



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: **Verifying SLC Operating Parameters**

LESSON NUMBER: **AOT-ADM-JP-005-01**

REVISION NO: **1**

Developer: Lou Sosler	Date: 7/21/2014
Technical Review: Bob Bolin	Date: 7/22/2014
Validator: William D. Pickett	Date: 8/7/2014
Facility Representative: Jerry Pierce	Date: 8/11/2014

Veryfying SLC Operating Parameters

RELATED TASKS:

211602B104 - Determine SLC Tank Volume Manually Per OP-05

299601B204 - Perform Reactor Building Auxiliary Operator Daily Surveillance Report Per OI-3.3, including all shifts and all mode checks.

K/A REFERENCE AND IMPORTANCE RATING:

211000 K5.06 3.0/3.2

Knowledge of the operational implications of the tank level as it applies to SLC.

Generic 2.1.7 4.4/4.7

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. 4.4/4.7

REFERENCES:

2OP-05 Standby Liquid Control System

0OI-03.3 Auxiliary Operator Daily Surveillance Report

Tech Spec Figures 3.1.7-1 and 3.1.7-2.

TOOLS AND EQUIPMENT:

None

SAFETY FUNCTION (from NUREG 1123, Rev. 2, Supp. 1):

Administrative – Conduct Of Operations

SETUP INSTRUCTIONS

None

Verifying SLC Operating Parameters

SAFETY CONSIDERATIONS:

Consider Core-4 including Take-A-Minute prior to performing JPM.

EVALUATOR NOTES: (Do not read to performer)

1. The applicable procedure section **WILL** be provided to the trainee.
2. Prior to the first JPM of the JPM set, provide the JPM briefing contained in NUREG-1021, Appendix E, or similar briefing (for non-regulated exams) to the trainee(s).
3. This JPM may be administered in any setting including classroom, and may be administered in a classroom to multiple examinees simultaneously.
4. Critical Step Basis
 - a. Prevents Task Completion
 - b. May Result in Equipment Damage
 - c. Affects Public Health and Safety
 - d. Could Result in Personal Injury

SPECIAL INSTRUCTIONS:

Obtain copy of Section 6 and Figures 1, 2, and 3 from 2OP-05 to provide to the Examinee.

Veryfying SLC Operating Parameters

Read the following to the JPM performer.

TASK CONDITIONS:

1. 2OP-05, Standby Liquid Control System Operating Procedure Section 8.6, Manual Volume Determination, has been completed up to 8.6.2.3.
2. The B-10 Atomic Enrichment is 51%.
3. Standby Liquid Control tank solution temperature (2-C41-TIC-R002) is 66°F.
4. SLC Pump suction piping temperature (2-C41-TI-5060 point 2) is 62°F.
5. SLC Pump discharge piping temperature (2-C41-5060 point 12) is 61°F.
6. The SLC Tank concentration is 8.6%.

INITIATING CUE:

You are directed by the CRS to perform 2OP-05, Step 8.6.2.4, and then determine Normal System Operating Parameters. inform the Control Room Supervisor of the results.

Verifying SLC Operating Parameters

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

TIME START: _____

NOTE: Normal System Operating Parameters are listed in Section 6.1 of 2OP-05. In order to determine SLC Tank Volume vs. Concentration, volume must first be determined using Figure 3. Attachment, Section 8.6.2.3, provides the level.

Step 1 – Calculates, using 2OP-05 Figure 3, that the volume in the tank is 2650 gallons.
Calculates volume in the SLC tank as 2650 gallons.

SAT/UNSAT

NOTE: SR 3.1.7.1 states 'Verify volume of sodium pentaborate solution is within the limits of Figure 3.1.7-1.'

Step 2 – Identifies that the volume (2650 gallons) versus the concentration (8.6%) is within the acceptable range of Figure 1 for the SLC system.
Identifies that for the volume vs. concentration, is acceptable.

****CRITICAL STEP** SAT/UNSAT**

Step 3 – Identifies that the tank temperature is within the operating range of 65-80°F.
Identifies that for the temperature is acceptable.

****CRITICAL STEP** SAT/UNSAT**

Verifying SLC Operating Parameters

NOTE: SR 3.1.7.3 states 'Verify pump suction and discharge piping up to the SLC injection valves is within the limits of Figure 3.1.7-2.'

Step 4 – Identifies that the temperature of the pump suction (62°F), and discharge temperature (61°F) with solution concentration (8.6%), is within the acceptable range of Figure 2 for the tank.

Identifies that temperature vs. concentration is acceptable.

****CRITICAL STEP** SAT/UNSAT**

Step 5 – Inform Control Room Supervisor of results of SLC parameters verification.

Control Room Supervisor informed of results.

SAT/UNSAT

TERMINATING CUE: When SLC parameters verification has been completed, this JPM is complete.

TIME COMPLETED: _____

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

Verifying SLC Operating Parameters

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT.

A. CORE 4	SAT / UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc)	SAT / UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT / UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking).	SAT / UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT / UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT / UNSAT/ NE
G. Electrical Safety and Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT / UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT / UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT / UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT / UNSAT/ NE

Verifying SLC Operating Parameters

REVISION SUMMARY

1	Formatting changes to match the JPM template, revision 3. Changed numbers to make all parameters be within the acceptable range. Validated using 2OP-05 Standby Liquid Control Procedure revision 65. Added Duke Energy Progress image to cover page. Updated work practices to current plant expectations.
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Veryfying SLC Operating Parameters

Validation Time: 15 Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	<u>X</u>	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	_____	No	<u>X</u>	Time Limit:	<u>N/A</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments: _____

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

TASK CONDITIONS:

1. 2OP-05, Standby Liquid Control System Operating Procedure Section 8.6, Manual Volume Determination, has been completed up to 8.6.2.3.
2. The B-10 Atomic Enrichment is 51%.
3. Standby Liquid Control tank solution temperature (2-C41-TIC-R002) is 66°F.
4. SLC Pump suction piping temperature (2-C41-TI-5060 point 2) is 62°F.
5. SLC Pump discharge piping temperature (2-C41-5060 point 12) is 61°F.
6. The SLC Tank concentration is 8.6%.

INITIATING CUE:

You are directed by the CRS to perform 2OP-05, Step 8.6.2.4, and then determine Normal System Operating Parameters. Inform the Control Room Supervisor of the results.

