

**N06-SRO-a**

<b>TITLE</b>	<b>Review Completed SDM Calculation</b>
<b>PROGRAM</b>	<b>Initial Licensed Operator (ILT)</b>

<b>REVISION</b>	<b>0</b>
<b>TIME</b>	<b>20 Minutes</b>

**SCOPE OF REVISION:** Bank JPM No. SRO-N005

<b>AUTHOR</b>	<b>Name:</b> Max Bailey	<b>DATE:</b>
	<b>Signature:</b> _____	
	_____	
<b>FACILITY REVIEWER</b>	<b>Name:</b> _____	
	<b>Signature:</b> _____	
	_____	
	Facility Supervisor / Manager	

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-a</b> <b>Review Completed SDM Calculation</b>	<b>REVISION: 0</b>
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**REFERENCES**

Unit 1 Technical Data Book                      Cycle 20  
01-OHP-4021-001-012, Rev 20                      Determination of Reactor Shutdown Margin

**TASK**

**TASK ID:**                                      ADM0370302                      Verify Limiting Conditions for Operations are met in accordance with Technical Specifications

**K/A Statement:**                              2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

**K/A Importance:**      RO:    2.8      SRO: 3.1

**K/A Statement:**                              2.1.32 Ability to explain and apply all system limits and precautions.

**K/A Importance:**      RO:    3.4      SRO: 3.8

**EVALUATION SETTING**

Classroom

**HANDOUTS**

Completed Attachment 1 of 01-OHP-4020-001-012  
Tech Data Book Figures 1.3b and 13.1  
Calculator

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-a Review Completed SDM Calculation</b>	<b>REVISION: 0</b>
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**TASK OBJECTIVES/STANDARDS**

Review and verify the accuracy of a manual Shutdown Margin Calculation for MODE 1 or 2.

**EVALUATOR INSTRUCTIONS**

Provide the operator with a completed copy of Attachment 1 of 01-OHP-4020-001-012 and Tech Data Book Figures

**TASK BRIEFING**

You are the Unit Supervisor on Unit 1.

Per your direction, the extra Control Room Operator completed Attachment 2 of 01-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

Unit 1 conditions are as follows:

- PPC point U0035 indicates 12,135 MWD/MTU
- Reactor power is at 100% steady state.
- RCS boron concentration is 535 ppm.
- Control Bank D step counter indicates 219 steps.
- Individual rod positions for the Control Bank D rods are as follows:
  - D-4 at 211 steps
  - D-8 at 203 steps
  - D-12 at 218 steps
  - H-4 at 216 steps
  - H-8 at 218 steps
  - H-12 at 220 steps
  - M-4 at 216 steps
  - M-8 at 210 steps
  - M-12 at 209 steps
- NO control rods are known to be unmovable or untrippable.

Perform the SRO review of the completed Attachment 2.

Continuous	01-OHP-4021-001-012	Rev. 20	Page 18 of 33
<b>Determination of Reactor Shutdown Margin</b>			
Attachment 2	Manual Shutdown Margin Calculation for Mode 1 and 2	Pages: 18 - 23	

**1 PURPOSE AND SCOPE**

1.1 [Current TS] To provide a method for manually calculating SHUTDOWN MARGIN while in MODE 1 or 2. (Technical Specification 3.1.1.1)

[Improved TS] To provide a method for manually calculating SHUTDOWN MARGIN while in MODE 1 or 2. (Technical Specification 3.1.1, 3.1.4, 3.1.5, and 3.1.6)

**2 PREREQUISITES**

2.1 None.

**3 PRECAUTIONS AND LIMITATIONS**

3.1 Data read from Technical Data Book figures shall **NOT** be interpolated. Minimum allowable Tavg per Technical Data Book is 68°F.

3.2 If a curve for desired plant conditions does **NOT** exist in the Technical Data Book, the next closer curve in the conservative direction shall be used.

**CAUTION:** It is essential to use the proper mathematical sign (+ or -) and include proper sign when performing calculations.

**NOTE:** Curves should be read as accurately as possible.

**4 DETAILS**

4.1 Cycle data:

4.1.1 Enter Cycle number from Technical Data Book (TDB):

Unit 1 Cycle 20

INIT

10

Operator initiates review of Attachment 2.

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Determination of Reactor Shutdown Margin			
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4.1.2 Enter Current Date:

Date: Today *JS*

**CAUTION:** [Current TS] If one or more rods are immovable due to friction, interference or known to be untrippable, the action statement of Technical Specification (TS) 3.1.3.1 must be performed. The TS action statement includes the requirement to verify adequate SHUTDOWN MARGIN within one hour.

[Improved TS] If one or more rods are inoperable due to being immovable as a result of excessive friction or mechanical interference or otherwise known to be untrippable, the action statement of Technical Specification (TS) 3.1.4 must be performed. The TS action statement includes the requirement to verify adequate SHUTDOWN MARGIN within one hour.

4.2 Rod Data:

4.2.1 Enter the total number of rods which are untrippable or immovable:

Number of Untrippable Rods 0 *JS*

4.2.2 Enter the total number of rods which are misaligned, including dropped rods, AND which violate the insertion limits of the CORE OPERATING LIMITS REPORT (COLR):

Number of Misaligned or Dropped Rods 1 *JS*

CT: Operator determines that NO rods are misaligned or below the RIL. Rod D-8 is NOT misaligned. TBD-1-FIG-13.1 allows ± 18 steps. Rod D-8 is at -16 steps.

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Determination of Reactor Shutdown Margin			
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4.3 Core Burnup:

- IF the Plant Process Computer (PPC) is available, THEN enter Core Burnup value from PPC point U0035 AND divide by 1000 to convert the burnup from MWD/MTU to GWD/MTU:

PPC Point U0035	12135	MWD/MTU	
	÷		
Conversion factor	1000	MWD/GWD	
Core Burnup from PPC	= 12.135	GWD/MTU	<u>JO</u>

-OR-

- IF the PPC is NOT available, THEN obtain Core Burnup value from Reactor Engineering:

Core Burnup from Reactor Engineering		GWD/MTU	←
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Operator should identify the second bullet of Step 4.3 as N/A with initial and date required.

4.4 Excess SHUTDOWN MARGIN:

Using Core Burnup (Step 4.3) determine Excess SHUTDOWN MARGIN from Technical Data Book (TDB) Figure 1.3b.

Excess SHUTDOWN MARGIN	2150	pcm	<u>JO</u>
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<b>Determination of Reactor Shutdown Margin</b>			
Attachment 2	Manual Shutdown Margin Calculation for Mode 1 and 2		Pages: 18 - 23

4.5 IF rods are stuck, THEN determine the Worth Of Stuck Rods:

4.5.1 Determine the Worth of a Single Stuck Out Rod from TDB Figure 1.3b using Core Burnup (Step 4.3) AND enter the value below:

4.5.2 Multiply Worth of Single Stuck Out Rod by the Number of Untrippable Rods.

Number of Untrippable Rods (Step 4.2.1)	∅	x	
Worth of a Single Stuck Rod	∅		pcm
Worth of Stuck Rods	= ∅		pcm

∅

Operator should identify Step 4.5.2 is N/A with initial and date required. NO stuck rod has been identified.

