 545 ECCS Room 2 room
0830 – You are directed to start venting Decay Heat Pump 2
0855 – Venting complete. You immediately exit the room and report back to the Control Room.

INITIATING CUE:
Based upon the above timeline, the information from your RWP and the Aux Building 545 ECCS Room 2 survey map:

1. Determine the total amount of dose that was received from room entry to exit. Use the highest potential dose rate in the area of the pump in determining your dose for the actual venting portion of the entry.
2. Assuming no dose was received until you entered the Aux Building 545 ECCS Room 2, determine the MAXIMUM time (including the wait time) you could take to vent the Decay Heat Pump 2 until you would receive an EAD Dose Alarm.

You do not have to include any dose received while transiting from the waiting area through the room to and from the pump.

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 required unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Determine the dose that will be received while waiting in the lowest dose waiting area in the radiologically controlled area.

   STANDARD: Calculates the dose received for the duration of the time in the low dose area.

   Based on a 30 minute wait at the area with a dose rate of 5 mrem/hr:

   Low Dose Wait Area Dose: 5 mrem/hr X 0.5 hr = 2.5 mrem

   COMMENT: Acceptable range is 2.4 to 2.6 mrem

   CUE: **None**

   SAT UNSAT

2. PERFORMANCE STEP: Determine the dose that will be received while venting the pump. **C**

   STANDARD: Calculates the dose received for the duration of the time venting the pump. Per the Survey Map location DR10 has the highest dose at 50 mrem/hr.

   Based on a 25 minute task duration at the pump with a dose rate of 50 mrem/hr:

   Pump Venting Dose: 50 mrem/hr X (25/60) hr = 20.83 mrem

   COMMENT: Acceptable range is 20 to 21 mrem.

   CUE: **None**

   SAT UNSAT

3. PERFORMANCE STEP: Determine the Total dose that will be received while in the area performing the task.

C

STANDARD: Calculate the dose received for the duration of the task.

TOTAL Dose: 2.5 mrem + 20.83 mrem = 23.3 mrem

COMMENT: Acceptable range is 22.4 to 23.6 mrem

CUE: **None**

SAT UNSAT

---

4. PERFORMANCE STEP: Determine the maximum time to complete the task before reaching the EAD Dose Alarm setpoint.

C

STANDARD: Calculates the maximum time until Dose Alarm.

The RWP Dose Alarm setpoint is 40 mrem.

Subtract the low dose waiting area dose from the total allowed:
40 mrem – 2.5 mrem = 37.5 mrem

Vent Time Dose Rate is 50 mrem / hr:
37.5 mrem/ 50 mrem / hr = 0.75 hrs or 45 minutes

TOTAL Time is 45 minutes

COMMENT: Acceptable range is 44 to 46 minutes.

CUE: **None**

SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by examinee)

END TIME: _____

Admin JPM
SRO A1.1

Facility: Davis-Besse **Task No:** 333-014-01-0300

Task Title: Review a Calculated Shutdown Value

K/A Reference: 2.1.37 (4.6) **Job Performance Measure No**: SRO A1.1 (JPM 262)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Reviews and corrects the Shutdown Value calculation to between -1.25%ΔK/K and -1.75%ΔK/K, identify errors in the shutdown value calculation.

Required Materials:
DB-NE-06202, Reactivity Balance Calculations Rev 10
DB-NE-06201, Reactor Operator Curve Book Procedure Rev 15
Straight edge, Calculator

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
No

Alternate Path:
No

Validation Time:
29 minutes

EXAMINER COPY

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:	60 EFPD
Xenon:	No Xenon
Boron Conc:	1035 ppmB
Tave:	520°F
APSRs at	29.5%
Control Rod Group 1	100%

The Reactor Engineer reports values for the following:
Transient poisons is -1.5% ΔK/K
Correction factor for Boron 10 depletion is 0.96
Reactivity Anomaly is zero.

INITIATING CUES:
As the Unit Supervisor review a shutdown value calculation per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book. Identify any discrepancies below.

(Provide examinee completed SDV calculation and DB-NE-06202 and DB-NE-06201)

CANDIDATE COPY

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:	60 EFPD
Xenon:	No Xenon
Boron Conc:	1035 ppmB
Tave:	520°F
APSRs at	29.5%
Control Rod Group 1	100%

The Reactor Engineer reports values for the following:
Transient poisons is -1.5% ΔK/K
Correction factor for Boron 10 depletion is 0.96
Reactivity Anomaly is zero.

INITIATING CUES:
As the Unit Supervisor review a shutdown value calculation per DB-NE-06202, Reactivity Balance Calculations, and DB-NE-06201, Reactor Operator Curve Book. Identify any discrepancies below.

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

Page 1 of 2

EFPD= **60** CF(B10)= **0.96** B(RCS)= **1035** ppmB Tave= **520** °F

Rod Index= **0** RI APSR= **29.5** %wd Data: Date **today** Time **now**

Is Control Rod Group 1 withdrawn? _____No __√___Yes

Use the **critical reference condition** for all data.
This calculation is valid only with the reactor subcritical and Tave ≥ 500°F.
If a stuck rod exists contact a Reactor Engineer.

Shutdown Value (SDV)

12.13 + **-6.89** + **-1.5** + **0.1469** + **-0.1776** + **-6.127** + **-0.085** + **0** = **-2.5027**%Δk/k

ρ (fuel) ρ (boron) ρ (tp) ρ (Pu-max) ρ (temp) ρ (CRG 1-7) ρ (APSR) ρ (anom) SDV

Where:

ρ(fuel) is fuel Worth from Figure 2 based on EFPD

ρ(boron) is Boron Worth = **-6.9** (ρ (BBOL)) x **0.998** (CF(FBU)) = **-6.89** (ρ (boron)) %Δk/k

Where:

ρ(BBOL) is Boron Worth at Beginning of Life from Figure 3 based on B(ROCB) (Critical curve)

1035 (B(RCS)) x **0.96** (CF(B10)) x (1 - .01) = **984** (B(ROCB)) ppmB

Where: .01 is the Boron Concentration Measurement Uncertainty

(1 - .01) is the Boron Concentration Measurement Correction Factor

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

ρ(tp) is Transient Poison Worth from START program for time of data

ρ (Pu-max) is Maximum Excess Pu-239 Worth from Figure 20B based on EFPD

ρ(temp) is Temperature Reactivity = **-0.0148** (α_T) x **-12** (ΔT) = **0.1776** (ρ (temp)) %Δk/k

Where:

α_T is Temperature Coefficient from Figure 12 based on EFPD and B(ROCB)

ΔT = Tave - 532°F

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

Page 2 of 2

ρ (CRG 1-7) is Control Rod Groups 1-7 Worth = **-3.25** (ρ (CRG 1-4)) + **-2.877** (ρ (CRG 5-7)) = **-6.127** (ρ (CRG 1-7)) %Δk/k

Where:

ρ(CRG 1-4) is Safety Rod Worth from Table 1 of ROCB based on Control Rod Group 1 position

ρ(CRG 5-7) is Control Rod Groups 5-7 Worth from Figure 9* based on EFPD, ρ(tp), and Rod Index

ρ(APSR) is APSR Worth from Figure 11A based on EFPD and APSR position

ρ(anom) is Reactivity Worth of HFP Anomaly from the Reactor Operating Guidance (For conservatism, a value of 0 may be used in place of a negative HFP anomaly for calculations of Shutdown Value. See Step 4.2.8.)

* Use Figure 9A if the absolute value of ρ(tp) < 2.0%Δk/k.
Use Figure 9B if the absolute value of ρ(tp) ≥ 2.0%Δk/k.

Calculated by **Candidate** Date **Today** Time **Now**

Checked by _____ Date _____

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 required unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Locate correct procedure section.

   STANDARD: Identifies Section 9 or Attachment 5 of DB-NE-06202, Reactivity Balance Calculations, as the correct section and reviews the data from the initial conditions.

   CUE: **None**

SAT UNSAT

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

   STANDARD: From Figure 2, determine value of 12.1 to 12.2 %ΔK/K and enter this value on Attachment 5.

   COMMENT: Actual value is 12.13 %ΔK/K.

   CUE: **None.**

SAT UNSAT

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

STANDARD: From Figure 3, determine value Boron Worth %ΔK/K for boron based on B10 correction factor of 0.96.

Multiply RCS boron by correction factor and by uncertainty, 1035 x 0.96 x 0.99 = 984 ppmB B(ROCB)

From Figure 4 determine value of 0.997 to 0.999 for the BCF.

From Figure 3 determine ρ(BBOL). Value should be between -6.8 and -7.0%ΔK/K.