SLC Normal Operating Parameters

<u>Parameter</u>	<u>Satisfactory</u>	<u>Unsatisfactory</u>
SLC Storage Tank Level		
SLC Storage Tank Temperature		
SLC Pump suction – discharge piping temperature		

8.6 Manual Volume Determination

C
Continuous
Use

8.6.1 Initial Conditions

1. Normal level indication is out of service. AC
2. SLC Storage tank air sparging is **NOT** in use. AC
3. Unit CRS's permission obtained to perform this procedure. AC
4. The following equipment obtained to determine tank volume: AC
 - Flashlight
 - Tape measure or other method to measure at least 80 inches.
 - Crescent wrench

8.6.2 Procedural Steps

CAUTION

When the SLC tank access is open, care should be taken to ensure no foreign material falls into the tank.

1. **ENSURE** the applicable level of Foreign Materials Exclusion controls are established in accordance with MNT-NGGC-0007, Foreign Material Exclusion Program. AC
2. **UNBOLT AND REMOVE** the manway cover on top of the SLC Storage Tank. AC

NOTE: Measurement should be taken from the top of the tank, **NOT** the top of the manway cover.

3. **MEASURE** the distance from the surface of the liquid to the top of the tank. AC
71 inches
4. **DETERMINE** the sodium pentaborate available volume using Figure 3. ☐



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: Evaluate a Clearance Request – 2A CRD Pump

LESSON NUMBER: LOT-ADM-JP-201-E02

REVISION NO: 2

Developer: Lou Sosler	Date: 10/13/2013
Technical Review: Bob Bolin	Date: 7/16/2014
Validator: William D. Pickett	Date: 7/17/2014
Facility Representative: Jerry Pierce	Date: 8/11/2014

Evaluate a Clearance Request – 2A CRD Pump

RELATED TASKS:

299020B301
Develop a Clearance Per OPS-NGGC-1301

K/A REFERENCE AND IMPORTANCE RATING:

Generic 2.2.13 4.1/4.3
Knowledge of tagging and clearance procedures

REFERENCES:

OPS-NGGC-1301

TOOLS AND EQUIPMENT:

Reference prints and OP lineups

SAFETY FUNCTION (from NUREG 1123, Rev. 2, Supp. 1):

Admin – Equipment Control

SETUP INSTRUCTIONS

None

Evaluate a Clearance Request – 2A CRD Pump

SAFETY CONSIDERATIONS:

Consider Core-4 including Take-A-Minute prior to JPM performance.

EVALUATOR NOTES: (Do not read to performer)

1. Prior to the first JPM of the JPM set, provide the JPM briefing contained in NUREG-1021, Appendix E, or similar briefing (for non-regulated exams) to the trainee(s).
 2. The applicable prints D-02516 SH1A & 1B, D-02538 SH2, LL-09113 SH32, and Attachments 2 & 4 of OPS-NGGC-1301 **WILL** be provided to the performer.
 3. The evaluator should have available copies of valve lineups from 2OP-08 & 21 to support performance of JPM if the performer asks for them.
 5. Critical Step Basis
 - a. Prevents Task Completion
 - b. May Result in Equipment Damage
 - c. Affects Public Health and Safety
 - d. Could Result in Personal Injury
-

Evaluate a Clearance Request – 2A CRD Pump

Read the following to the JPM performer.

TASK CONDITIONS:

1. You are an operator in the Work Control Center. Passport is not available for use.
2. Maintenance has prepared a Clearance Request to place CRD Pump 2A under clearance for scheduled work. CRD Pump 2B will be running.
3. This clearance is to allow maintenance to perform two WOs.
 - a. The first WO is to allow maintenance to sample lube oil on CRD Pump 2A motor bearings and speed changer, and to inspect the seal cooling water lines (requires breaking flanges on cooling water lines at the pump).
 - b. The second WO is to lift the pump so the pump feet can be honed due to high vibration (requires breaking flanges at the pump).

INITIATING CUE:

The WCC SRO directs you to evaluate the attached Clearance Request Form (Attachment 2 of OPS-NGGC-1301) and proposed Clearance Checklist (Attachment 4 of OPS-NGGC-1301).

Determine the adequacy of the clearance boundary, and inform him if the proposed clearance is adequate. Mark any proposed changes directly on the Equipment Clearance Checklist.

Evaluate a Clearance Request – 2A CRD Pump

ATTACHMENT 2

Page 1 of 1

SHOP SUPPORT CLEARANCE BOUNDARIES REQUEST FORM

Requestor Complete: (Please print.)

Name	Mechanical Supervisor	Ext. No.	0000
Work Group	Z73 (Mechanical Maintenance)	Date	Today
Unit No.	2		
System No.	2-C12		
Clearance Request No.	1234567-01		
Work Order No.	WO 1234567		

Individual(s) determining required clearance boundaries complete the following:

Identify clearance specifications – Items required to be tagged (attach list is necessary):
Fluid boundary
System depressurized
Power Supply breaker racked out/off

List reference drawings and procedures (attach list if necessary):
OPS-NGGC-1301
D-02516, SH1A&B
D-02538, SH2
LL-09113, SH32, LL-09114, SH29
2OP-08
2OP-21

Identify special requests, precautions, and prerequisites:
Need SS Waiver of 2 isolation valve requirement.

Performer		Independent Verifier	
Print Name	Joe Mechanic	Print Name	Jane Mechanic
Sign	Signed	Sign	Signed
Date	Today	Date	Today

Evaluate a Clearance Request – 2A CRD Pump

ATTACHMENT 4

Page 1 of 1

EQUIPMENT CLEARANCE CHECKLIST

Clearance No. N/A

Page 1 of 1

Checklist Type: ☒ Hang ☐ Lift ☐ Boundary Change (Check one)

INT Passport Short Name (PRINT) INT Passport Short Name (PRINT)

* Independent/Concurrent Verification Required? YES / NO If NO, N/A the Blocks

Seq	Action	Type	Tag Id	Position	Equipment/Component	Completed By	Verified By*
1	Hang	CIT	2-C12-CS-Z4A	INFTAH	CRD Pump 2A Control Switch		
2	Hang	RED	2-E3-AI2	RACOR	Motor Feeder 2-E3-AI2		
3	Hang	RED	2-C12-F013A	CLOLOC	CRD Pump 2A Suction Valve		
4	Hang	RED	2-C12-F015A	CLOLOC	CRD Pump 2A Recirc Valve		
5	Hang	RED	2-C12-F014A	CLOLOC	CRD Pump 2A Discharge Valve		
6	Hang	RED	2-RCC-V295	CLOSED	RBCCW Cooling Inlet Valve		
7	Hang	RED	2-RCC-V7	CLOSED	RBCCW Cooling Outlet Valve		
8	Hang	CIT	2-C12-V45	CLOSED	CRD Pump 2A Drain Valve		
9	Hang	RED	2-C12-F109A	OPEN	CRD Pump 2A Casing Vent Valve		

Evaluate a Clearance Request – 2A CRD Pump

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

TIME START: _____

Step 1 – Evaluates CIT INFTAH Tag for the RTGB Control Switch 2-C12-CS-Z4A.
Determines no deficiencies for the info tag.