4.6 IF rods are misaligned/dropped, THEN determine the Worth of Misaligned/Dropped Rods:

4.6.1 Determine the Worth of a Single Misaligned/Dropped Rod from TDB Figure 1.3b using Core Burnup (Step 4.3) AND enter the value below:

4.6.2 Multiply Worth of Single Misaligned/Dropped Rod by the Number of Misaligned or Dropped Rods.

Number of Misaligned/Dropped Rods (Step 4.2.2)	1	x	
Worth of a Single Misaligned/Dropped Rod	121.1		pcm
Worth of Misaligned/Dropped Rods	= 121.1		pcm

121.1

CT: Operator shall identify NO misaligned rod exist. Refer to Step 4.2.2 which identified rod D-8 as misaligned.

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Determination of Reactor Shutdown Margin			
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4.7 Total Unavailable Rod Worth:

Add Worth of Stuck Rods to the Worth of Misaligned/Dropped Rods.

Worth of Stuck Rods (Step 4.5)

$\emptyset$

+

Worth of Misaligned/Dropped Rods (Step 4.6)

121.1 pcm

Total Unavailable Rod Worth

= 121.1 pcm

SO

4.8 Net Excess SHUTDOWN MARGIN:

Subtract Total Unavailable Rod Worth from Excess SHUTDOWN MARGIN.

Excess SHUTDOWN MARGIN (SDM)  
(Step 4.4)

2150 pcm

-

Total Unavailable Rod Worth (Step 4.7)

121.1 pcm

Net Excess SHUTDOWN MARGIN:

= ~~2028.9~~ pcm

SO

- IF Net Excess SDM is zero or positive, THEN boration is NOT required.

SO

-OR-

- IF Net Excess SDM is negative, THEN perform the following:

N/A  
2/1/20

- Commence emergency boration per 01-OHP-4021-005-007, Operation of Emergency Boration Flow Paths.

-AND-

- Immediately trip the Reactor AND go to 01-OHP-4023-E-0, Reactor Trip or Safety Injection.

\_\_\_\_\_

CT: Operator shall identify error carried forward. NO misaligned rod exist. Refer to Step 4.2.2 which identified rod D-8 as misaligned.

Operator identifies both bulleted items of Step 4.8 under OR should be N/A with initial and date required.

COURSE NUMBER  
AND TITLE:

N06-SRO-a  
Review Completed SDM Calculation

REVISION: 0

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Determination of Reactor Shutdown Margin			
Attachment 2	Manual Shutdown Margin Calculation for Mode 1 and 2		Pages: 18 - 23

Comments:

Rod D-8 is misaligned

Calculated By: Jam Ojertoto Time: \_\_\_\_\_ Date: Today

Calculation  
Independently  
Verified By: B. Niles Time: \_\_\_\_\_ Date: Today

Reviewed By: \_\_\_\_\_ Date:  / /  
US/SM/WCC-SRO

CT: Operator shall identify the incorrect use of rod D-8 misalignment data in the calculation. Although the SDM calculation is conservative, the calculated value is incorrect and the SRO should not sign this Attachment until the necessary corrections are made.

**THIS JPM IS COMPLETE**

## Task Briefing

You are the Unit Supervisor on Unit 1.

Per your direction, the extra Control Room Operator completed Attachment 2 of 01-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

Unit 1 conditions are as follows:

- PPC point U0035 indicates 12,135 MWD/MTU
- Reactor power is at 100% steady state.
- RCS boron concentration is 535 ppm.
- Control Bank D step counter indicates 219 steps.
- Individual rod positions for the Control Bank D rods are as follows:
  - D-4 at 211 steps
  - D-8 at 203 steps
  - D-12 at 218 steps
  - H-4 at 216 steps
  - H-8 at 218 steps
  - H-12 at 220 steps
  - M-4 at 216 steps
  - M-8 at 210 steps
  - M-12 at 209 steps
- NO control rods are known to be unmovable or untrippable.

Perform the SRO review of the completed Attachment 2.

**N06-SRO-b**

<b>TITLE</b>
<b>PROGRAM</b>

**Review AFD Log**  
**Initial License Training (ILT)**

<b>REVISION</b>
<b>TIME</b>

**0**  
**15 Minutes**

SCOPE OF REVISION: New Issue from **SR-O-ADM10 Rev. 0**

<b>DATE:</b>
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<b>AUTHOR</b>
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**Name:** Max Bailey \_\_\_\_\_  
**Signature:** \_\_\_\_\_

<b>FACILITY REVIEWER</b>
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**Name:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_

Facility Supervisor / Manager

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-b Review AFD Log</b>	<b>REVISION: 0</b>
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**REFERENCES**

01-OHP-4024-110, Drop 44, Rev. 12  
Tech Data Book 1-Figure 13.1 Unit 1 Cycle 20

**TASK**

**TASK ID:** ADM0370302 Verify Limiting Conditions for Operations are met in accordance with Technical Specifications

**K/A Statement:** 2.1.12 Ability to apply technical specifications for a system.  
**K/A Importance:** RO: 2.9 SRO: 4.0

**EVALUATION SETTING**

Classroom

**HANDOUTS**

Completed Attachment A of 01-OHP-4024-110 Drop 44.  
Tech Data Book 1-Figure 13.1 Unit 1 Cycle 20

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-b</b> Review AFD Log	<b>REVISION: 0</b>
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**TASK OBJECTIVES/STANDARDS**

Review a completed AFD Log for correctness and compliance.

**EVALUATOR INSTRUCTIONS**

Provide student with a completed copy 01-OHP-4024-110 Drop 44, Attachment A.  
Provide 1-Figure 13.1 Unit 1 Cycle 20