Multiply these two values to obtain between -6.78 and -6.99 %ΔK/K.

COMMENT: Actual values: Boron is -6.9 %ΔK/K, BCF is 0.998 and total boron reactivity worth is –6.89 %ΔK/K.

CUE: **None.**

SAT UNSAT

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

STANDARD: Determine from initial conditions (-1.5 %ΔK/K).

CUE: **None.**

SAT UNSAT

5. PERFORMANCE STEP: Determine the reactivity worth due to excess Pu-239.

STANDARD: From Figure 20B, determine value of 0.1465 to 0.1475 %ΔK/K for maximum excess Pu-239 worth.

COMMENT: Actual value: 0.1469 %ΔK/K.

CUE: **None.**

SAT UNSAT

6. PERFORMANCE STEP: Determine the reactivity worth due to temperature.
.....C.....

STANDARD: From Figure 12, determine value of -0.0145 to -0.0155 %ΔK/K/°F for temperature coefficient.

ΔT = 520 – 532 = -12

Multiply these two values to obtain between 0.1740 and 0.1860 %ΔK/K.

COMMENT: Actual values: temperature coefficient is -0.0148 (%ΔK/K)/°F; ΔT is -12°F; temperature reactivity worth is 0.1776 %ΔK/K.

INCORRECT VALUE ENTERED: Incorrect sign results in entering **-**0.1776

CUE: **None.**

SAT UNSAT

7. PERFORMANCE: STEP: Determine Safety Rod worth (Att. 5 page 2 of 2)
.....C.....

STANDARD: From Table 1, determine Safety worth of -2.624 %ΔK/K.

COMMENT:Actual value is -2.624 %ΔK/K.

INCORRECT VALUE ENTERED: Using Group 1-4 inserted value instead of Group 1 withdrawn value results in entering -3.25%ΔK/K.

CUE: **None.**

SAT UNSAT

8. PERFORMANCE STEP: Determine Control Rod 5-7 worth.

STANDARD: From Figure 9A, determine Regulating Rod worth of -2.8 to -2.95 %ΔK/K.

COMMENT:Actual value is -2.877 %ΔK/K.

CUE: **None.**

SAT UNSAT

9. PERFORMANCE STEP: Determine Total Rod worth.
.....C.....

STANDARD: Add Safety Rod worth and Control Rod worth. Range from -5.424 to -5.574 %ΔK/K.

COMMENT: Actual value is -5.501%ΔK/K

INCORRECT VALUE: -6.127 was entered due to using the all Safety Rods inserted value in step 7.

CUE: **None.**

SAT UNSAT

10. PERFORMANCE STEP: Determine APSR worth.

STANDARD: From Figure 11A, determine APSR worth of -0.084 to -0.090 %ΔK/K.

COMMENT:Actual value is -0.085 %ΔK/K.

CUE: **None.**

SAT UNSAT

11. PERFORMANCE STEP: Determine reactivity anomaly worth.

STANDARD: Determine zero from Initial Conditions.

CUE: **None.**

SAT UNSAT

12. PERFORMANCE STEP: Determine the correct value for shutdown value.
.....C.....

STANDARD: Determine that shutdown value is a value between -1.50 and -1.55%ΔK/K.

COMMENT: Actual value is -1.5215 %ΔK/K.

CUE: **None.**

SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by examinee). See next page for Answer Key.

END TIME: _____

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

Page 1 of 2

ANSWER KEY

EFPD= **60** CF(B10)= **0.96** B(RCS)= **1035** ppmB Tave= **520** °F

Rod Index= **0** RI APSR= **29.5** %wd Data: Date **today** Time **now**

Is Control Rod Group 1 withdrawn? _____No __√___Yes

Use the **critical reference condition** for all data.
This calculation is valid only with the reactor subcritical and Tave ≥ 500°F.
If a stuck rod exists contact a Reactor Engineer.

Shutdown Value (SDV)

12.13 + **-6.89** + **-1.5** + **0.1469** + **0.1774 – 0.1860** + **(-)5.424 – (-)5.574** + **0.085** + **0** = **(-)1.50 – (-)1.55** %Δk/k

ρ (fuel) ρ (boron) ρ (tp) ρ (Pu-max) ρ (temp) ρ (CRG 1-7) ρ (APSR) ρ (anom) SDV

Where:

ρ(fuel) is fuel Worth from Figure 2 based on EFPD

ρ(boron) is Boron Worth = **-6.9** (ρ (BBOL)) x **0.998** (CF(FBU)) = **-6.89** (ρ (boron)) %Δk/k

Where:

ρ(BBOL) is Boron Worth at Beginning of Life from Figure 3 based on B(ROCB) (Critical curve)

1035 (B(RCS)) x **0.96** (CF(B10)) x (1 - .01) = **984** (B(ROCB)) ppmB

Where: .01 is the Boron Concentration Measurement Uncertainty

(1 - .01) is the Boron Concentration Measurement Correction Factor

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

ρ(tp) is Transient Poison Worth from START program for time of data

ρ (Pu-max) is Maximum Excess Pu-239 Worth from Figure 20B based on EFPD

ρ(temp) is Temperature Reactivity = **-0.0148** (α_T) x **-12** (ΔT) = **0.1776** (ρ (temp)) %Δk/k

Where:

α_T is Temperature Coefficient from Figure 12 based on EFPD and B(ROCB)

ΔT = Tave - 532°F

ATTACHMENT 5: SHUTDOWN VALUE (SDV) CALCULATION WITH Tave ≥ 500°F - SECTION 9.0

ANSWER KEY

ρ (CRG 1-7) is Control Rod Groups 1-7 Worth = $\frac{\textbf{-2.624}}{\rho\text{ (CRG 1-4)}}$ + $\frac{\textbf{-2.877}}{\rho\text{ (CRG 5-7)}}$ = $\frac{\textbf{(-)5.424 – (-)5.574}\%\Delta k/k}{\rho\text{ (CRG 1-7)}}$

Where:

ρ(CRG 1-4) is Safety Rod Worth from Table 1 of ROCB based on Control Rod Group 1 position

ρ(CRG 5-7) is Control Rod Groups 5-7 Worth from Figure 9* based on EFPD, ρ(tp), and Rod Index

ρ(APSR) is APSR Worth from Figure 11A based on EFPD and APSR position

ρ(anom) is Reactivity Worth of HFP Anomaly from the Reactor Operating Guidance (For conservatism, a value of 0 may be used in place of a negative HFP anomaly for calculations of Shutdown Value. See Step 4.2.8.)

* Use Figure 9A if the absolute value of ρ(tp) < 2.0%Δk/k.
Use Figure 9B if the absolute value of ρ(tp) ≥ 2.0%Δk/k.

Calculated by **Candidate** Date **Today** Time **Now**

Checked by _____ Date _____

ADMIN JPM
SRO A1.2

Facility: Davis-Besse **Task No:** 332-002-02-0300

Task Title: Review DB-OP-03006, Miscellaneous Shift Check

K/A Reference: 2.1.31 (4.3) **Job Performance Measure No**: SRO A1.2

Examinee: _____ **NRC Examiner:** _____

Facility Evaluator: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X__ Simulator ___ Plant ___

Read to the examinee:

Initial Conditions:
The plant is in Mode 1.

Initiating Cue:
You are to review DB-OP-03006, Attachment 1, Miscellaneous Instrument Shift Check and determine if there are any Technical Specification entry requirements and if so, determine the associated actions.

Task Standard:
Identify errors in the performance of DB-OP-03006, Attachment 1, Miscellaneous Instrument Shift Check, and determine Technical Specification entry requirements and associated actions.

Required Materials:
Completed surveillance of DB-OP-03006, Miscellaneous Instrument Shift Check
DB-OP-03006, Miscellaneous Instrument Shift Check
DB-OP-03006, Miscellaneous Instrument Shift Check, Attachment 6 with current data entered
Technical Specifications
Core Operating Limits Report

General References:
None

Time Critical Task: No

Validation Time: 33 minutes

EXAMINER COPY

INITIAL CONDITIONS:
The plant is in Mode 1.

INITIATING CUES:

You are to review DB-OP-03006, Attachment 1, Miscellaneous Instrument Shift Check and determine if there are any Technical Specification entry requirements and if so, determine the associated actions.

(Provide completed surveillance of DB-OP-03006, Miscellaneous Instrument Shift Check including Attachment 6 data, a copy of DB-OP-03006, Miscellaneous Instrument Shift Check, and a copy of Technical Specifications)

CANDIDATE COPY

INITIAL CONDITIONS:
The plant is in Mode 1.