SAT/UNSAT

Step 2 – Evaluates Red RACOR Tag for the Motor Feeder 2-E3-AI2.
Identifies deficiency for the breaker number, which should be 2-E3-AJ2.

****CRITICAL STEP** SAT/UNSAT**

Step 3 – Evaluates Red CLOLOC Tag for the Suction Valve 2-C12-F013A.
Determines wrong sequence. Discharge valve should be tagged prior to suction valve.

****CRITICAL STEP** SAT/UNSAT**

Step 4 – Evaluates Red CLOLOC Tag for the Recirc Valve 2-C12-F015A.
Determines no deficiencies for the locked closed tag.

SAT/UNSAT

Step 5 – Evaluates Red CLOLOC Tag for the Discharge Valve 2-C12-F014A.
Determines wrong sequence. Discharge and Suction valve sequence is reversed.

****CRITICAL STEP** SAT/UNSAT**

Evaluate a Clearance Request – 2A CRD Pump

Step 6 – Evaluates Red Closed Tag for the Cooling Inlet Valve 2-RCC-V295.
Identifies wrong valve listed. Valve should be 2-RCC-V294.

****CRITICAL STEP** SAT/UNSAT**

Step 7 – Evaluates Red Closed Tag for the Cooling Outlet Valve 2-RCC-V7.
Identifies wrong valve listed. Valve should be 2-RCC-V8.

****CRITICAL STEP** SAT/UNSAT**

Step 8 – Evaluates CIT Closed Tag for the Pump Drain Valve 2-C12-V45.
Determines that tag should be a RED tag and the valve position should be OPEN or HANG NOT, valve position ANY, if drain is by craft.

***CRITICAL STEP** SAT/UNSAT**

Step 9 – Evaluates Red Open Tag for the Casing Vent Valve 2-C12-F109A.
Determines no deficiencies for the open tag.

SAT/UNSAT

Step 10 – Identify the positive seal line isolation valve not included in boundary request.
*Determine positive seal pressure valve (2-C12-F017) should be added.
(Red Closed Tag sequenced anywhere after the breaker but before the Drain Valve).*

****CRITICAL STEP** SAT/UNSAT**

Step 11 – Evaluates Sequence of the steps of the clearance.
Determines no deficiencies for the sequence.

SAT/UNSAT

Evaluate a Clearance Request – 2A CRD Pump

Step 12 - Inform WCC SRO of results._

WCC SRO informed that the clearance is UNSAT as written for the following reasons:

- *Feed breaker ID#*
- *Incorrect RCC inlet valve listed*
- *Incorrect outlet valve listed*
- *Incorrect drain valve tag type and position*
- *Positive seal pressure valve not listed*

****CRITICAL STEP** SAT/UNSAT**

TERMINATING CUE: When the clearance request has been evaluated for adequacy of the proposed boundary, this JPM is complete.
--

TIME COMPLETED: _____

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

Evaluate a Clearance Request – 2A CRD Pump

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT

A. CORE 4	SAT/ UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc.)	SAT/ UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT/ UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking)	SAT/ UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT/ UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT/ UNSAT/ NE
G. Electrical Safety And Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT/ UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT/ UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT/ UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT/ UNSAT/ NE

Comments:

Evaluate a Clearance Request – 2A CRD Pump

REVISION SUMMARY

2	Revised to new JPM Template, Revision 3. Revised OPS-NGGC-1301 forms, Attachment 2 and 4. Reversed Suction and Discharge valve order. Added OPS-NGGC-1301 as reference. Revised Equipment Clearance Checklist to comply with current conventions.
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Evaluate a Clearance Request – 2A CRD Pump

Validation Time: 30 Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	<u>X</u>	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	_____	No	<u>X</u>	Time Limit:	<u>N/A</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments: _____

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

TASK CONDITIONS:

1. You are an operator in the Work Control Center. Passport is not available for use.
2. Maintenance has prepared a Clearance Request to place CRD Pump 2A under clearance for scheduled work. CRD Pump 2B will be running.
3. This clearance is to allow maintenance to perform two WOs.
 - c. The first WO is to allow maintenance to sample lube oil on CRD Pump 2A motor bearings and speed changer, and to inspect the seal cooling water lines (requires breaking flanges on cooling water lines at the pump).
 - d. The second WO is to lift the pump so the pump feet can be honed due to high vibration (requires breaking flanges at the pump).

INITIATING CUE:

The WCC SRO directs you to evaluate the attached Clearance Request Form (Attachment 2 of OPS-NGGC-1301) and proposed Clearance Checklist (Attachment 4 of OPS-NGGC-1301).

Determine the adequacy of the clearance boundary, and inform him if the proposed clearance is adequate. Mark any proposed changes directly on the Equipment Clearance Checklist.

SHOP SUPPORT CLEARANCE BOUNDARIES REQUEST FORM**Requestor Complete: (Please print.)**

Name	Mechanical Supervisor	Ext. No.	0000
Work Group	Z73 (Mechanical Maintenance)	Date	Today
Unit No.	2		
System No.	2-C12		
Clearance Request No.	1234567-01		
Work Order No.	WO 1234567		

Individual(s) determining required clearance boundaries complete the following:

Identify clearance specifications – Items required to be tagged (attach list is necessary):
Fluid boundary
System depressurized
Power Supply breaker racked out/off

List reference drawings and procedures (attach list if necessary):
OPS-NGGC-1301
D-02516, SH1A&B
D-02538, SH2
LL-09113, SH32, LL-09114, SH29
2OP-08
2OP-21

Identify special requests, precautions, and prerequisites:
Need SS Waiver of 2 isolation valve requirement.