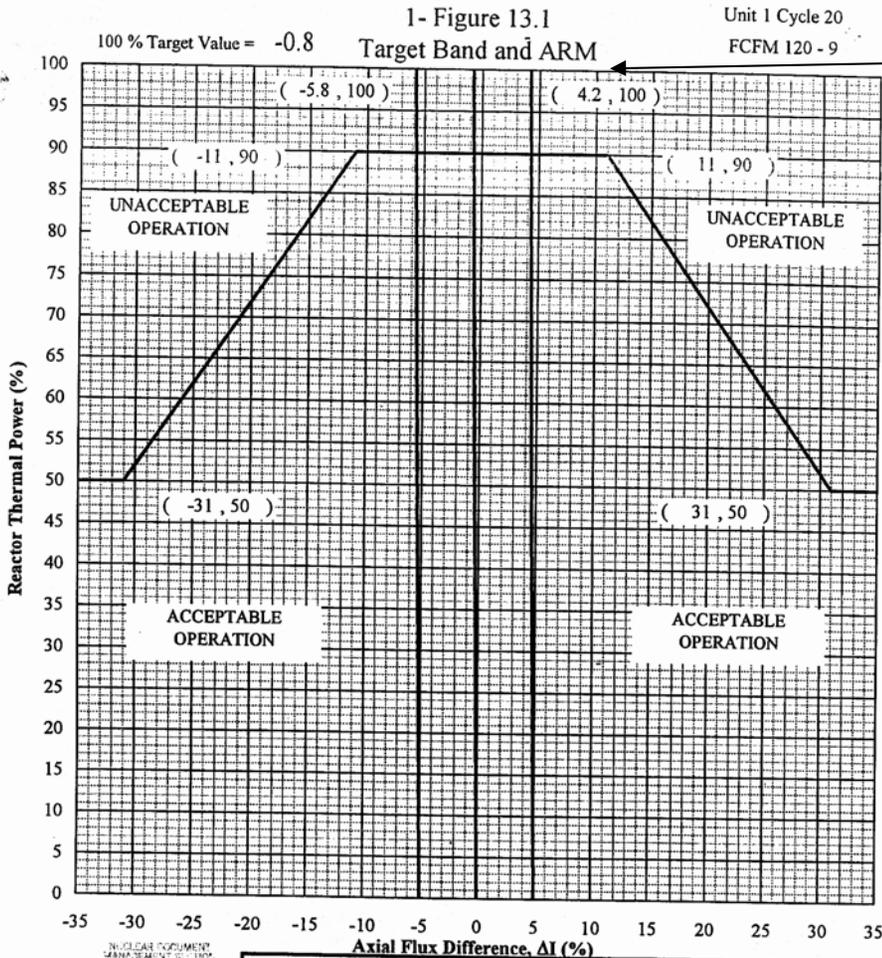
**TASK BRIEFING**

Unit 1 is at 100% power. A Xenon oscillation is in progress and as a result the Control Rods have been moved in an effort to dampen out the oscillation. The AFD Monitor Alarm was declared Inoperable at 0545 hrs this morning due to a bad input to the PPC. A Reactor Operator has recorded the AFD readings during the shift per 01-OHP-4024-110 Drop 44 Attachment A.

You are the Unit 1 Unit Supervisor.

The AFD Monitor Alarm was declared Operable at 1500 hrs. The Reactor Operator has stopped taking AFD data and turned in the completed Attachment A.

You are to review the completed 01-OHP-4024-110, Attachment A, for correctness and compliance.



C.T. Identifies AFD Target Band Limit is +4.2.

NUCLEAR DOCUMENT MANAGEMENT SYSTEM  
SEP 14 2005  
GENERAL DOCUMENT

**ALLOWABLE ROD MISALIGNMENT (ARM)**  
If Thermal Power ≤ 85% RTP, ARM = ± 18 Steps  
If Thermal Power > 85% RTP, ARM = ± 18 Steps  
(>85% RTP, the ARM is based upon F<sub>H</sub> and F<sub>C(Z)</sub> margin)

RESPONSIBLE DEPT NUCLEAR ENGINEERING  
INITIATED BY W. V. Ferguson  
REVIEWED BY R. W. Hennen  
APPROVED FOR USE A. Verteramo APPROVAL DATE 9/14/05  
ISSUE DATE 9-14-05 EXPIRATION DATE ECC20  
Revision: 242



01-OHP-4024-110

Level of Use: REFERENCE

Drop 44

**NOTE**

- If the AFD alarm comes in for a valid AFD condition above 90% and then clears when either the condition clears or power is reduced below 90%, the alarm is assumed to have been OPERABLE during the period that the alarm was in. (If the alarm clears when power is reduced or the condition clears and less than 60 penalty minutes have accumulated, annunciator would occur if AFD subsequently goes outside of the band.) Therefore, AFD logging is NOT required after the alarm clears.  
If Reactor Power is between 15% - 90% and the alarm has actuated, subsequent operation with AFD outside the target band will NOT be annunciated until the accumulated penalty time drops below the alarm setpoint. Therefore, the alarm is considered INOPERABLE until the penalty time drops to less than the setpoint and the logging of Step 3.8 will be required.

3.8 **[Current TS]** Upon returning the AFD alarm to OPERABLE status after a valid AFD condition, log the indicated AFD on all four channels every 1/2 hour for 24 hours on Attachment A. (T.S. 3.2.1)

**[Improved TS]** Upon returning the AFD alarm to OPERABLE status after a valid AFD condition, log the indicated AFD on all four channels every 1/2 hour for 24 hours on Attachment A. (T.S. 3.2.3)

3.9 **IF** two or more inputs are unreliable, **THEN** determine which inputs are unreliable. Delta flux inputs (N0041A-N0052A).

Cue: Ask the SRO if any additional surveillance requirements are necessary after the AFD Alarm Monitor was declared Operable at 1500 hrs.

**C.T.** Identifies log taking must continue to occur every 30 minutes for 24 hours after restoring the AFD Monitor Alarm to Operable status if the AFD has been outside the target band for any period of time in the previous 24 hours of operation. Reference LCO. 3.2.3 and step 3.8.

**THIS JPM IS COMPLETE**

## Task Briefing

Unit 1 is at 100% power. A Xenon oscillation is in progress and as a result the Control Rods have been moved in an effort to dampen out the oscillation. The AFD Monitor Alarm was declared Inoperable at 0545 hrs this morning due to a bad input to the PPC. A Reactor Operator has recorded the AFD readings during the shift per 01-OHP-4024-110 Drop 44 Attachment A.

You are the Unit 1 Unit Supervisor.

The AFD Monitor Alarm was declared Operable at 1500 hrs. The Reactor Operator has stopped taking AFD data and turned in the completed Attachment A.

You are to review the completed 01-OHP-4024-110, Attachment A, for correctness and compliance.

**N06-SRO-c**

<b>TITLE</b>
<b>PROGRAM</b>

**Verify a Clearance Permit for East ESW Pump**  
**Initial Licensed Operator (ILT)**

<b>REVISION</b>
<b>TIME</b>

**0**  
**20 Minutes**

SCOPE OF REVISION: NEW ISSUE

<b>AUTHOR</b>
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**Name:** Max Bailey  
**Signature:** \_\_\_\_\_

<b>DATE:</b>
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<b>FACILITY REVIEWER</b>
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**Name:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_

Facility Supervisor / Manager

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-c Verify a Clearance Permit for the East ESW Pump</b>	<b>REVISION: 0</b>
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**REFERENCES**

12-OHP-2110-CPS-001, Rev 14                      Clearance Permit System

**TASK**

TASK ID:    3000040201                      Verify/Approve a Clearance Permit.

K/A REFERENCE:            2.2.13                      Knowledge of tagging and clearance procedures.

K/A IMPORTANCE:            RO    3.6                      SRO 3.8

**EVALUATION SETTING**

Classroom

**HANDOUTS**

Task Briefing  
Clearance Package (Forms, Cards ( ), & Prints OP-1-5113-87, OP-1-98415-45)  
Copy of 12-OHP-2110-CPS-001, Attachment 1

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-c Verify a Clearance Permit for the East ESW Pump</b>	<b>REVISION: 0</b>
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Task Standards

The operator performs a review per 12-OHP-2110-CPS-001 and determines that the clearance is improperly sequenced, and that tags are required for the control power fuses and that the strainer power supply should be off.

Task Briefing

You are an extra SRO.

The Work Control Center-SRO directs you to verify the Unit 1 East Essential Service Water (PP-7E) Pump clearance is ready to hang per 12-OHP-2110-CPS-001, Attachment 1.

- The clearance was written to protect workers/equipment during a ESW motor/pump and strainer basket inspection.
- The Clearance was written from a Clearance Request.
- The Clearance was not written from a Standard Clearance.
- The Clearance does not fit into the boundaries of an existing Clearance.