INITIATING CUES:

You are to review DB-OP-03006, Attachment 1, Miscellaneous Instrument Shift Check and determine if there are any Technical Specification entry requirements and if so, determine the associated actions.

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 required unless denoted in the "Comments".

START TIME: _____

---

1. PERFORMANCE STEP: Reviews completed surveillance DB-OP-03006, Miscellaneous Instrument Shift Check.

   STANDARD: Reviews information provided in completed surveillance DB-OP-03006, Miscellaneous Instrument Shift Check.

   SAT UNSAT

---

2. PERFORMANCE STEP: Step 4.2, BWST Level, calculated Maximum Difference should be 2.5 feet not 2.0 feet
   C Should declare LI1525B inoperable and enter TS 3.3.5, Cond. A and place channel in Trip in 1 hour. (TS 3.3.17 may also be referenced for Information Only)

   STANDARD: Should identify that maximum difference in logged should be 2.5 feet not 2.0 feet. Step NOT met, (YES incorrectly circled). Should declare LI1525B inoperable and enter TS 3.3.5 and trip BWST level indicator LI1525B within 1 hour. May refer to TS 3.3.17 but not critical.

   COMMENT: Critical step is to enter TS 3.3.5 Condition A and identify action to place LI1525B in trip within 1 hour.

   CUE: As SM, acknowledge error and continue with surveillance review
   (If necessary) Inform Candidate that computer point L063 is also reading 42.5 feet.

   SAT UNSAT

---

3. PERFORMANCE STEP: Step 4.3, CTMT to Annulus Diff Pressure, Shift Manager should be notified of degraded condition as required by Note a.

   STANDARD: Notifies Shift Manager that CTMT to Annulus Diff Pressure needs to be addressed.

   COMMENT: Not critical, no TS entry.

   CUE: As SRO, acknowledge error and continue with surveillance.

   SAT UNSAT

---

4. PERFORMANCE STEP: Step 4.9, CST Level, levels should be added together.
C

STANDARD: Identifies that Step 4.9, CST Levels were not added together. Notifies shift manager of error.

COMMENT: Not critical since no TS entry.

CUE: As SRO, acknowledge error and continue with surveillance.

SAT UNSAT

---

5. PERFORMANCE STEP: Step 4.18, Missed circling YES for PWR Range flux.

STANDARD: Identifies that Step 4.18 not circled.

CUE: As SRO, acknowledge error and continue with surveillance.

SAT UNSAT

---

6. PERFORMANCE STEP: Step 4.20, Missed RCS Loop flow data entry.
C

STANDARD: Identifies that Step 4.20 data entry is missing.

CUE: As SRO, acknowledge error and (if necessary) provide the following information
FIRC1B is 74 MPPH
FIRC1A is 76 MPPH.

SAT UNSAT

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7. PERFORMANCE STEP: Step 4.2, BWST Level on SFAS Cabinets page 6 of 8, calculated maximum difference in error should be 2.2 feet not 2.0 feet (Similar to BWST level error on page 1 of 8).
C
STANDARD: Informs Shift Manager that BWST Level indicator is out of tolerance. Requires entry into TS 3.3.5, Condition A. Must place channel in trip < 1hr.

CUE: As SRO, acknowledge error and continue with surveillance.

SAT UNSAT

TERMINATING CUES: This JPM is complete. (Terminated by the applicant)

END TIME

Admin JPM
SRO A2

Facility: Davis-Besse **Task No:** 333-040-01-0300

Task Title: Review Shutdown Safety Assessment

K/A Reference: 2.2.18 (3.9) **Job Performance Measure No**: SRO A2 (JPM NEW)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Reviews the provided Defense in Depth Turnover Checklist and identifies the errors in the DID calculations and status indications.

Required Materials:
NOP-OP-1005, Shutdown Defense in Depth, Rev 15
NOP-OP-1005-02 Davis Besse Key Shutdown Defense in Depth Turnover Checklist, Rev 10
NOP-OP-1005-04 Key Shutdown Defense in Depth Function Status, Rev 8
NG-DB-00117, Shutdown Defense in Depth Assessment

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
No

Alternate Path:
No

Validation Time:
24 minutes

EVALUATOR COPY

INITIAL CONDITIONS:

A Refueling Outage is in progress, the core has been offloaded to the Spent Fuel Pool

RCS Temperature is 102 ˚F as indicated on computer point T532

RCS Pressure is 0 PSIG as indicated on computer point P723

Spent Fuel Pool Temperature is 100 ˚F as indicated on computer point T874

Refueling cavity level is 23.5 feet

RCS Boron concentration is 2350 PPM

Train 1 Decay Heat Pump and Cooler is available

Train 2 Decay Heat Pump and Cooler is on clearance

Emergency Diesel Generator 1 is Operable

Emergency Diesel Generator 2 is in Clearance

Station Blackout Diesel Generator is Operable

Startup Transformer X01 is energized

Startup Transformer X02 is not available

Backfeed through the Aux Transformer is not available

All four Off-site power sources are available (Beaver, Lemoyne, Bayshore, Hayes)

There are no Severe Weather warnings or Grid stability issues

Train A Spent Fuel Pool Cooling pump is in service

Train B Spent Fuel Pool Cooling pump is in standby.

Makeup to the Spent Fuel pool is available

INITIATING CUE:

You are to perform the SRO review of the provided Shutdown Safety Defense in Depth Turnover Checklist. The Safety Functions that are identified as "N/A" do not need to be reviewed since the core is offloaded. Use the plant status information provided in the Initial Conditions to support your review.

You do not need to verify the Time to Boiling Calculations, they have been verified as accurate.

Document the results of your review below.

(Provide examinee a copy of NOP-OP-1005, Shutdown Defense in Depth, completed Forms NOP-OP-1005-02 and NOP-OP-1005-04, and NG-DB-00117, Shutdown Defense in Depth Assessment)

CANDIDATE COPY

INITIAL CONDITIONS:

A Refueling Outage is in progress, the core has been offloaded to the Spent Fuel Pool

RCS Temperature is 102 ˚F as indicated on computer point T532

RCS Pressure is 0 PSIG as indicated on computer point P723

Spent Fuel Pool Temperature is 100 ˚F as indicated on computer point T874

Refueling cavity level is 23.5 feet

RCS Boron concentration is 2350 PPM

Train 1 Decay Heat Pump and Cooler is available

Train 2 Decay Heat Pump and Cooler is on clearance

Emergency Diesel Generator 1 is Operable

Emergency Diesel Generator 2 is in Clearance

Station Blackout Diesel Generator is Operable

Startup Transformer X01 is energized

Startup Transformer X02 is not available

Backfeed through the Aux Transformer is not available

All four Off-site power sources are available (Beaver, Lemoyne, Bayshore, Hayes)

There are no Severe Weather warnings or Grid stability issues

Train A Spent Fuel Pool Cooling pump is in service

Train B Spent Fuel Pool Cooling pump is in standby.

Makeup to the Spent Fuel pool is available

INITIATING CUE:

You are to perform the SRO review of the provided Shutdown Safety Defense in Depth Turnover Checklist. The Safety Functions that are identified as “N/A” do not need to be reviewed since the core is offloaded. Use the plant status information provided in the Initial Conditions to support your review.

You do not need to verify the Time to Boiling Calculations, they have been verified as accurate.

Document the results of your review below.

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 required unless denoted in the "Comments".

START TIME: _____

1. PERFORMANCE STEP: Reviews the forms and Attachment 1 and 2 of NG-DG-00117.

   STANDARD: Reviews the provided documents.

   CUE: **None**

   SAT UNSAT

---

2. PERFORMANCE STEP: Identifies that the number of credited EDGs is correct and “2” are credited.

   STANDARD: Determines that EDG 1 and the SBO EDG are available.

   CUE: **None**

   SAT UNSAT

---

3. PERFORMANCE STEP: Identifies that the number of credited Startup Transformers is correct as “1”.

   STANDARD: Recognizes that the X01 Startup Transformer is energized, X02 is denergized.

   CUE: **None**

   SAT UNSAT

---

4. PERFORMANCE STEP: Identifies that the Backfeed is not available through the Aux Transformer so the source is correct and credited as “0”.

   STANDARD: Recognizes that Backfeed is not available.

   CUE: **None**

   SAT UNSAT

---

5. PERFORMANCE STEP: Identifies that the number of credited Offsite Sources is incorrect as “4” it should be “2”.

C

STANDARD: Recognizes the maximum credit for Offsite sources is “2”, not “4”.

CUE: **None**

SAT UNSAT

---

6. PERFORMANCE STEP: Identifies that the No Severe Weather or Grid Stability should be credited as a “1” not a “T” for True.