Performer		Independent Verifier	
Print Name	Joe Mechanic	Print Name	Jane Mechanic
Sign	Signed	Sign	Signed
Date	Today	Date	Today

EQUIPMENT CLEARANCE CHECKLISTClearance No. N/APage 1 of 1Checklist Type: ☒ Hang ☐ Lift ☐ Boundary Change (Check one)

INT Passport Short Name (PRINT) INT Passport Short Name (PRINT)

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

* Independent/Concurrent Verification Required? YES / NO If NO, N/A the Blocks

Seq	Action	Type	Tag Id	Position	Equipment/Component	Completed By	Verified By*
1	Hang	CIT	2-C12-CS-Z4A	INFTAH	CRD Pump 2A Control Switch		
2	Hang	RED	2-E3-AI2	RACOR	Motor Feeder 2-E3-AI2		
3	Hang	RED	2-C12-F013A	CLOLOC	CRD Pump 2A Suction Valve		
4	Hang	RED	2-C12-F015A	CLOLOC	CRD Pump 2A Recirc Valve		
5	Hang	RED	2-C12-F014A	CLOLOC	CRD Pump 2A Discharge Valve		
6	Hang	RED	2-RCC-V295	CLOSED	RBCCW Cooling Inlet Valve		
7	Hang	RED	2-RCC-V7	CLOSED	RBCCW Cooling Outlet Valve		
8	Hang	CIT	2-C12-V45	CLOSED	CRD Pump 2A Drain Valve		
9	Hang	RED	2-C12-F109A	OPEN	CRD Pump 2A Casing Vent Valve		



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: Determine Total Dose For ALARA

LESSON NUMBER: LOT-ADM-JP-102-A01

REVISION NO: 2

Developer: Lou Sosler	Date: 10/13/2013
Technical Review: Bob Bolin	Date: 7/16/2014
Validator: William D. Pickett	Date: 7/17/2014
Facility Representative: Jerry Pierce	Date: 8/11/2014

Determine Total Dose For ALARA

RELATED TASKS:

None

K/A REFERENCE AND IMPORTANCE RATING:

Gen 2.3.7 3.5/3.6
Ability to comply with RWP requirement during normal or abnormal conditions

REFERENCES:

None

TOOLS AND EQUIPMENT:

Examinee may use calculator

SAFETY FUNCTION (from NUREG 1123, Rev. 2, Supp. 1):

Administrative Topic - Radiation Control

SETUP INSTRUCTIONS

None

Determine Total Dose For ALARA

SAFETY CONSIDERATIONS:

1. None
-

EVALUATOR NOTES: (Do not read to performer)

1. This is an administrative JPM designed to be administered in any setting and may be administered to multiple candidates simultaneously in a classroom setting.
 2. A calculator may be given to Trainee.
 3. Prior to the first JPM of the JPM set, provide the JPM briefing contained in NUREG-1021, Appendix E, or similar briefing (for non-regulated exams) to the trainee(s).
 4. Critical Step Basis:
 - a) Prevents Task Completion
 - b) May Result in Equipment Damage
 - c) Affects Public Health and Safety
 - d) Could Result in Personal Injury
-

Determine Total Dose For ALARA

Read the following to the JPM performer.

TASK CONDITIONS:

An suspected leak on a RWCU valve requires entry into the Drywell on Unit Two.

Three paths to arrive at the Drywell entrance are detailed below:

Dose Rate	Path 1	Dose Rate	Path 2	Dose Rate	Path 3
20 mr/hr	Transient time in the Unit 2 Turbine Building 6 minutes	24 mr/hr	Transient time in the Unit 1 Turbine Building 3 minutes	24 mr/hr	Transient time in the Unit 2 Turbine Building 6 minutes
30 mr/hr	Transient time in the Unit 2 Reactor Building 3 minutes	30 mr/hr	Transient time in the Unit 2 Turbine Building 3 minutes	36 mr/hr	Transient time in the Unit 2 Reactor Building 3 minutes
10 mr/hr	Changes into PCs to go into contaminated area in Unit 2 Reactor Building (Takes 6 minutes)	36 mr/hr	Transient time in the Unit 2 Reactor Building 6 minutes	10 mr/hr	Rides elevator in Unit 2 Reactor Building for 3 minutes
15 mr/hr	Transient time through contaminated area 3 minutes			30 mr/hr	Transient time in Unit 2 Reactor Building 3 minutes
8 mr/hr	Changes out of PCs to exit contaminated area in Unit 2 Reactor Building (Takes 6 minutes)				
Arrives at DW entrance		Arrives at DW entrance		Arrives at DW entrance	
Total Dose		Total Dose		Total Dose	

INITIATING CUE:

Determine the dose received for each path and which path maintains dose ALARA.

SRO only: Dose rates in the Drywell are 16R/hr. The Drywell entry will take 30 minutes to complete. Determine if the calculated dose received would be greater than or less than the dose limit for protection of valuable property.

Determine Total Dose For ALARA

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

TIME START: _____

Step 1 – Determine dose for Path 1 is 6.05 mr. ($20 \times 0.1 + 30 \times 0.05 + 10 \times 0.1 + 15 \times 0.05 + 8 \times 0.1$)

Dose for Path 1 determined to be 6.05 mr.

****CRITICAL STEP** SAT/UNSAT***

Step 2 - Determine dose for Path 2 is 6.3 mr. ($24 \times 0.05 + 30 \times 0.05 + 36 \times 0.1$)

Dose for Path 2 determined to be 6.3 mr.

****CRITICAL STEP** SAT/UNSAT***

Step 3 - Determine dose for Path 3 is 6.2 mr. ($8 \times 0.1 + 9 \times 0.05 + 1 \times 0.1 + 9 \times 0.05$)

Dose for Path 3 determined to be 6.2 mr.

****CRITICAL STEP** SAT/UNSAT***

Step 4 – Determine Path 1 provides lowest overall dose.

Determined Path 1 provides lowest overall dose.

****CRITICAL STEP** SAT/UNSAT***

RO

TERMINATING CUE: When dose for the three Paths is determined, and Path 1 is determined to provide the lowest dose, this JPM is complete.

RO TIME COMPLETE: _____

Determine Total Dose For ALARA

NOTE: In accordance with OPEP-03.7.6, Emergency Exposure Guidelines, the limit for protection of valuable property is 10 Rem TEDE.

Step 5 – Determine the dose received while in the Drywell.
Determines dose received in Drywell is 8 Rem (0.5 X 16R).

SAT/UNSAT*

Step 6 – Determine dose received is **less than** the dose limit for protection of valuable property.
Determines dose received is less than dose limit for protection of valuable property.

****CRITICAL STEP** SAT/UNSAT***

SRO TIME COMPLETE: _____

SRO

TERMINATING CUE: When the approval authority for dose extensions beyond 10CFR20 limits for onsite personnel is determined, this JPM is complete.

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

Determine Total Dose For ALARA

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT

A. CORE 4	SAT/ UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc.)	SAT/ UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT/ UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking)	SAT/ UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT/ UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT/ UNSAT/ NE
G. Electrical Safety And Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT/ UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT/ UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT/ UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT/ UNSAT/ NE

Determine Total Dose For ALARA

REVISION SUMMARY

2	Revised to new JPM Template, Revision 3. No technical changes.
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Determine Total Dose For ALARA

Validation Time: 10 RO / 15 SRO Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	<u>X</u>	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	_____	No	<u>X</u>	Time Limit:	<u>N/A</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments:

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

TASK CONDITIONS:

An suspected leak on a RWCU valve requires entry into the Drywell on Unit Two.