**COURSE NUMBER  
AND TITLE:**

**N06-SRO-c Verify a Clearance Permit for the East ESW Pump**

**REVISION: 0**

*Clearance Tag List  
Clearance Group: 1-06  
Clearance: N-ESW -ESWE-0006*

*American Electric Power  
Donald C. Cook Nuclear Plant*

11/17/2005 07:14

Tag Serial No.	Tag Type	Equipment ----- * Equipment Description * Room	Pla Seq	Placement Configuration ----- * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest Seq	Restoration Configuration ----- * Notes	As Left Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
0	Red	1-101-T11D10 * EAST ESW PUMP 1-PP-7E * Control Room	1	LOCKOUT			8	NEUTRAL	NEUTRAL		
0	Red	1-101-S1E * EAST ESW PUMP STRAINER {1-OME-34E} CONTROL MODE * Control Room	1	MANUAL			8	AUTO	AUTO		
0	Red	1-101-WMO-701 * EAST ESW PUMP DISCHARGE 1-WMO-701 * Control Room	2	CLOSE			7	CL/NEUT	CL/NEUT		
0	Red	1-201-T11D10 * EAST ESW PUMP 1-PP-7E * Control Room	2	LOCKOUT			7	NEUTRAL	NEUTRAL		
0	Red	1-201-S1E * EAST ESW PUMP STRAINER CONTROL MODE * Control Room	2	MANUAL			7	AUTO	AUTO		
0	Red	1-201-WMO-701 * EAST ESW PUMP DISCHARGE 1-WMO-701 * Control Room	2	CLOSE			7	CL/NEUT	CL/NEUT		
0	Red	1-T11D10 * EAST ESSENTIAL SERVICE WATER PUMP 1-PP-7E * 4kv Room - CD 4Kv Switchgear Area	3	DISC			6	CONN	CONN		
0	No Tag	1-T11D10-FUSES * EAST ESSENTIAL SERVICE WATER PUMP 1-PP-7E BREAKER 1-T11D10 FUSES (LOC IN REAR COR. OF BKR CTRL CUBE) * 4kv Room - CD 4Kv Switchgear Area	4	PULLED			5	INSERTED	INSERTED		

Page 1 of 4

**CT** - Identifies 1-T11D10-Fuses have NO TAG associated. (Fuses Should be Tagged)

Identifies 1-T11D10-Fuses are sequenced after 1-T11D10 Breaker (Fuses Should be Pulled & Tagged before breaker is taken to DISC)

**COURSE NUMBER  
AND TITLE:**

**N06-SRO-c Verify a Clearance Permit for the East ESW Pump**

**REVISION: 0**

Clearance Tag List  
Clearance Group: 1-06  
Clearance: N-ESW -ESWE-0006

American Electric Power  
Donald C. Cook Nuclear Plant

11/17/2005 07:14

Tag Serial No.	Tag Type	Equipment * Equipment Description * Room	Pla Seq	Placement Configuration * Notes	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest Seq	Restoration Configuration * Notes	As Left Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time
0	Red	1-101-ESWHE * EAST ESW PUMP 1-PP-7E MOTOR HEATER * Traveling Screen MCC Lower Room	5	OFF			4	ON	ON		
0	Red	1-SHMP-6 * ESSENTIAL SERVICE WATER PUMP '1E' MOTOR HEATER * Traveling Screen MCC Lower Room	6	OFF			3	ON	ON		
0	Red	1-PS-D-4C * EAST ESW PUMP DISCHARGE SHUTOFF VALVE 1-WMO-701 * Traveling Screen MCC Upper Room	6	OFF			3	ON	ON		
0	Red	1-PS-D-3C * EAST ESW PUMP DISCHARGE STRAINER 1-OME-34E * Traveling Screen MCC Upper Room	6	ON			3	OFF	OFF		
0	Red	1-WMO-701 * EAST ESW PUMP 1-PP-7E DISCHARGE VALVE * East ESW Pump Room	7	CLOSED			2	NEUT	NEUT		
0	Red	1-ESW-103E * EAST ESW PUMP DISCHARGE STRAINER 1-OME-34E WEST BASKET DRAIN VALVE * East ESW Pump Room	8	OPEN			1	CLOSED	CLOSED		
0	Red	1-ESW-105E * EAST ESW PUMP DISCHARGE STRAINER 1-OME-34E EAST BASKET DRAIN VALVE * East ESW Pump Room	8	OPEN			1	CLOSED	CLOSED		

**CT** – Identifies that the Position listed for 1-PS-D-3C (Strainer Power Supply Breaker) is ON (Should be tagged off)

Identifies that Restoration Configuration position for 1-PS-D-3C (Strainer Power Supply Breaker) is OFF (Should be ON)

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-c Verify a Clearance Permit for the East ESW Pump</b>	<b>REVISION: 0</b>
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**THIS JPM IS COMPLETE.**

## Task Briefing

You are an extra SRO.

The Work Control Center-SRO directs you to verify the Unit 1 East Essential Service Water (PP-7E) Pump clearance is ready to hang per 12-OHP-2110-CPS-001, Attachment 1.

- The clearance was written to protect workers/equipment during a ESW motor/pump and strainer basket inspection.
- The Clearance was written from a Clearance Request.
- The Clearance was not written from a Standard Clearance.
- The Clearance does not fit into the boundaries of an existing Clearance.

**N06-SRO-d**

<b>TITLE</b>	<b>Respond to a High SJAE Radiation Alarm</b>
<b>PROGRAM</b>	<b>Initial License Training (ILT)</b>

<b>REVISION</b>	<b>0</b>
<b>TIME</b>	<b>15 Minutes</b>

**SCOPE OF REVISION:** New Issue

**AUTHOR**

**Name:** Max Bailey  
**Signature:** \_\_\_\_\_

**DATE:**

**FACILITY  
REVIEWER**

**Name:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_

Facility Supervisor / Manager

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-d Respond to a High SJAE Radiation Alarm</b>	<b>REVISION: 0</b>
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**REFERENCES**

12-OHP-4024-139, Drop 25, Rev. 11    Steam Jet Air Ejector  
Tech Data Book Figures:

- 2-Figure-19.19a, Rev 3    Primary to Secondary Leak Rate (Unit 2 at 5 SCFM)
- 2-Figure-19.19b, Rev 2    Primary to Secondary Leak Rate (Unit 2 at 10 SCFM)
- 2-Figure-19.19c, Rev 2    Primary to Secondary Leak Rate (Unit 2 at 15 SCFM)
- 2-Figure-19.19e, Rev 0    Primary to Secondary Leak Rate (Unit 2 at 20 SCFM)

**TASK**

**TASK ID:**            ADM0420302    Verify Limiting Conditions for Operations are met in accordance with Offsite Dose Calculation Manual (ODCM)

**K/A Statement:**    2.3.10            Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

**K/A Importance:**    RO: 2.9        SRO: 3.3

**EVALUATION SETTING**

Classroom

**HANDOUTS**

Completed Data Sheet 1 of 12-OHP-4024-139 Drop 25.

Tech Data Book Figures:

- 2-Figure-19.19a
- 2-Figure 19.19b
- 2-Figure-19.19c
- 2-Figure-19.19e

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

**COURSE NUMBER  
AND TITLE:**

**N06-SRO-d  
Respond to a High SJAE Radiation Alarm**

**REVISION: 0**

**TASK OBJECTIVES/STANDARDS**

Review a completed Data Sheet 1 of 12-OHP-4024-139 Drop 25 for accuracy and determine required actions based upon that data.

**EVALUATOR INSTRUCTIONS**

Provide student with a completed copy Data Sheet 1 of 12-OHP-4024-139 Drop 25.  
Provide a copy of 2-Figure 19.19a, 2-Figure 19.19b, 2-Figure 19.19c, and 2-Figure 19.19e.

**TASK BREIFING**

Unit 2 is at 100% power. Radiation Monitoring Panel Alert alarm was received on SRA 2900. A RCS to Steam Generator Tube Leak is suspected. The BOP has taken initial action per 12-OHP-4024-139, Drop 25 to record SRA-2905 activity and leak rate on Data Sheet 1 at 15 minute intervals.