STANDARD: Recognizes the credit for Weather and Grid should be a “1” not a “T”.

CUE: **None**

SAT UNSAT

---

7. PERFORMANCE STEP: Identifies that Total Status for the Electrical Power Availability should be “6” not “7”.

C

STANDARD: Recognizes the error in calculating the total credit and corrects to be a “6”.

CUE: **None**

SAT UNSAT

---

8. PERFORMANCE STEP: Recognizes that the status for Electrical Power Availability remains Green with “6” sources credited.

STANDARD: Determines that Electrical status remains Green.

CUE: **None**

SAT UNSAT

---

9. PERFORMANCE STEP: Identifies that the number of credited Spent Fuel Pool Cooling trains is correct as “2”.

   STANDARD: Recognizes that SFP cooling has two trains available.

   CUE: **None**

   SAT UNSAT

---

10. PERFORMANCE STEP: Identifies that the number of credited Standby Decay Heat trains is correct as “1” for SFP cooling.

    STANDARD: Recognizes that Decay Heat cooling has one train available.

    CUE: **None**

    SAT UNSAT

---

11. PERFORMANCE STEP: Identifies that the credited Second train of Decay Heat trains is incorrect as “F” should be a “0”.

    STANDARD: Recognizes that Second Decay Heat cooling train is misidentified as a “F” versus a “0”.

    CUE: **None**

    SAT UNSAT

---

12. PERFORMANCE STEP: Identifies that the credited Spent Fuel Pool Makeup is incorrect as “T” should be a “1”.

    STANDARD: Recognizes that Spent Fuel Pool Makeup is misidentified as a “T” versus a “1”.

    CUE: **None**

    SAT UNSAT

---

13. PERFORMANCE STEP: Identifies that Total Status for the Spent Fuel Pool Cooling should be “4” not “3”.

C

STANDARD: Recognizes the error in calculating the total credit and corrects to be a “4”.

CUE: **None**

SAT UNSAT

---

14. PERFORMANCE STEP: Recognizes that the status for Spent Fuel Pool Cooling should be Green and not Yellow with “4” sources credited.

C

STANDARD: Changes the Spent Fuel Pool status to Green.

CUE: **None**

SAT UNSAT

---

15. PERFORMANCE STEP: Recognizes that the Overall Shutdown status is Green not Yellow.

C

STANDARD: Changes the overall status to Green.

CUE: **None**

SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by examinee)

END TIME: _____

KEY SHUTDOWN DEFENSE IN DEPTH FUNCTION STATUS

Date/Time: Today / Now **Mode: Defueled** **Protected Train/Division: Train 1**

Overall Key Shutdown Defense in Depth Function Status (Yellow)

Shutdown Defense in Depth Function	Description	Status
RCS Decay Heat Removal	Not applicable with the Core Offloaded	N/A
RCS Inventory Control	Not applicable with the Core Offloaded	N/A
Power Availability	EDG 1, SBODG, S/U Xfrmr X01, Beaver, Lemoyne, Bayshore, Hayes	Green
Reactivity Control	Not applicable with the Core Offloaded	N/A
Containment Closure	Not applicable with the Core Offloaded	N/A
Spent Fuel Pool Cooling	Spent Fuel pool Cooling Trains 1 & 2, Decay Heat Train 1	Yellow

Green: Full S/D Defense in Depth Yellow: Adequate S/D Defense in Depth

Orange: Marginal S/D Defense in Depth Red: Unacceptable S/D Defense in Depth

RCS Pressure: 0 psig RCS Temp: 102 ˚F RCS Time to Boil: 15 hours

RCS Temp at which Time to Boil less than 60 minutes: 212˚F

Switchyard Work: None Time to Uncover: > 25 hours

SFP Temp: 100 ˚F SFP Time to Boil: 25 hours

Shutdown Defense in Depth Advisor: Ima Did

SRO Peer Review: _____

DAVIS-BESSE KEY SHUTDOWN DEFENSE IN DEPTH TURNOVER CHECKLIST

NOP-OP-1005-02 Rev. 10 **Date/Time:** Today / Now **Mode:** Defueled **Protected DHR Train (s):** 1

Overall Defense In Depth/Plant Status			
Key Shutdown Defense In Depth Functions	**Description**	**# or True = 1 False = 0**	**Status**
Decay Heat Removal Monitored when fuel is in the core	1) Number of OTSGs available with RCS Filled (0 to 2) 2) Number of DHR trains available (0 to 2) 3) Forced "Feed and Bleed" is available (T/F) 4) Gravity "Feed and Bleed" is available (T/F) 5) Time to Boil ≥ 2 Hours (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 1 Red 2 Orange 3 Yellow ≥ 4 Green N/A
Reactor Coolant Inventory Control Monitored when fuel is in the core	1) Number of HPI train flow paths available (0 to 2) 2) Number of MU train flow paths available (0 to 2) 3) BWST Gravity flow path avail. and RCS vented (T/F) 4) CWRT and Pump flow path available (T/F) 5) RCS Water level ≥ 80 in. (T/F) 6) Refueling Canal ≥ 23 ft. (T/F) Maximum Defense in Depth is Yellow when RCS Water level is below flange (except during plenum operations), per NG-DB-00117, Shutdown Defense in Depth Assessment. Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A 6) N/A Total N/A	≤ 1 Red 2 Orange 3 Yellow ≥ 4 Green N/A
Electrical Power Availability	1) Number of Diesel Generators available (0 to 3) 2) Number of Startup Transformers available (0 to 2) 3) Backfeed established through the Aux Transformer (T/F) 4) Number of Off Site Power Sources available (0 to 2) 5) No Severe Weather (Warning) or Degraded Grid (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) 2 2) 1 3) 0 4) 4 5) T Total 7	≤ 3 Red 4 Orange 5 Yellow ≥ 6 Green Green
Reactivity Control Monitored when fuel is in the core	1) ≥2 of 4 source Range NI's available (T/F) 2) Inadvertent Deboration Clearance posted (T/F) 3) Number of Boron Injection Sources (0 to 3) 4) Number of Boron Injection flow Paths (0 to 2) 5) Shut down margin acceptable (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 2 Red 3 Orange 4 Yellow ≥ 5 Green N/A
Containment Closure Monitored when fuel is in the core	1) Number of CAC's available. (0 to 2) 2) Equipment hatch on or CTMT Closure controls established for equipment hatch (T/F) 3) CTMT Closure controls established (T/F) 4) No fuel handling in CTMT in progress (T/F) 5) Time to Boil ≥ 2 Hours (T/F) Min. requirements of NG-DB-00117 Attachment 1? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 0 Red 1 Orange 2 Yellow ≥ 3 Green N/A
Spent Fuel Pool Cooling Monitored when ≥1/3 core is off-loaded	1) No. of Spent Fuel Pool cooling trains available (0 to 2) 2) Standby Decay Heat train is available for SFP (T/F) 3) Second Decay Heat train is available for SFP (T/F) 4) Spent Fuel Pool Makeup is available (T/F) Min. requirements of NG-DB-00117 Attachment 1? (Yes/No) No = Maximum Defense in Depth Orange	1) 2 2) 1 3) F 4) T Total 3	≤ 1Red 2Orange 3Yellow ≥ 4Green Yellow
Overall Shutdown Status	Equivalent to the Key Shutdown Defense in Depth Function with the lowest Defense in Depth status.	N/A	Yellow

Green: Full D-I-D Yellow: Adequate D-I-D Orange: Marginal D-I-D Red: Unacceptable D-I-D

RCS Pressure: 0 psi RCS Temp: 102 °F RCS Time-to-Boil: 15 hours

Switchyard Work: ☐ Y / ☒ N SFP Temp: 100 °F SFP Time-to-Boil: 25 hours

DID Advisor: _____ SRO Peer Check: _____

ANSWER KEY

DAVIS-BESSE KEY SHUTDOWN DEFENSE IN DEPTH TURNOVER CHECKLIST

NOP-OP-1005-02 Rev. 10 **Date/Time:** Today / Now **Mode:** Defueled **Protected DHR Train (s):** 1