Three paths to arrive at the Drywell entrance are detailed below:

Dose Rate	Path 1	Dose Rate	Path 2	Dose Rate	Path 3
20 mr/hr	Transient time in the Unit 2 Turbine Building 6 minutes	24 mr/hr	Transient time in the Unit 1 Turbine Building 3 minutes	24 mr/hr	Transient time in the Unit 2 Turbine Building 6 minutes
30 mr/hr	Transient time in the Unit 2 Reactor Building 3 minutes	30 mr/hr	Transient time in the Unit 2 Turbine Building 3 minutes	36 mr/hr	Transient time in the Unit 2 Reactor Building 3 minutes
10 mr/hr	Changes into PCs to go into contaminated area in Unit 2 Reactor Building (Takes 6 minutes)	36 mr/hr	Transient time in the Unit 2 Reactor Building 6 minutes	10 mr/hr	Rides elevator in Unit 2 Reactor Building for 3 minutes
15 mr/hr	Transient time through contaminated area 3 minutes			30 mr/hr	Transient time in Unit 2 Reactor Building 3 minutes
8 mr/hr	Changes out of PCs to exit contaminated area in Unit 2 Reactor Building (Takes 6 minutes)				
Arrives at DW entrance		Arrives at DW entrance		Arrives at DW entrance	
Total Dose		Total Dose		Total Dose	

INITIATING CUE:

Determine the dose received for each path and which path maintains dose ALARA.

SRO only: Dose rates in the Drywell are 16R/hr. The Drywell entry will take 30 minutes to complete. The calculated dose received would be

greater than or less than

the dose limit for protection of valuable property.



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: Hand Calculation of APRM GAFs and Tech Spec Assessment

LESSON NUMBER: LOT-ADM-JP-09.6-03

REVISION NO: 0

Developer: Lou Sosler	Date: 10/13/2013
Technical Review: Bob Bolin	Date: 7/16/2014
Validator: Bruce Leitch	Date: 7/16/2014
Validator: Jerry Pierce	Date: 7/17/2014
Facility Representative: Jerry Pierce	Date: 7/17/2014

Hand Calc of APRM GAFs and Tech Spec Assessment

RELATED TASKS:

215 209 B201

Operate the Power Range Neutron Monitoring System per OP-09

K/A REFERENCE AND IMPORTANCE RATING:

GEN 2.1.23 4.3/4.4

Ability to perform specific system and integrated plant procedures during all modes of plant operation

REFERENCES:

OPT-01.8C, Hand Calculations of AGAFs
OPT-01.8D, Core Thermal Power Calculation
2PT-1.11, Core Performance Parameter Check

TOOLS AND EQUIPMENT:

Calculator

SAFETY FUNCTION (from NUREG 1123, Rev. 2, Supp. 1):

Administrative – Conduct Of Operations

SETUP INSTRUCTIONS

None

Hand Calc of APRM GAFs and Tech Spec Assessment

SAFETY CONSIDERATIONS:

Consider Core-4 including Take-A-Minute prior to performing JPM.

EVALUATOR NOTES: (Do not read to performer)

1. The applicable procedure section **WILL** be provided to the trainee.
 2. Prior to the first JPM of the JPM set, provide the JPM briefing contained in NUREG-1021, Appendix E, or similar briefing (for non-regulated exams) to the trainee(s).
 3. This JPM may be administered in any setting including classroom, and may be administered in a classroom to multiple examinees simultaneously.
 4. Critical Step Basis
 - a. Prevents Task Completion
 - b. May Result in Equipment Damage
 - c. Affects Public Health and Safety
 - d. Could Result in Personal Injury
-

Hand Calc of APRM GAFs and Tech Spec Assessment

Read the following to the JPM performer.

TASK CONDITIONS:

1. Unit Two is performing a startup following refueling. 0GP-04 is being performed.
2. Plant conditions:

Reactor pressure: 945 psig

Mode Switch Run

Reactor power (as read on APRMs at H12-P608)

APRM 1	30.2%
APRM 2	29.6%
APRM 3	30.8%
APRM 4	29.9%
3. Heat Balance on the process computer is unavailable.
4. The Reactor Engineer has calculated core thermal power to be 891.5 MWt per OPT-01.8D, Core Thermal Power Calculation.

INITIATING CUE:

The CRS directs you to perform OPT-01.8C, Hand Calculation of GAFs.

SRO Only:

You are also directed to determine if Technical Specifications are met based on current plant conditions, and if not, what Technical Specification actions are required.

Hand Calc of APRM GAFs and Tech Spec Assessment

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

TIME START: _____

NOTE: The sequence of the GAF calculations, is not critical.

Step 1 – On OPT-01.8C, record the date, time and Unit on Attachment 2, AGAF Calculation Sheet.

Date, Time and Unit recorded on Attachment 2.

SAT/UNSAT

NOTE: Thermal power of 891.5 MWt from OPT-01.8D is given as an initial condition.

Step 2 – Perform OPT-01.8D, Core Thermal Power Calculation, and record results on Attachment 2.

891.5 MWt Recorded.

SAT/UNSAT

NOTE: RATED THERMAL POWER is a Tech Spec definition.

Step 3 – Calculate percent rated CTP (desired reading) by dividing 891.5 by 2923, and multiplying times 100%, and record results of 30.5% on Attachment 2.

Determines percent rated CTP is 30.5%.

****CRITICAL STEP** SAT/UNSAT**

NOTE: APRM readings given as an initial condition.

Step 4 – Record APRM Readings from Panel P608 on Attachment 2.

APRM readings are recorded on Attachment 2.

SAT/UNSAT

Hand Calc of APRM GAFs and Tech Spec Assessment

Step 5 – Calculate the AGAF for each APRM Channel by dividing % rated CTP by APRM reading, and record results on Attachment 2.

- a. APRM 1 GAF calculated to be 1.01
APRM 1 GAF determined to be .1.01-1.02

****CRITICAL STEP** SAT/UNSAT***

- b. APRM 2 GAF calculated to be 1.03
APRM 1 GAF determined to be 1.02-1.04

****CRITICAL STEP** SAT/UNSAT***

- c. APRM 3 GAF calculated to be 0.99
APRM 1 GAF determined to be 0.99-1.00

****CRITICAL STEP** SAT/UNSAT***

- d. APRM 4 GAF calculated to be 1.02
APRM 1 GAF determined to be 1.01-1.03

****CRITICAL STEP** SAT/UNSAT**

PROMPT: If examinee requests independent verification for the AGAF calculations, inform examinee the independent verification is complete. Attachment 1 will be completed by another operator.