Your are the extra SRO.

The US directs you to plot the data and determine the total leak rate in accordance with 12-OHP-4024-139, Drop 25. Report your results and any operational limitations required per 12-OHP-4024-139, Drop 25.

12-OHP-4024-139

Level of Use: REFERENCE

#25

<b>NOTE</b>	<p>Primary-to-Secondary Leak Rate Change graphs are contained in each Unit's TDB, Figure 19.19.a, b, c and d.</p> <p>These graphs represent expected SJAE monitor readings corresponding to a 30 gpd/hr leak rate rise versus time based or steady-state (i.e. equilibrium) conditions between the primary and secondary systems.</p> <p>Plotting actual SJAE monitor readings versus time on the appropriate graph (5, 10, 15 or 20 scfm SJAE flow rate) results in a line with a slope comparable to the calculated 30 gpd/hr leak rate rise. The SJAE graph representing the closest HIGHER flow rate is used. If SJAE flow is 6 scfm, the 10 scfm graph is used. If SJAE flow is 12 scfm, the 15 scfm graph is used.</p> <p>A plotted line with a slope greater than the calculated slope indicates a leak rate rising at a rate greater than 30 gpd/hr. A plotted line with a slope less than the calculated slope indicates a leak rate rising at a rate less than 30 gpd/hr.</p>
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Operator determines that SJAE graph for 10 scfm (7 scfm actual) should be used for graphing radiation reading.

3.1.2 Determine SJAE flow rate:

- IF SJAE flow rate is <10 cfm, THEN 2-SFR-402, SJAE Vent Narrow Range is the preferred instrument.
- IF SJAE flow rate is ≥10 cfm, THEN either SJAE Vent Wide Range indication, 2-SFR-2910 OR 2-SFR-401 is the preferred instrument.
- IF necessary, THEN SJAE flow rates may be obtained at local manometers.

3.1.3 Select appropriate Primary to Secondary Leak Rate Change graph from the TDB Unit 2 Figures 19.19.a, b, c or d to determine primary-to-secondary leak rate and rate of change of primary to secondary leakage.

Responsible Dept: Operations  
 Initiated By: Alan E. Smith Reviewed by: REH  
 Approved For Use in Ops Dept. by: [Signature]  
 Issue Date: 01-05-2005 Expiration Date: N/A

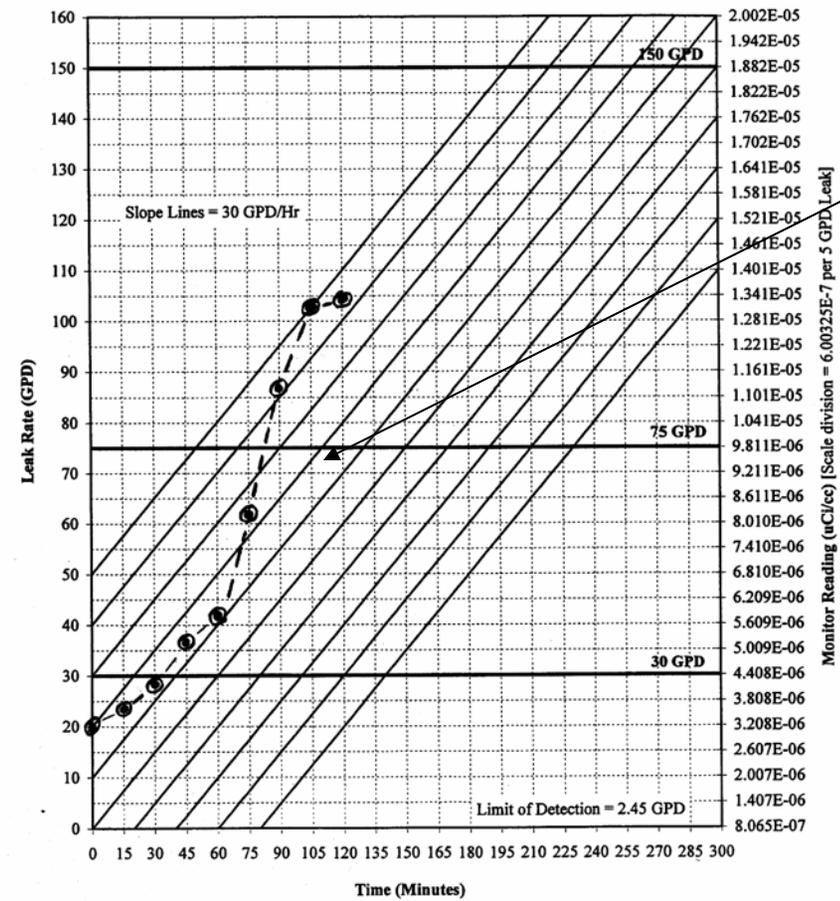
2-Figure 19.19b Rev. 2

NUCLEAR DOCUMENT  
MANAGEMENT SECTION

JAN 05 2005

**Primary to Secondary Leak Rate  
(Unit 2 at 10 SCFM)**

CONTROLLED DOCUMENT



**CT:** Operator graphs the radiation monitor data as indicated. Slope of curve indicated leakrate exceeds 30 GPD.



## Task Briefing

Unit 2 is at 100% power. Radiation Monitoring Panel Alert alarm was received on SRA 2900. A RCS to Steam Generator Tube Leak is suspected. The BOP has taken initial action per 12-OHP-4024-139, Drop 25 to record SRA-2905 activity and leak rate on Data Sheet 1 at 15 minute intervals.

Your are the extra SRO.

The US directs you to plot the data and determine the total leak rate in accordance with 12-OHP-4024-139, Drop 25. Report your results and any operational limitations required per 12-OHP-4024-139, Drop 25.

Steam Jet Air Ejector Radiation Readings	
TIME	RMS Reading
0	3.20E-06
+15	3.70E-06
+30	4.20E-06
+45	5.10E-06
+60	5.80E-06
+75	8.20E-06
+90	1.12E-05
+105	1.30E-05
+120	1.31E-05
SJAE flow rate = 7.0 scfm	

**N06-SRO-e**

<b>TITLE</b>	<b>Prepare Prompt NRC Notification Worksheet</b>
<b>PROGRAM</b>	<b>Initial Licensed Operator (ILT)</b>

<b>REVISION</b>	<b>0</b>
<b>TIME</b>	<b>10 Minutes</b>

SCOPE OF REVISION: New Issue

**AUTHOR**

**Name:** Max Bailey  
**Signature:** \_\_\_\_\_

**DATE:**

**FACILITY  
REVIEWER**

**Name:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_

Facility Supervisor / Manager

<b>COURSE NUMBER AND TITLE:</b>	<b>N06-SRO-e Prepare Prompt NRC Notification Worksheet</b>	<b>REVISION: 0</b>
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**REFERENCES**

PMP-7030-001-001, Rev 8 Prompt NRC Notification  
 10 CFR 50.72, Notification of NRC  
 NUREG-1022, Revent Reporting Guidelines

**TASK**

TASK ID: ADM1250304 Make a prompt NRC notification

K/A Statement: 2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.

K/A Importance: RO: 2.2 SRO: 3.6

**EVALUATION SETTING**

Classroom

**HANDOUTS**

Task Briefing Sheet  
 Copy of procedure PMP-7030-001-001

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

**COURSE NUMBER  
AND TITLE:**

**N06-SRO-e  
Prepare Prompt NRC Notification Worksheet**

**REVISION: 0**

### **TASK OBJECTIVES/STANDARDS**

Determine NRC notification requirements and prepare an event notification worksheet.