Overall Defense In Depth/Plant Status

Key Shutdown Defense In Depth Functions	Description	# or True = 1 False = 0	Status
Decay Heat Removal Monitored when fuel is in the core	1) Number of OTSGs available with RCS Filled (0 to 2) 2) Number of DHR trains available (0 to 2) 3) Forced "Feed and Bleed" is available (T/F) 4) Gravity "Feed and Bleed" is available (T/F) 5) Time to Boil ≥ 2 Hours (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 1 Red 2 Orange 3 Yellow ≥ 4 Green N/A
Reactor Coolant Inventory Control Monitored when fuel is in the core	1) Number of HPI train flow paths available (0 to 2) 2) Number of MU train flow paths available (0 to 2) 3) BWST Gravity flow path avail. and RCS vented (T/F) 4) CWRT and Pump flow path available (T/F) 5) RCS Water level ≥ 80 in. (T/F) 6) Refueling Canal ≥ 23 ft. (T/F) Maximum Defense in Depth is Yellow when RCS Water level is below flange (except during plenum operations), per NG-DB-00117, Shutdown Defense in Depth Assessment Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A 6) N/A Total N/A	≤ 1 Red 2 Orange 3 Yellow ≥ 4 Green N/A
Electrical Power Availability	1) Number of Diesel Generators available (0 to 3) 2) Number of Startup Transformers available (0 to 2) 3) Backfeed established through the Aux Transformer (T/F) 4) Number of Off Site Power Sources available (0 to 2) 5) No Severe Weather (Warning) or Degraded Grid (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) 2 2) 1 3) 0 4) ~~4~~ 2 C 5) ~~T~~ 1 Total ~~7~~ 6 C	≤ 3 Red 4 Orange 5 Yellow ≥ 6 Green Green
Reactivity Control Monitored when fuel is in the core	1) ≥2 of 4 source Range NI's available (T/F) 2) Inadvertent Deboration Clearance posted (T/F) 3) Number of Boron Injection Sources (0 to 3) 4) Number of Boron Injection flow Paths (0 to 2) 5) Shut down margin acceptable (T/F) Min. requirements of NG-DB-00117 Attachment 1 met? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 2 Red 3 Orange 4 Yellow ≥ 5 Green N/A
Containment Closure Monitored when fuel is in the core	1) Number of CAC's available. (0 to 2) 2) Equipment hatch on or CTMT Closure controls established for equipment hatch (T/F) 3) CTMT Closure controls established (T/F) 4) No fuel handling in CTMT in progress (T/F) 5) Time to Boil > 2 Hours (T/F) Min. requirements of NG-DB-00117 Attachment 1? (Yes/No) No = Maximum Defense in Depth Orange	1) N/A 2) N/A 3) N/A 4) N/A 5) N/A Total N/A	≤ 0 Red 1 Orange 2 Yellow ≥ 3 Green N/A
Spent Fuel Pool Cooling Monitored when ≥1/3 core is off-loaded	1) No. of Spent Fuel Pool cooling trains available (0 to 2) 2) Standby Decay Heat train is available for SFP (T/F) 3) Second Decay Heat train is available for SFP (T/F) 4) Spent Fuel Pool Makeup is available (T/F) Min. requirements of NG-DB-00117 Attachment 1? (Yes/No) No = Maximum Defense in Depth Orange	1) 2 2) 1 3) ~~F~~ 0 4) ~~T~~ 1 Total ~~3~~ 4 C	≤ 1Red 2Orange 3Yellow ≥ 4Green ~~Yellow~~ GREEN C Yellow
Overall Shutdown Status	Equivalent to the Key Shutdown Defense in Depth Function with the lowest Defense in Depth status.	N/A	~~Yellow~~ Green C

Green: Full D-I-D Yellow: Adequate D-I-D Orange: Marginal D-I-D Red: Unacceptable D-I-D

RCS Pressure: 0 psi RCS Temp: 102 °F RCS Time-to-Boil: 15 hours

Switchyard Work: ☐ Y / ☒ N SFP Temp: 100 °F SFP Time-to-Boil: 25 hours

DID Advisor: _____ SRO Peer Check: _____

Admin JPM
SRO-A3

Facility: Davis-Besse **Task No:** 334-005-05-0300

Task Title: Emergency Dose Authorization

K/A Reference: 2.3.4 (3.7) **Job Performance Measure No**: SRO-A3

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator ___ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Select the three mechanic method and authorize Emergency dose for mechanic 1, 2, and 4 only

Required Materials:
RA-EP-02620, Emergency Dose Control and Potassium Iodide Distribution
Emergency Dose Authorization form for each mechanic
Calculator

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task: No

Alternate Path: No

Validation Time: 21 minutes

EXAMINER COPY

INITIAL CONDITIONS:
The Plant has experienced a Loss of Coolant Accident and fuel damage. Emergency Core Cooling Train (ECCS) 1 is in operation at full flow. Low Pressure Injection Pump (LPI) 2 is out of service for maintenance. Just before the accident it was determined LPI Pump 1 was losing oil through a loose bearing housing. Plans were being made to tighten the housing and add oil. It is determined that this task is required to be performed immediately to maintain core cooling and prevent core damage.

INITIATION CUE:
You are an extra SRO on shift. The ERO is not yet activated. The Shift Manager, acting as the Emergency Director, has directed you to prepare an emergency dose authorization using the information below.

- Select the method that results in the lowest accumulated dose per mechanic and acceptable mechanics to perform this task. Document your recommendations on this page.
- Prepare the Emergency Dose Authorization form(s) per RA-EP-02620, Emergency Dose Control and Potassium Iodide Distribution up to the authorization signatures.

Radiation levels in ECCS Room 1 are indicating 40 Rem/hr
These two tasks (tighten the housing and add oil) can be performed by the mechanic(s) working in series or multiple mechanics working in parallel.

One mechanic would obtain 48 minutes of exposure
Two mechanics simultaneously would obtain 24 minutes of exposure each
Three mechanics in rotation would obtain 15 minutes of exposure each
Four mechanics in rotation would obtain 10 minutes of exposure each

Four Mechanics have volunteered to perform this work:
- Mechanic 1 is a 52 year old male with 10 Rem lifetime dose and no dose for current year.
- Mechanic 2 is a 47 year old male with 600 mrem lifetime dose and 5 mrem for current year
- Mechanic 3 is a 34 year old female, who has a declared pregnancy, with 125 mrem lifetime dose and no dose for current year
- Mechanic 4 is a 49 year old male with 4.2 mrem lifetime and 700 mrem for the current year
- None of the four Mechanics have ever received Emergency Dose

(Hand Candidate a copy of RA-EP-02620, Emergency Dose Control and Potassium Iodide Distribution and the four Emergency Dose Authorization Forms)

CANDIDATE COPY

INITIAL CONDITIONS:
The Plant has experienced a Loss of Coolant Accident and fuel damage. Emergency Core Cooling Train (ECCS) 1 is in operation at full flow. Low Pressure Injection Pump (LPI) 2 is out of service for maintenance. Just before the accident it was determined LPI Pump 1 was losing oil through a loose bearing housing. Plans were being made to tighten the housing and add oil. It is determined that this task is required to be performed immediately to maintain core cooling and prevent core damage.

INITIATION CUE:
You are an extra SRO on shift. The ERO is not yet activated. The Shift Manager, acting as the Emergency Director, has directed you to prepare an emergency dose authorization using the information below.

- Select the method that results in the lowest accumulated dose per mechanic and acceptable mechanics to perform this task. Document your recommendations on this page.
- Prepare the Emergency Dose Authorization form(s) per RA-EP-02620, Emergency Dose Control and Potassium Iodide Distribution up to the authorization signatures.

Radiation levels in ECCS Room 1 are indicating 40 Rem/hr
These two tasks (tighten the housing and add oil) can be performed by the mechanic(s) working in series or multiple mechanics working in parallel.