RO

TERMINATING CUE: When calculation of APRM GAFs has been performed, this JPM is complete.

RO TIME COMPLETE: _____

Hand Calc of APRM GAFs and Tech Spec Assessment

SRO PROMPT: What are Technical Specification requirements?

NOTE: 2PT-01.11, Core Performance Parameter Check, Acceptance Criteria, Section 4.0, identifies that **OPERABLE APRMS are adjusted such that the APRM gain adjustment factors (GAFs) are less than or equal to 1.00.**

SR 3.3.1.1.3 is not met for APRM Channels 1, 2, and 4. This SR is required for Functions 2b and 2c per Table 3.3.1.1-1, so these functions are inoperable for APRM Channels 1, 2, and 4.

This requires entry into LCO 3.3.1.1 Conditions A and C (separate entry allowed for each channel but this makes no difference). Condition A requires action A.1 (A.2 is not applicable to these functions; Condition B is also not applicable to these functions). Condition C requires restoring trip capability within one hour.

If trip capability is not restored in one hour, Condition D requires entry into Condition F immediately (Be in Mode 2 in 6 hours).

Step 6 – Determine APRM Channels 1, 2, and 4 do not currently meet operability requirements, and that LCO 3.3.1.1 conditions A and C must be entered immediately for these channels, and that conditions D and F are required to be entered after one hour

Determines LCO 3.3.1.1 is not met for APRM 1, 2, and 4 requiring entry into Conditions A and C, and after one hour entry into Conditions D and F.

****CRITICAL STEP** SAT/UNSAT**

Step 7 – Inform CRS of results of the Tech Spec assessment.

CRS informed of the results of the Tech Spec assessment

SAT/UNSAT

TERMINATING CUE: When the Alternate Power Verification and calculation of APRM GAFs have been performed, and Tech Specs actions have been determined, this JPM is complete.

SRO TIME COMPLETE: _____

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

Hand Calc of APRM GAFs and Tech Spec Assessment

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT.

A. CORE 4	SAT / UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc)	SAT / UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT / UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking).	SAT / UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT / UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT / UNSAT/ NE
G. Electrical Safety and Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT / UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT / UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT / UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT / UNSAT/ NE

Hand Calc of APRM GAFs and Tech Spec Assessment

REVISION SUMMARY

0	Revised to new JPM Template, Revision 3. New JPM.
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Hand Calc of APRM GAFs and Tech Spec Assessment

Validation Time: 15 RO / 25 SRO Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	<u>X</u>	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	_____	No	<u>X</u>	Time Limit:	<u>N/A</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments:

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

TASK CONDITIONS:

1. Unit Two is performing a startup following refueling. 0GP-04 is being performed.

2. Plant conditions:

Reactor pressure 945 psig

Mode Switch Run

Reactor power (as read on APRMs at H12-P608)

APRM 1 30.2%

APRM 2 29.6%

APRM 3 30.8%

APRM 4 29.9%

3. Heat Balance on the process computer is unavailable.

4. The Reactor Engineer has calculated core thermal power to be 891.5 MWt per OPT-01.8D.

INITIATING CUE:

The CRS directs you to perform OPT-01.8C, Hand Calculation of GAFs.

SRO Only:

You are also directed to determine if Technical Specifications are met based on current plant conditions, and if not, what Technical Specification actions are required.

Tech Spec Assessment: _____

HAND CALCULATIONS OF AGAFS	OPT-01.8C
	Rev. 15
	Page 9 of 9

ATTACHMENT 2

Page 1 of 1

AGAF Calculation Sheet

A. Date Today Time Now Unit 2

B. Core Thermal Power (CTP) 891.5 MWt

C. Percent of Rated Core Thermal Power (desired reading):

$$\% \text{ Rated CTP} = (\text{CTP} \div \text{Rated MWt (2923)}) \times 100\% = \underline{30.5} \% \text{Pwr}$$

APRM Channel	APRM Reading % Pwr (D)	AGAFi (C / D)
1	30.2	1.01
2	29.6	1.03
3	30.8	0.99
4	29.9	1.02
AGAFi = $\frac{\% \text{ of rated CTP}}{\text{APRM reading in \% power}} = \frac{C}{D}$		

Independently **verify** the AGAF calculations are correct:

1st Verification _____ Date _____
 Signature _____
 2nd Verification _____ Date _____
 Signature _____



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: Evaluate Plant Chemistry Limits During Resin Intrusion

LESSON NUMBER: LOT-ADM-JP-302-B02

REVISION NO: 0

Developer: Lou Sosler	Date: 8/6/2014
Technical Review: Bob Bolin	Date: 8/7/2014
Validator: Bruce Leitch	Date: 8/14/2014
Facility Representative: Jerry Pierce	Date: 8/14/2014

Evaluate Plant Chemistry Limits During Resin Intrusion

RELATED TASKS:

344 228 B4 02, Direct Actions For High Reactor Coolant Or Condensate Conductivity Per AOP-26.0

K/A REFERENCE AND IMPORTANCE RATING:

2.1.34 Knowledge of primary and secondary plant chemistry limits
RO/SRO 2.7/3.5

REFERENCES:

0AI-81, Water Chemistry Guidelines

0AOP-26.0, High Reactor Coolant Or Condensate Conductivity

Technical Requirements Manual 3.5 and 3.13

TOOLS AND EQUIPMENT:

None

ADMIN SECTION (from NUREG 1123):

Generic - Conduct of Operations

SETUP INSTRUCTIONS

None

Evaluate Plant Chemistry Limits During Resin Intrusion

SAFETY CONSIDERATIONS:

Consider Core-4 including Take-A-Minute prior to JPM performance.

EVALUATOR NOTES: (Do not read to performer)

1. The applicable procedure section **WILL** be provided to the trainee.
 2. Prior to the first JPM of the JPM set, provide the JPM briefing contained in NUREG-1021, Appendix E, or similar briefing (for non-regulated exams) to the trainee(s).
 3. This JPM may be performed on Unit 1 or Unit 2 as selected by the evaluator.
 4. Critical Step Basis
 - a. Prevents Task Completion
 - b. May Result in Equipment Damage
 - c. Affects Public Health and Safety
 - d. Could Result in Personal Injury
-

Read the following to the JPM performer.