### **EVALUATOR INSTRUCTIONS**

Brief the student by providing the student with a task briefing sheet to read. Provide a copy of PMP-7030-001-001 for reference use.

### **TASK BRIEFING**

You are the extra SRO.

The Shift Manager directs you to determine the NRC notification requirements and prepare an event notification worksheet (Data Sheet 1) for prompt NRC NOTIFICATION in accordance with PMP-7030-001-001.

The following plant conditions exist as noted.

- **Current time is 1400**
- DC Cook Units 1 & 2 were both operating at 100% steady state power.
- At 1325 today, Unit 1 tripped from 100% power.
- The reason for the reactor trip was a steam-flow/feed-flow mismatch with low SG level in #11 SG which was caused by the #11 SG Feed. Reg. Valve (FRV-110) failing closed.
- Steam Generator #12 Safety Valve has opened and did not reseal (remains partially open).
- The Unit 1 operation crew manually initiated Safety Injection due to uncontrolled lowering of RCS temperature / pressure, and Steam Generator #12 pressure continues to lower.
- The Unit 1 operating crew has completed E-0, Reactor Trip and Safety Injection, E-2 Faulted Steam Generator Isolation, and is currently in ES-1.1, SI Termination. SI flow has been terminated per ES-1.1.
- **Present RCS conditions:** RCS is stable in Mode 3; level in SG #12 is at 5% WR and slowly lowering; all other SG's are being maintained between 26% and 50% NR on auxiliary feedwater; and there is no detectable radiation release in progress.
- All other plant systems responded normally to the trip.
- The SM has determined that NO Emergency Classification is required per PMP-2080-EPP-101.

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PROMPT NRC NOTIFICATION			

**3 DETAILS**

**3.1 Reporting – Notification**

3.1.1 The purpose of this section is to outline the reportability process to be followed when issues arise as it applies to the following reports:

- One (1) hour
- Four (4) hour
- Eight (8) hour
- Twenty-four (24) hour
- Two (2) day

- a. It is a requirement of 10 CFR 50.72 that the above reports be made within the required time frames.
- b. If an event occurs or an engineering issue is brought to light that may be reportable based on 10 CFR 50.72 reporting criteria, initiate the reportability process by promptly contacting the SS/SM. The following activities shall be performed:
  1. The SS/SM, in consultation with the Shift Technical Advisor, Operations and Regulatory Affairs Duty Personnel, will determine if assistance from other plant organizations is required to determine reportability.
  2. Notify Regulatory Affairs of event or issue.
- c. The individuals from step 3.1.1b.1 reviewing the event/issue shall make a determination of reportability.
- d. Use the Figure 1, Reportability Flowchart, to aid in determining the reportability of the event or issue. Use the text in the procedure as an additional source of information and clarification. In addition, NUREG-1022, Revision 2, Event Reporting Guidelines 10 CFR 50.72 and 50.73, contains additional information including examples that may clarify reportability.
- e. Reports not specifically identified in 10 CFR 50.72 are found in their respective parts of the CFR.
- f. Complete the Event Notification Worksheet, NRC Form 361 (Data Sheet 1), or facsimile, and attach all supporting documentation utilized in the determination.

**CT:** Determine from conditions stated that the event is reportable per guidance provided in PMP 7030-001-001

Refers to FIGURE 1 to identify reportability and the reference text section for information and clarification

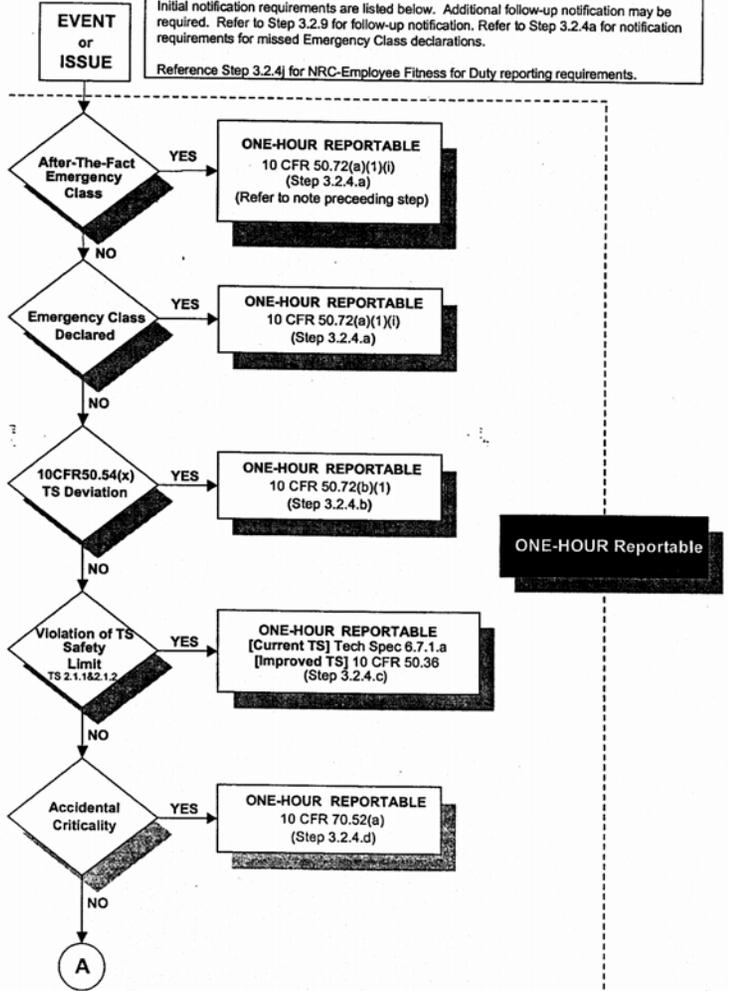
**CT:** Goes to Data Sheet 1

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<b>PROMPT NRC NOTIFICATION</b>			
Figure 1	Reportability Flowchart	Pages: 28 - 33	

**NOTE:** This aid is intended to provide a quick reference to the user back to the appropriate procedure section.

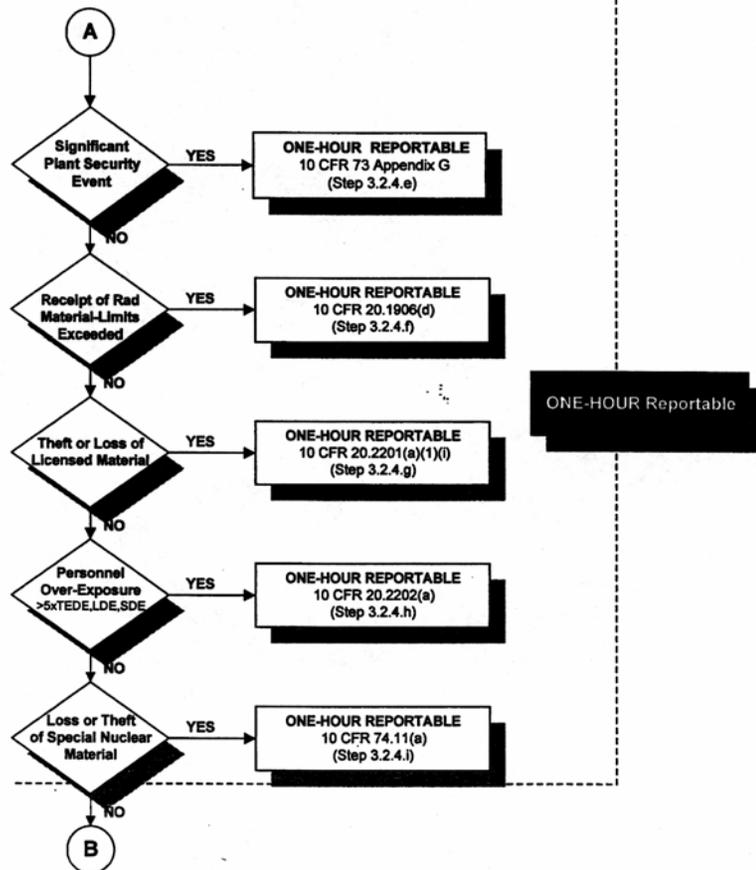
Initial notification requirements are listed below. Additional follow-up notification may be required. Refer to Step 3.2.9 for follow-up notification. Refer to Step 3.2.4a for notification requirements for missed Emergency Class declarations.