One mechanic would obtain 48 minutes of exposure
Two mechanics simultaneously would obtain 24 minutes of exposure each
Three mechanics in rotation would obtain 15 minutes of exposure each
Four mechanics in rotation would obtain 10 minutes of exposure each

Four Mechanics have volunteered to perform this work:

- Mechanic 1 is a 52 year old male with 10 Rem lifetime dose and no dose for current year.
- Mechanic 2 is a 47 year old male with 600 mrem lifetime dose and 5 mrem for current year
- Mechanic 3 is a 34 year old female, who has a declared pregnancy, with 125 mrem lifetime dose and no dose for current year
- Mechanic 4 is a 49 year old male with 4.2 mrem lifetime and 700 mrem for the current year
- None of the four Mechanics have ever received Emergency Dose

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: Evaluate the dose that would be received for each method

   STANDARD: One mechanic would obtain 32 Rem, which exceeds the 25 Rem limit
   Two mechanics simultaneously would obtain 16 Rem each
   Three mechanics in rotation would obtain 10 Rem each
   Four mechanics in rotation would obtain 6.7 Rem each

   COMMENT: JPM step sequence not critical. May evaluate mechanics and select method first in which case only the method selected will need dose evaluated

   CUE: **None**

   _____
   SAT UNSAT

2. PERFORMANCE STEP: Evaluate Mechanic 1 acceptability for receiving Emergency Dose

   STANDARD:. Determines Mechanic 1 can be authorized to receive emergency dose

   CUE: **None**

   _____
   SAT UNSAT

3. PERFORMANCE STEP: Evaluate Mechanic 2 acceptability for receiving Emergency Dose

   STANDARD: Determines Mechanic 2 can be authorized for Emergency Dose

   CUE: **None**

   _____
   SAT UNSAT

4. PERFORMANCE STEP: Evaluate Mechanic 3 acceptability for receiving Emergency Dose

   STANDARD: Determines Mechanic 3 SHALL NOT be authorized to receive emergency dose. Since mechanic is female, and is a declared pregnant worker

   CUE: **None**

_____
SAT UNSAT

5. PERFORMANCE STEP: Evaluate Mechanic 4 acceptability for receiving Emergency Dose

   STANDARD: Determines Mechanic 4 can be authorized for Emergency Dose

   CUE: **None**

_____
SAT UNSAT

6. PERFORMANCE STEP: Determine method for repair
   .....C.....

   STANDARD: Determines 3 mechanics in rotation is proper method due to condition in RA-EP-02620, step 6.1.3.b 25,000 mrem TEDE

   CUE: **None**

_____
SAT UNSAT

7. PERFORMANCE STEP: Select Mechanic 1, Mechanic 2 and Mechanic 4 to perform work
   .....C.....

   STANDARD: Recommend Emergency Dose for Mechanic 1, Mechanic 2 and Mechanic 4

   CUE: **None**

_____
SAT UNSAT

TERMINATING CUES: This JPM is complete (Terminated by the examiner)

_____
END TIME

EMERGENCY DOSE AUTHORIZATION
DBEP-204-01

INDIVIDUAL (Last, First, Middle)
Mechanic 1

SOCIAL SECURITY NUMBER
111-11-1111

DATE	TLD NO.	EMPLOYER
Today	1	FENOC

BRIEF DESCRIPTION OF TASK

Enter ECCS Room 1 to add oil and tighten the bearing housing for Low Pressure Injection Pump 1

RECOMMENDED EMERGENCY DOSE AUTHORIZATION ☐ YES ☐ NO

RECOMMENDED EMERGENCY DOSE LIMIT REM { TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)}

COMMENTS

EMERGENCY RP MANAGER RECOMMENDATION (Signature)

EMERGENCY DIRECTOR APPROVAL (Signature)

AUTHORIZATION DATE	AUTHORIZATION LIMIT REM { TEDE }

I have been briefed on the radiological consequences and hazards associated with the authorized emergency dose and I have volunteered to perform the above described task.

INDIVIDUAL (Signature)	DATE
BRIEFED BY (Signature)	DATE

(TOTAL DOSE – TEDE) =	(EXTERNAL – DDE)	PLUS (INTERNAL – CEDE)

RADIOBIOASSAY RESULTS

EMERGENCY RP MANAGER REVIEW (Signature)	DATE
EMERGENCY DIRECTOR REVIEW (Signature)	DATE

EMERGENCY DOSE AUTHORIZATION
DBEP-204-01

INDIVIDUAL (Last, First, Middle)
Mechanic 2

SOCIAL SECURITY NUMBER
222-22-2222

DATE	TLD NO.	EMPLOYER
Today	2	FENOC

BRIEF DESCRIPTION OF TASK

Enter ECCS Room 1 to add oil and tighten the bearing housing for Low Pressure Injection Pump 1

RECOMMENDED EMERGENCY DOSE AUTHORIZATION ☐ YES ☐ NO

RECOMMENDED EMERGENCY DOSE LIMIT REM { TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)}

COMMENTS

EMERGENCY RP MANAGER RECOMMENDATION (Signature)

EMERGENCY DIRECTOR APPROVAL (Signature)

AUTHORIZATION DATE	AUTHORIZATION LIMIT REM { TEDE }

I have been briefed on the radiological consequences and hazards associated with the authorized emergency dose and I have volunteered to perform the above described task.

INDIVIDUAL (Signature)	DATE
BRIEFED BY (Signature)	DATE

(TOTAL DOSE – TEDE) =	(EXTERNAL – DDE)	PLUS (INTERNAL – CEDE)

RADIOBIOASSAY RESULTS

EMERGENCY RP MANAGER REVIEW (Signature)	DATE
EMERGENCY DIRECTOR REVIEW (Signature)	DATE

EMERGENCY DOSE AUTHORIZATION
DBEP-204-01

INDIVIDUAL (Last, First, Middle)
Mechanic 3

SOCIAL SECURITY NUMBER
333-33-3333

DATE	TLD NO.	EMPLOYER
Today	3	FENOC

BRIEF DESCRIPTION OF TASK

Enter ECCS Room 1 to add oil and tighten the bearing housing for Low Pressure Injection Pump 1

RECOMMENDED EMERGENCY DOSE AUTHORIZATION ☐ YES ☐ NO

RECOMMENDED EMERGENCY DOSE LIMIT REM { TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)}

COMMENTS

EMERGENCY RP MANAGER RECOMMENDATION (Signature)

EMERGENCY DIRECTOR APPROVAL (Signature)

AUTHORIZATION DATE	AUTHORIZATION LIMIT REM { TEDE }

I have been briefed on the radiological consequences and hazards associated with the authorized emergency dose and I have volunteered to perform the above described task.

INDIVIDUAL (Signature)	DATE
BRIEFED BY (Signature)	DATE

(TOTAL DOSE – TEDE) =	(EXTERNAL – DDE)	PLUS (INTERNAL – CEDE)

RADIOBIOASSAY RESULTS

EMERGENCY RP MANAGER REVIEW (Signature)	DATE
EMERGENCY DIRECTOR REVIEW (Signature)	DATE

EMERGENCY DOSE AUTHORIZATION
DBEP-204-01

INDIVIDUAL (Last, First, Middle)
Mechanic 4

SOCIAL SECURITY NUMBER
444-44-4444

DATE	TLD NO.	EMPLOYER
Today	4	FENOC

BRIEF DESCRIPTION OF TASK

Enter ECCS Room 1 to add oil and tighten the bearing housing for Low Pressure Injection Pump 1

RECOMMENDED EMERGENCY DOSE AUTHORIZATION ☐ YES ☐ NO

RECOMMENDED EMERGENCY DOSE LIMIT REM { TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)}

COMMENTS

EMERGENCY RP MANAGER RECOMMENDATION (Signature)

EMERGENCY DIRECTOR APPROVAL (Signature)

AUTHORIZATION DATE	AUTHORIZATION LIMIT REM { TEDE }

I have been briefed on the radiological consequences and hazards associated with the authorized emergency dose and I have volunteered to perform the above described task.

INDIVIDUAL (Signature)	DATE
BRIEFED BY (Signature)	DATE

(TOTAL DOSE – TEDE) =	(EXTERNAL – DDE)	PLUS (INTERNAL – CEDE)

RADIOBIOASSAY RESULTS

EMERGENCY RP MANAGER REVIEW (Signature)	DATE
EMERGENCY DIRECTOR REVIEW (Signature)	DATE

Admin JPM
SRO-A4

Facility: Davis-Besse **Task No:** 334-004-05-0300

Task Title: Determine the off-site PAR

K/A Reference: 2.4.44 (4.4) **Job Performance Measure No**: SRO-A4 (JPM 150)

Examinee: _____

NRC Examiner: _____ **Date:** _____

Method of testing:

Simulated Performance ___ Actual Performance _X_

Classroom _X_ Simulator __X_ Plant ___

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

Initial Conditions:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Task Standard:
Determine the off-site protective action recommendations and make all required offsite notifications.

Required Materials:
- RA-EP-01900, General Emergency, Rev 9
- RA-EP-02110, Emergency Notification, Rev 15
- RA-EP-02245, Protective Action Guidelines, Rev 6
- RA-EP-02240, Offsite Dose Assessment, Rev 9
- RA-EP-01500, Emergency Classification, Rev 16
- E-Plan Implementation Forms envelope

General References:
None

Initiating Cue:
The plant conditions are specified in the Initial Conditions and Initiating Cues.

Time Critical Task:
Yes

Alternate Path:
No

Validation Time: 12 Minutes

SIMULATOR INSTRUCTIONS

INITIAL CONDITION:
This JPM is not dependent on any specific simulator initial conditions since the task is administrative in nature.

The plant conditions are specified in the Initial Conditions and Initiating Cues.