TASK CONDITIONS:

1. Unit Two is in Mode One.
2. An organic resin intrusion event has occurred from an unknown source.
3. The operating crew has entered 0AOP-26.0, High Reactor Coolant Or Condensate Conductivity.
4. E&RC has been notified to sample reactor coolant, the condensate system and the CST.
5. The following indications of conductivity are available:
 - a. From CR-24, Condenser Conductivity

Condenser A-N:	1.3 μ mhos/cm
Condenser A-S:	0.2 μ mhos/cm
Condenser B-N:	2.4 μ mhos/cm
Condenser B-S:	1.6 μ mhos/cm
 - b. From 2-CO-CR—3075

Condensate Pump Discharge:	2.0 μ mhos/cm
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 - c. From CFD-CIT-1 (reported by Radwaste)

CFD influent conductivity:	1.4 μ mhos/cm
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 - d. From CDD-CIT-1 (reported by Radwaste)

CDD influent conductivity:	6.0 μ mhos/cm
----------------------------	-------------------
 - e. From G31-CRS-R601

Point A, RWCU Demin 2A effluent:	2.3 μ mhos/cm
Point B, RWCU Demin 2B effluent:	1.2 μ mhos/cm
Point C, RWCU inlet header:	6.2 μ mhos/cm

INITIATING CUE:

You are directed to evaluate the available indications against the applicable limits specified in 0AI-81, Water Chemistry Guidelines. Determine if any 0AI-81 limits are exceeded, and if any conditions are met which require a plant shutdown.

Inform the Shift Manager of the results.

Evaluate Plant Chemistry Limits During Resin Intrusion

NOTE: Sequence is assumed unless denoted in the **Comments**.

TIME START: _____

NOTE: Per 0AOP-26.0, Note prior to step 3.2.8, when using 0AI-81, 1 μ S is equivalent to 1 μ mho.

Step 1 – Determine hotwell conductivity is above diagnostic limit of .16 μ S/cm.
Determined that hotwell conductivity is above diagnostic limit.

SAT/UNSAT

Step 2 – Determine Condensate Pump discharge conductivity is above EPRI Action Level 1 limit of 000.12 μ S/cm using 0AI-81, Attachment 11.
Determined that Condensate Pump discharge conductivity is above the EPRI Action Level 1 limit.

SAT/UNSAT

Step 3 – Determine CFD influent conductivity is above diagnostic limit of .07 μ S/cm using 0AI-81, Attachment 12.
Determined that CFD influent conductivity is above diagnostic limit.

SAT/UNSAT

Evaluate Plant Chemistry Limits During Resin Intrusion

PROMPT: If asked, inform examinee that one CDD is being removed from service as directed by AOP-26.0.

Step 4 – Determine CDD influent conductivity is above diagnostic limit of .07 $\mu\text{S}/\text{cm}$ using 0AI-81, Attachment 13.

Determined that CDD influent conductivity is above diagnostic limit.

SAT/UNSAT

Step 5 – Determine RWCU effluent conductivity is above the diagnostic limits using 0AI-81, Attachment 5

Determined that RWCU effluent conductivity is above diagnostic limits.

SAT/UNSAT

Step 6 – Determine RWCU influent conductivity (reactor water) is above EPRI Action Level 3 limit of $>5 \mu\text{S}/\text{cm}$ using 0AI-81, Attachment 1.

Determined that RWCU influent conductivity is above EPRI Action Level 3.

****CRITICAL STEP** SAT/UNSAT**

NOTE: AI-81, Section 5.5.5 require following the applicable actions in table or begin an orderly shutdown of the unit immediately unless otherwise directed by the Plant General Manager, or if the parameter will be below action level 2 within the time required to reach 212°F, power operation may continue.

Step 8 – Determine 0AI-81 EPRI Action Level 3 being exceeded and an orderly shutdown of the unit is required (Section 5.5.5)

Determine 0AI-81, step 5.5.5 requires shutdown of the unit unless otherwise directed by the Plant General Manager (or unless Reactor conductivity can be restored below Action Level 2 within time required to reach 212°F)

****CRITICAL STEP** SAT/UNSAT**

Evaluate Plant Chemistry Limits During Resin Intrusion

Step 9 – Inform SM of the results.

SM notified EPRI Action Level 3 exceeded for Reactor Coolant conductivity.

SAT/UNSAT

TERMINATING CUE: When evaluation of chemistry limits is complete and actions have been determined, this JPM is complete

TIME COMPLETED: _____

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

Evaluate Plant Chemistry Limits During Resin Intrusion

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT

A. CORE 4	SAT/ UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc.)	SAT/ UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT/ UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking)	SAT/ UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT/ UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT/ UNSAT/ NE
G. Electrical Safety And Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT/ UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT/ UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT/ UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT/ UNSAT/ NE

Comments:

Evaluate Plant Chemistry Limits During Resin Intrusion

REVISION SUMMARY

0	Modified LOT-ADM-JP-302-B01 from a Condenser Tube Leak to a Resin Intrusion evaluation.
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Evaluate Plant Chemistry Limits During Resin Intrusion

Validation Time: 15 Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	_____	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	_____	No	<u>X</u>	Time Limit:	<u>N/A</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments: _____

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

TASK CONDITIONS:

1. Unit Two is in Mode One.
2. An organic resin intrusion event has occurred from an unknown source.
3. The operating crew has entered 0AOP-26.0, High Reactor Coolant Or Condensate Conductivity.
4. E&RC has been notified to sample reactor coolant, the condensate system and the CST.
5. The following indications of conductivity are available:
 - a. From CR-24, Condenser Conductivity

Condenser A-N:	1.3 μ mhos/cm
Condenser A-S:	0.2 μ mhos/cm
Condenser B-N:	2.4 μ mhos/cm
Condenser B-S:	1.6 μ mhos/cm
 - b. From 2-CO-CR—3075

Condensate Pump Discharge:	2.0 μ mhos/cm
----------------------------	-------------------
 - c. From CFD-CIT-1 (reported by Radwaste)

CFD influent conductivity:	1.4 μ mhos/cm
----------------------------	-------------------
 - d. From CDD-CIT-1 (reported by Radwaste)

CDD influent conductivity:	6.0 μ mhos/cm
----------------------------	-------------------
 - e. From G31-CRS-R601

Point A, RWCU Demin 2A effluent:	2.3 μ mhos/cm
Point B, RWCU Demin 2B effluent:	1.2 μ mhos/cm
Point C, RWCU inlet header:	6.2 μ mhos/cm
6. Confirmatory samples are in agreement.

INITIATING CUE:

You are directed to evaluate the available indications against the applicable limits specified in 0AI-81, Water Chemistry Guidelines. Determine if any 0AI-81 limits are exceeded, and if any conditions are met which require a plant shutdown.