Reference Step 3.2.4j for NRC-Employee Fitness for Duty reporting requirements.



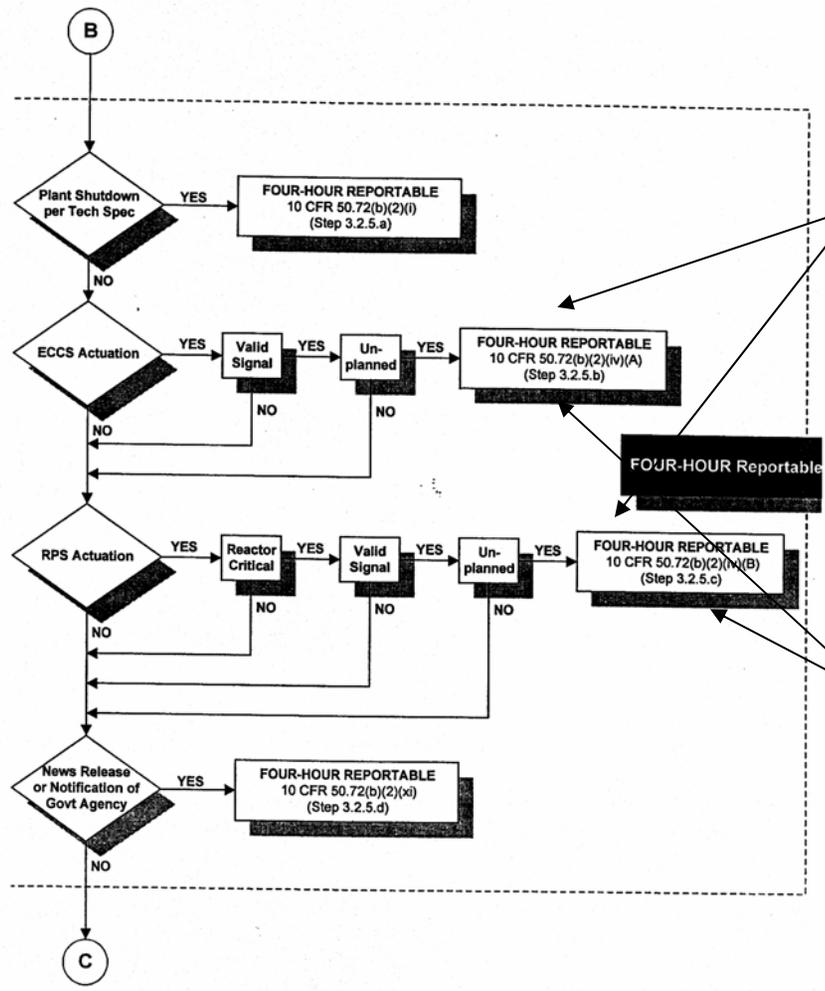
**NO CRITERIA ON THIS PAGE APPLY TO THE STATED PLANT CONDITIONS.**

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<b>PROMPT NRC NOTIFICATION</b>			
Figure 1	Reportability Flowchart		Pages: 28 - 33



**NO CRITERIA ON THIS PAGE APPLY TO THE STATED PLANT CONDITIONS.**

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<b>PROMPT NRC NOTIFICATION</b>			
Figure 1	Reportability Flowchart		Pages: 28 - 33



CT: Identifies that an unplanned ECCS actuation and unplanned reactor trip from a critical condition, both from valid signals requires a report within 4 hours.

CT: Note the sections in the procedure text that provide information or clarification of this flow chart determination.

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PROMPT NRC NOTIFICATION			

j. Fitness for Duty. See Attachment 1, Section 3.3 for additional information.

1. The regulations found in 10 CFR 26 do not apply to NRC employees, law enforcement personnel, or offsite emergency fire and medical response personnel while responding onsite. [10 CFR 26.2(b)]
2. If a licensee has a reasonable belief that an NRC employee may be under the influence of any substance, or otherwise unfit for duty, the licensee may not deny access, but shall escort the individual. In any instance of this occurrence, the appropriate Regional Administrator must be notified immediately by telephone. During other than normal working hours, the NRC Operations Center must be notified. Concurrently, notify the Senior Resident Inspector. [10 CFR 26.27(d)]

### 3.2.5 Four Hour Reports

Notify the NRC as soon as practical and in all cases, within **four hours**, of the discovery of any event similar to the below listed events and identify that event as being reported as a Four Hour Report.

**NOTE:** This includes initiation of any shutdown due to expected inability to restore equipment prior to exceeding the LCO action time. This does not include mode changes required by TS if initiated after the plant is already in a shutdown condition. [NUREG 1022, Sect. 3.2.1]

- a. The initiation of any nuclear plant shutdown required by the plant's Technical Specifications. [10 CFR 50.72(b)(2)(i)]

**NOTE:** Any valid unplanned automatic or manual ECCS signal is reportable. [NUREG 1022, Sect. 3.2.6]

- b. Any event that results or should have resulted in Emergency Core Cooling System (ECCS) discharge into the reactor coolant system as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. [10 CFR 50.72(b)(2)(iv)(A)]

**CT:** Refers to section in procedure text for information of clarification of flow chart results

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PROMPT NRC NOTIFICATION			

**NOTE:** Any valid unplanned automatic or manual critical scram is reportable. If an operator were to manually scram the reactor in anticipation of receiving an automatic reactor scram, this would be reportable. [NUREG 1022, Sect. 3.2.6]

- c. Any event or condition that results in actuation of the Reactor Protection System (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. [10 CFR 50.72(b)(2)(iv)(B)]
- d. Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials. Some minor environmental reports to other government agencies do not need follow up NRC reporting. [10 CFR 50.72 (b)(2)(xi), NUREG 1022, Sect. 3.2.12]

**3.2.6 Eight Hour Reports**

Notify the NRC as soon as practical and in all cases, within **eight hours**, of the discovery of any event similar to the below listed events and identify that event as being reported as a Eight Hour Report.