ADDITIONAL SETUP/DEVIATION FROM INITIAL CONDITION:
If this JPM is not conducted in the simulator, the following references need to be available to the examinee:

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

MALFUNCTIONS/FAILURE TO INSERT:
None.

ACTION/CUES:
See body of JPM

EXAMINER COPY

INITIAL CONDITIONS:

Damage to a fuel assembly in the Spent Fuel Pool has resulted in a release from the Station Vent.

A General Emergency has been declared (3 minutes ago) per EAL RG1.

Information reviewed for the General Emergency declaration determined that there is no Loss or Potential Loss of the CTMT Fission Product Barrier. There is no Hostile Action or Evacuation Impediments reported by the state or counties.

The Emergency Response Organization is being notified of the General Emergency.

Due to a power failure, MIDAS is unavailable and the current wind direction is unknown.

INITIATING CUES:
You are the Emergency Director.

The following off-site dose assessment data is provided.

TEDE RATE		TOTAL TEDE RELEASE
3.0 Rem/hr at 0.75 Miles	X 2 hour estimated release duration	6.0 Rem at 0.75 Miles
0.6 Rem/hr at 2 Miles		1.2 Rem at 2 Miles
0.2 Rem/hr at 5 Miles		0.4 Rem at 5 Miles
0.075 Rem/hr at 10 Miles		0.15 Rem at 10 Miles

This is a Time Critical JPM. The instructor will inform when the clock begins and stops.

Determine the off-site protective action recommendations starting with step 6.1.1.i of RA-EP-01900, General Emergency. Use the TEDE values only (Child Thyroid dose equivalent values not yet available) **AND** make required offsite notifications.

Provide copy of in progress RA-EP-01900, General Emergency, and have available the following procedures:

- **RA-EP-01500, Emergency Classification**
- **RA-EP-02240, Offsite Dose Assessment**
- **RA-EP-02110, Emergency Notification**
- **RA-EP-02245, Protective Action Guidelines**
- **E-Plan Implementation Forms envelope**

CANDIDATE COPY

INITIAL CONDITIONS:

Damage to a fuel assembly in the Spent Fuel Pool has resulted in a release from the Station Vent.

A General Emergency has been declared (3 minutes ago) per EAL RG1.

Information reviewed for the General Emergency declaration determined that there is no Loss or Potential Loss of the CTMT Fission Product Barrier. There is no Hostile Action or Evacuation Impediments reported by the state or counties.

The Emergency Response Organization is being notified of the General Emergency.

Due to a power failure, MIDAS is unavailable and the current wind direction is unknown.

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The following off-site dose assessment data is provided.

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0.2 Rem/hr at 5 Miles		0.4 Rem at 5 Miles
0.075 Rem/hr at 10 Miles		0.15 Rem at 10 Miles

This is a Time Critical JPM. The instructor will inform when the clock begins and stops.

Determine the off-site protective action recommendations starting with step 6.1.1.i of RA-EP-01900, General Emergency. Use the TEDE values only (Child Thyroid dose equivalent values not yet available) **AND** make required offsite notifications.

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: Refer to RA-EP-02245, Protective Action Guidelines and refer to Attachment 1.

   STANDARD: Obtains RA-EP-02245 and refers to Attachment 1.

   CUE: "**Time Critical clock begins"** _____ **(Record Time)**

   _____
   SAT UNSAT

2. PERFORMANCE STEP: Determine PAR using page 1 of Attachment 1.

   STANDARD: Determines a General Emergency IS declared
   Determines this is the Initial PAR
   Determines Rapidly Progressing Severe Accident NOT in progress (NOTE1)
   Determines Hostile Action or Impediment to Evacuation NOT in progress
   Determines a release IS in progress
   Determines the release is NOT terminable by operator action
   Determines TEDE projected doses are < 1 Rem at 5 miles

   CUE: **None**

   _____
   SAT UNSAT

3. PERFORMANCE STEP: Determine PAR using page 2 of Attachment 1.
   .....C.....

   STANDARD: Uses Column A on Page 2 of Attachment 1.
   Using the unknown wind direction, determines the affected subareas for 2 mile radius and 5 miles down wind are 1, 2, 6, 10 and 12.

   CUE: **None**

   _____
   SAT UNSAT

4. PERFORMANCE STEP: Make notifications to offsite agencies

   STANDARD: Refers to RA-EP-02110, Emergency Notification.

   CUE: **None**

_____
SAT UNSAT

5. PERFORMANCE STEP: Complete an Initial Notification Form (DBEP-010) and a Davis-Besse Notification Cover Sheet (DBEP-012).
   .....C.....

   STANDARD: Completes items 1 through 5 on the Initial Notification form and the header information on the Cover Sheet then signs the Cover Sheet.

   CUE: **If asked, provide an independent check of the data entered and sign the Davis-Besse Notification Cover Sheet.**

_____
SAT UNSAT

6. PERFORMANCE STEP: Make Initial Notification using the 4-Way Ring-Down Circuit.
   .....C.....

   STANDARD: Picks up the 4-Way Ring-Down phone in the Control Room. When all parties answer, reads the Initial Notification information.

   COMMENT: Notification must be made within 15 minutes of the event declaration time; the clock stops when the 4-Way Ring-Down phone is picked up.

   CUE **(when the 4-Way Ring-Down phone is picked up "Time Critical clock stops")** Critical Time is less than 12 minutes from start time since declaration of General Emergency was "3 minutes ago" by initial conditions.

_____ **(Record Time)**

   CUE: **(I/S or classroom instructor CUE) "Ottawa Country Sheriff's Dispatcher, Lucas County Sheriff's Dispatcher, and Ohio State Highway Patrol Dispatcher answer the phone."**

   (I/S or classroom instructor CUE) Repeat back the information as it is communicated.

Time: _____

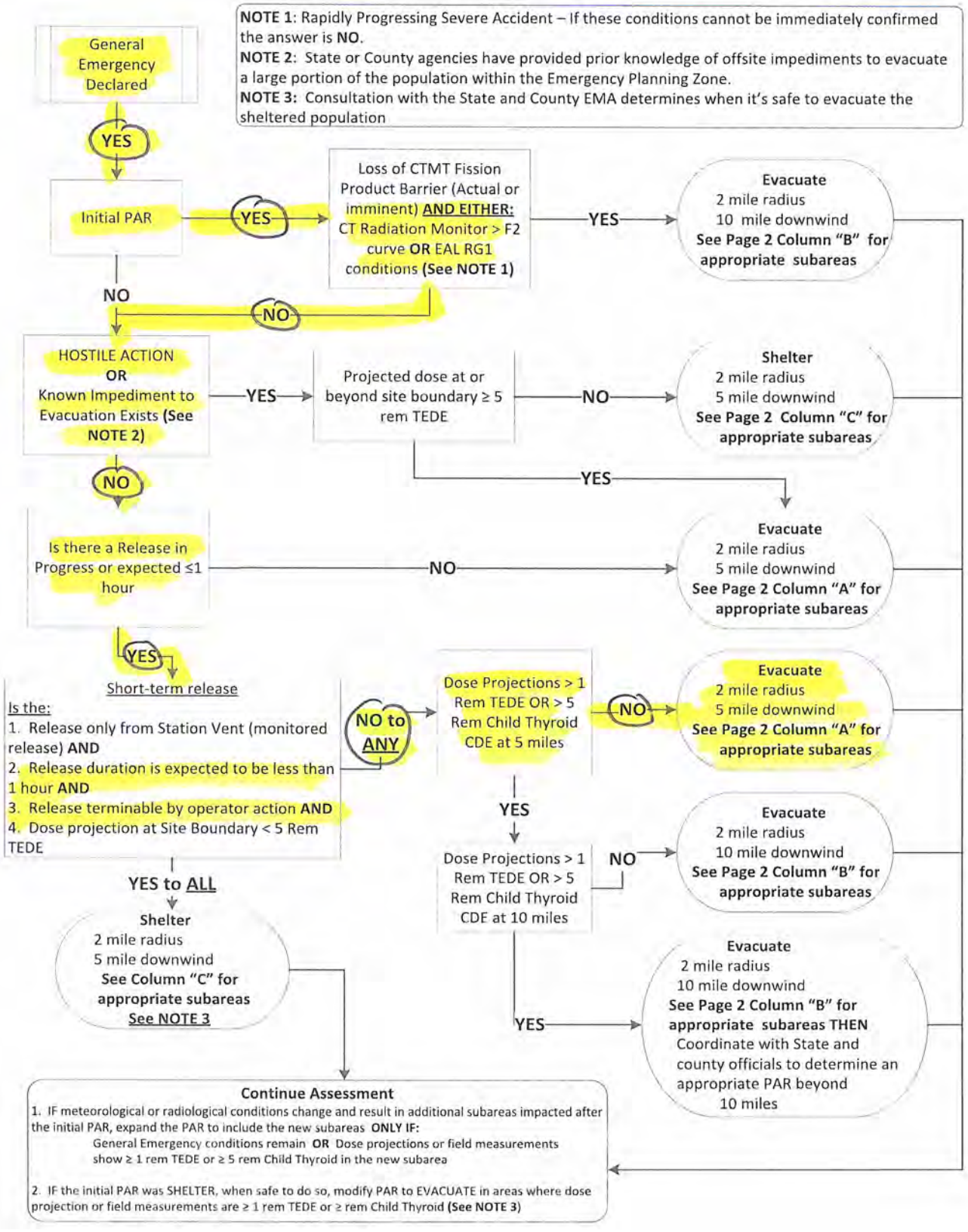
_____
SAT UNSAT

TERMINATING CUES: **This JPM is complete.** (Terminated by the evaluator).