- a. Any event or condition that results in: [10 CFR 50.72(b)(3)(ii)]

**NOTE:** This condition applies to material (e.g., metallurgical or chemical) problems that cause abnormal degradation of or stress upon the principal safety barriers (i.e., fuel cladding, RCS pressure boundary, or containment). Abnormal degradation of a barrier may be indicated by the necessity of taking corrective action to restore the barrier's capability. Abnormal stress upon a barrier may result from an unplanned transient. [NUREG 1022, Sect. 3.2.4]

- 1. The condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or

**CT:** Refers to section in procedure text for information of clarification of flow chart results.

**COURSE NUMBER AND TITLE:**

**N06-SRO-e  
Prepare NRC Prompt Notification Worksheet**

**REVISION: 0**

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Data Sheet 1	Event Notification Worksheet		Pages: 26 - 27

PAGE 1 OF 2

NRC FORM 361 (12-2000)		<b>REACTOR PLANT EVENT NOTIFICATION WORKSHEET</b>		U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER	
EN #					
NRC OPERATION TELEPHONE NUMBER: PRIMARY - 301-816-5100 OR 800-532-3469* - BACKUP - [1 ST] 301-951-0550 OR 800-449-3694* [2 ND] 301-415-0550 AND [3 RD] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.					
NOTIFICATION TIME <b>1400</b>	FACILITY OR ORGANIZATION <b>DC COOK</b>	UNIT <b>1</b>	NAME OF CALLER <b>FILL IN NAME</b>	CALL BACK # <b>ANY EXTENSION</b>	
EVENT TIME & ZONE <b>1325 EST/EST</b>	EVENT DATE <b>TODAY</b>	POWER/MODE BEFORE <b>1</b>	POWER/MODE AFTER <b>3</b>		
<b>EVENT CLASSIFICATIONS</b>					
GENERAL EMERGENCY	GENA/AAEC	1-Hr Non-Emergency 10 CFR 50.72 (b)(4) TS Deviation		(v)(A) Safe Stop Capability	AUNA
SITE AREA EMERGENCY	SIT/AAEC	4-Hr Non-Emergency 10 CFR 50.72 (b)(2)		(v)(B) Shift Capability	CSIB
ALERT	ALE/AAEC	(i) TS Required S/D	ASHU	(v)(C) Control of Rad Release	AANC
UNUSUAL EVENT	UNU/AAEC	(iv)(A) ECCS Discharge to RCS	ACCS	(v)(D) Accident Mitigation	AAND
50.72 NON-EMERGENCY	(see next column)	(iv)(B) RPS Actuation (scram)	ARPS	(vi) Other Medical	AMED
PHYSICAL SECURITY (73.71)	DDDD	(xi) Offsite Notification	APBE	(viii) Loss Comm/Atm/Resp	ACOM
MATERIAL/EXPOSURE	B???	8-Hr Non-Emergency 10 CFR 50.72 (b)(3)		60-Day Optional 10 CFR 50.73 (a)(1)	
FITNESS FOR DUTY	HFTT	(ii)(A) Degraded Condition	ADEG	Invalid Specified System Actuation	
OTHER UNSPECIFIED REQMT. (see last column)		(ii)(B) Unanalyzed Condition	AUNA	Other Unspecified Requirement (Identity)	
INFORMATION ONLY	NNF	(iv)(A) Specified System Actuation	AESF		NONR
					MONR
<b>DESCRIPTION</b>					
Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)					
<b>Fill in Information</b>					
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD? <input type="checkbox"/> YES (Explain above) <input checked="" type="checkbox"/> NO	
NRC RESIDENT	<input checked="" type="checkbox"/>				
STATE(S)				DID ALL SYSTEMS FUNCTION AS REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO (Explain Above)	
LOCAL					
OTHER GOV AGENCIES				MODE OF OPERATION UNTIL CORRECTED:	ESTIMATED RESTART DATE:
MEDIA/PRESS RELEASE				ADDITIONAL INFO ON BACK <input type="checkbox"/> YES <input type="checkbox"/> NO	

**CT:** Fill in applicable data to include:

Notification of Time / Facility or organization

Unit / Caller / Call Back Number (Can be any plant extension)

Event Time / Date / mode (Before and After)

**CT:** 4 hr Classification (TS required SD & ECCS to RCS)

Description:

Reactor Trip due to the Feed Reg Valve closure on SG #11 causing a SF/FF mismatch with low SG level. This was followed by a manual ECCS Actuation on lowering RCS Temp & Pressure from steam release through SG #12 safety valve that opened and failed to reseat. RCS stable in mode three, SI terminated per ES-1.1, SI Termination, SG #12 has blown down and all other SGs are stable at 26% to 50% NR level.

Notifications (NRC)

Other Information

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Data Sheet 1	Event Notification Worksheet	Pages: 26 - 27	

ADDITIONAL INFORMATION

PAGE 2 OF 2

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
LIQUID RELEASE	GASEOUS RELEASE	UNPLANNED RELEASE	PLANNED RELEASE	ONGOING	TERMINATED	
MONITORED	UNMONITORED	OFFSITE RELEASE	T.S. EXCEEDED	RM ALARMS	AREAS EVACUATED	
PERSONNEL EXPOSED OR CONTAMINATED		OFFSITE PROTECTIVE ACTIONS RECOMMENDED		*State release path in description.		
	Release Rate (Ci/sec)	% T.S. Limit	HOO GUIDE	Total Activity (Ci)	% T.S. Limit	HOO GUIDE
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 µCi/sec			0.01 Ci
Particulate			1 µCi/sec			1 mCi
Liquid (excluding tritium & dissolved noble gases)			10 µCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						
	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	S/G BLOWDOWN	OTHER	
RAD MONITOR READINGS:						
ALARM SETPOINTS						
% T.S. LIMIT (if applicable)						

RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS: (specific details/explanations should be covered in event description)  
LOCATION OF THE LEAK (e.g. SG#, valve, pipe, etc.):

LEAK RATE:	UNITS: gpm/gpd	T.S. LIMITS:	SUDDEN OR LONG TERM DEVELOPMENT:
LEAK START DATE:	TIME:	COOLANT ACTIVITY & UNITS: PRIMARY -	SECONDARY -
LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL:			

EVENT DESCRIPTION (Continued from front)

NO ITEMS ON THIS PAGE ARE APPLICABLE

JPM IS COMPLETE

## Task Briefing

You are the extra SRO.

The Shift Manager directs you to determine the NRC notification requirements and prepare an event notification worksheet (Data Sheet 1) for prompt NRC NOTIFICATION in accordance with PMP-7030-001-001.

The following plant conditions exist as noted.

- **Current time is 1400**
- DC Cook Units 1 & 2 were both operating at 100% steady state power.
- At 1325 today, Unit 1 tripped from 100% power.
- The reason for the reactor trip was a steam-flow/feed-flow mismatch with low SG level in #11 SG which was caused by the #11 SG Feed. Reg. Valve (FRV-110) failing closed.
- Steam Generator #12 Safety Valve has opened and did not reseal (remains partially open).
- The Unit 1 operation crew manually initiated Safety Injection due to uncontrolled lowering of RCS temperature / pressure, and Steam Generator #12 pressure continues to lower.
- The Unit 1 operating crew has completed E-0, Reactor Trip and Safety Injection, E-2 Faulted Steam Generator Isolation, and is currently in ES-1.1, SI Termination. SI flow has been terminated per ES-1.1.
- **Present RCS conditions:** RCS is stable in Mode 3; level in SG #12 is at 5% WR and slowly lowering; all other SG's are being maintained between 26% and 50% NR on auxiliary feedwater; and there is no detectable radiation release in progress.
- All other plant systems responded normally to the trip.
- The SM has determined that NO Emergency Classification is required per PMP-2080-EPP-101.