_____
END TIME

SRO A4 ANSWER KEY

ATTACHMENT 1: FLOWCHART FOR OFFSITE PROTECTIVE ACTION RECOMMENDATION DETERMINATION



SRO A4 ANSWER KEY

ATTACHMENT 1: FLOWCHART FOR OFFSITE PROTECTIVE ACTION RECOMMENDATION DETERMINATION

Wind Direction From	Protective Action Recommendation	A - Evacuate 2-Mile Radius & 5-Miles Downwind Subareas	B - Evacuate 2-Mile Radius & 10-Miles Downwind Subareas	C - Shelter 2-Mile Radius & 5-Miles Downwind Subareas
Unknown or Lake Breeze	Shelter	N/A	N/A	1, 2, 6
	Evacuate	1, 2, 6, 10, 12	ALL Subareas	10, 12
141° to 278°	Shelter	N/A	N/A	1
	Evacuate	1, 12	1, 12	12
279° to 286°	Shelter	N/A	N/A	1, 6
	Evacuate	1, 6, 12	1, 6, 7, 9, 12	12
287° to 293°	Shelter	N/A	N/A	1, 6
	Evacuate	1, 6, 12	1, 6, 7, 8, 9, 12	12
294° to 330°	Shelter	N/A	N/A	1, 2, 6
	Evacuate	1, 2, 6, 12	1, 2, 6, 7, 8, 9, 12	12
331° to 005°	Shelter	N/A	N/A	1, 2, 6
	Evacuate	1, 2, 6, 12	1, 2, 5, 6, 7, 8, 12	12
006° to 013°	Shelter	N/A	N/A	1, 2, 6
	Evacuate	1, 2, 6, 12	1, 2, 4, 5, 6, 7, 8, 12	12
014° to 020°	Shelter	N/A	N/A	1, 2
	Evacuate	1, 2, 12	1, 2, 4, 5, 12	12
021° to 065°	Shelter	N/A	N/A	1, 2
	Evacuate	1, 2, 12	1, 2, 3, 4, 5, 12	12
066° to 072°	Shelter	N/A	N/A	1, 2
	Evacuate	1, 2, 12	1, 2, 3, 4, 12	12
073° to 078°	Shelter	N/A	N/A	1, 2
	Evacuate	1, 2, 10, 12	1, 2, 3, 10, 12	10, 12
079° to 117°	Shelter	N/A	N/A	1, 2
	Evacuate	1, 2, 10, 12	1, 2, 3, 10, 11, 12	10, 12
118° to 122°	Shelter	N/A	N/A	1
	Evacuate	1, 10, 12	1, 3, 10, 11, 12	10, 12
123° to 140°	Shelter	N/A	N/A	1
	Evacuate	1, 10, 12	1, 10, 11, 12	10, 12

Once the PAR and subareas are selected **GO TO** Step 6.2.2

SRO A4 ANSWER KEY

DAVIS-BESSE EMERGENCY NOTIFICATION COVER SHEET

DBEP-012-11

☒ **FENOC Nuclear Power Plant Initial Notification Form** USE FOR: ▪ INITIAL CLASSIFICATIONS, ▪ CHANGES IN CLASSIFICATION, ▪ CHANGES IN PROTECTIVE ACTION RECOMMENDATIONS. ☐ **FENOC Follow-Up/Periodic Update Notification** USE ONLY FOR UPDATING STATUS OF CURRENT CLASSIFICATION. DO NOT USE FOR CHANGING CLASSIFICATIONS OR CHANGING PROTECTIVE ACTION RECOMMENDATIONS.	☐ **ACTUAL EMERGENCY** **(Check Actual Emergency only if a real plant emergency exists)** ☒ **DRILL**

FENOC Nuclear Power Plant Initial Notification Form / FENOC Follow-Up/Periodic Update Notification Form completed by: SIGNED

FENOC Nuclear Power Plant Initial Notification Form / FENOC Follow-Up/Periodic Update Notification Form accuracy verified by: PROVIDED BY EXAMINER

Communicator:

1. Ensure the Emergency Director has signed the FENOC Nuclear Power Plant Initial Notification Form / FENOC Follow-Up/Periodic Update Notification Form.
2. Initiate the 4-Way Phone.
3. As parties answer, identify yourself and your facility.
4. Obtain and fill in information below:

	TIME INITIAL CONTACT MADE	COMPLETION TIME OF CALL	4-WAY PHONE USED? YES	NO	TIME OF CALLBACK (IF 4-WAY NOT USED)	INDIVIDUAL CALLING BACK (IF 4-WAY NOT USED)
OTTAWA COUNTY	Time	Time	☒	☐	N/A	N/A
LUCAS COUNTY	Time	Time	☒	☐	N/A	N/A
STATE OF OHIO	Time	Time	☒	☐	N/A	N/A

5. **FENOC Nuclear Power Plant Initial Notification Form**: Read information on the attached FENOC Nuclear Power Plant Initial Notification Form over the phone, document above the time lines 1 through 5 have been communicated, and then fax the completed Initial Notification Form (DBEP-010) to Ottawa Co, Lucas Co, and the State of Ohio using the fax machine "Group Tx" key labeled "INF FORM".

   OR

   FENOC Follow-Up/Periodic Update Notification Form First: Fax the completed FENOC Follow-up/Periodic Update Notification form (DBEP-009) using the fax machine "Group Tx" key labeled "PERIODIC" to Ottawa Co, Lucas Co, and the State of Ohio, and then verify the information over the phone.

NOTE: This coversheet should NOT be FAXED.

☐ Control Room
☐ Emergency Operations Facility

Signature of Communicator transmitting information

SRO A4 ANSWER KEY

FENOC NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM
Davis Besse
DBEP-010-11

USE FOR:
- **INITIAL CLASSIFICATION,**
- **CHANGES IN CLASSIFICATION,**
- **CHANGES IN PROTECTIVE ACTION RECOMMENDATIONS.**
- **EVENT TERMINATION**

STATE / COUNTY USE ONLY
DATE: _____ TIME: _____
MESSAGE NO: _____

1. This is the: Davis-Besse Nuclear Power Station

2. This is: ☐ An Actual Emergency ☒ A Drill

3. ☒ a. A(n) ☒ GENERAL EMERGENCY ☐ SITE AREA EMERGENCY ☐ ALERT ☐ UNUSUAL EVENT
was declared at: 3 minutes prior to start (TIME) on TODAY (DATE) based on EAL: RG1

☐ b. The Emergency situation has been terminated at: _____ (TIME) on _____ (DATE)

☐ c. The Protective Action Recommendation is being changed at: _____ (TIME) on _____ (DATE)

4. The radiological conditions are:

☒ a. A non-routine release of radioactive material, as a result of this event, is in progress

☐ b. The release of radioactive material associated with this event has been terminated.

☐ c. NO Radiological Release in progress as a result of this event.

5. Utility Protective Action Recommendations (PAR's):

☒ a. Evacuation:

(check applicable subareas)

☒ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6 ☐ 7 ☐ 8 ☐ 9 ☒ 10 ☐ 11 ☒ 12

AND that potassium iodide (KI) be administered to the general public in accordance with State procedures. The general public in unaffected areas should be advised to go indoors and monitor EAS broadcasts.

☐ b. Sheltering:

(check applicable subareas)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 11

AND that potassium iodide (KI) be administered to the general public in accordance with State procedures. The general public in unaffected areas should be advised to go indoors and monitor EAS broadcasts.

☐ c. None

For Utility Use Only

Approved: _____
Emergency Director