Inform the Shift Manager of the results.

Evaluation of Conductivity Readings

Sample Locations	Result	Shutdown Required ?
Condenser		YES / NO
Condensate Pump discharge		YES / NO
CFD Influent		YES / NO
CDD Influent		YES / NO
RWCU Demin Effluent		YES / NO
RWCU Inlet Header		YES / NO

Additional Information: _____



DUKE ENERGY PROGRESS
BRUNSWICK TRAINING SECTION

JOB PERFORMANCE MEASURE

LESSON TITLE: Classify an Emergency per PEP-02.1

LESSON NUMBER: SOT-ADM-JP-301-18

REVISION NO: 0

Developer: Lou Sosler	Date: 10/13/2013
Technical Review: Bob Bolin	Date: 7/16/2014
Validator: Jerry Pierce	Date: 7/14/2014
Validator: Bruce Letich	Date: 7/17/2014
Facility Representative: Jerry Pierce	Date: 7/17/2014

Classify an Emergency per PEP-02.1

RELATED TASKS:

344256B502 Direct Initial Emergency Actions Including Emergency Classification per
0PEP-02.1

K/A REFERENCE AND IMPORTANCE RATING:

GEN 2.4.29 3.1/4.4
Knowledge of the Emergency Plan

REFERENCES:

0PEP-02.1 – Emergency Control – Notification of Unusual Event, Alert, Site Area
Emergency and General Emergency

TOOLS AND EQUIPMENT:

None

SAFETY FUNCTION (from NUREG 1123):

Admin – Emergency Procedures/ Plan

SETUP INSTRUCTIONS

None

SAFETY CONSIDERATIONS:

1. Consider Core-4 tools including Take-A-Minute prior to JPM performance.
-

EVALUATOR NOTES: (Do not read to trainee)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the trainee.
 2. The examinee **WILL** be provided a copy of 0PEP-02.1 flowchart
 3. The examinee will have access to PEP procedures.
 4. A clock must be available and visible to examiner and examinees.
 5. Emphasize to candidates that this is a Time Critical JPM and that following cue sheet review the evaluator will designate the START TIME on the board and stop the JPM at the applicable critical time.
 6. Explain to the examinees they should record their classification of the event in the blocks provided beneath the Initiating Conditions.
-

Read the following to trainee:

TASK CONDITIONS:

****This is a time critical JPM****

Time begins when directed by the evaluator

You are the Site Emergency Coordinator. The following conditions exist on Unit 2:

Time = 0: A fire in the Unit 2 Cable Spread has required a Control Room Evacuation.

Time = + 6 min: During the execution of 0AOP-32.0, Plant Shutdown from Outside the Control Room, Immediate Actions, the 2C Bus did not transfer to the SAT.

Time = +15 min: Diesel Generators 2 and 4 started and Diesel 4 is supplying power to E4.

Time = + 20 min: Control of the plant has been established at the Remote Shutdown Panel.

INITIATING CUE:

Evaluate the current conditions to determine EAL applicability. Write the time, classification and EAL identifier in the table below.

TIME	CLASSIFICATION	EAL IDENTIFIER

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

NOTE: Ensure a clock is visible for candidates. Announce and write the Start Time on the board. Start time is when the examinees have been given the initial conditions, initiating cue and state they understand the task (or state they have no questions)

The candidates will have 15 minutes to classify the event. The time, classification and EAL identifier should be recorded by the candidates in the blocks provided beneath the Initiating Conditions.

NOTE: Declaration of event must be made in **15 minutes** from the Start Time.

NOTE: Intermediate declarations are not required and are not Critical. The final declaration is a critical step. Intermediate classification:

Fire or explosion affecting plant safety systems (Table H-1): Alert – HA2

Control Room evacuation has been initiated: Alert – HA5.1

START TIME: _____

Step 1 – Determine Classification threshold and associated EAL Number(s)
Fire or explosion affecting plant safety systems (Table H-1): Alert – HA2

SAT/UNSAT

Step 2 – Determine Classification threshold and associated EAL Number(s)
Control Room evacuation has been initiated: ALERT – HA5.1

SAT/UNSAT

Classify an Emergency per PEP-02.1

Step 3 – Determine required Classification threshold and associated EAL Number(s)
*Control Room evacuation has been initiated and plant control cannot be established. Control Room evacuation has been initiated **AND** control of the plant cannot be established within 15 minutes: SAE – HS5.1*

**** CRITICAL STEP ** SAT/UNSAT**

DECLARATION TIME _____

Step 4 - Classification made within required the required time
(Declaration Time minus Start Time \leq 15 minutes).
Classification declared within 15 minutes of Start Time.

**** CRITICAL STEP ** SAT/UNSAT**

TERMINATING CUE: When the event is classified with the applicable EAL identifier(s) in the table, this JPM is complete.
--

COMPLETION TIME: _____

NOTE: Comments required for any step evaluated as UNSAT.

COLLECT AND CONTROL ALL JPM EXAM MATERIALS FOR EXAM SECURITY.

WORK PRACTICES:

Comments are required for any step evaluated as UNSAT

A. CORE 4	SAT/ UNSAT/ NE
1. Task Preview / Pre-Job Briefs	
2. Take-A-Minute / Two Minute Rule	
3. Correct Component Verification (CCV), Validate Assumptions	
4. Procedure and Work Instruction Use and Adherence (PU&A)	
B. Communications (proper content, repeat backs, 3 step communications, etc.)	SAT/ UNSAT/ NE
C. STAR (Use of Stop, Think, Act, Review)	SAT/ UNSAT/ NE
D. Peer Checking (if performer requests or discusses peer checking)	SAT/ UNSAT/ NE
E. Proper Equipment Use (observe starting limitations, throttle valve closures, etc.)	SAT/ UNSAT/ NE
F. Safety Compliance (use of PPE, knowledge of safety equipment, etc.)	SAT/ UNSAT/ NE
G. Electrical Safety And Arc Flash Protection Compliance (refer to SAF-NGGC-2175, as applicable)	SAT/ UNSAT/ NE
H. Security Compliance (controlled area entry and exit, key control, etc.)	SAT/ UNSAT/ NE
I. Proper Tool Use (proper tool for the job, calibration dates, etc.)	SAT/ UNSAT/ NE
J. Radiation Protection (ALARA, understanding and use of RWP, frisking, etc.)	SAT/ UNSAT/ NE

Comments:

REVISION SUMMARY

0	New JPM
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Classify an Emergency per PEP-02.1

Validation Time: 15 Minutes (approximate)

Time Taken: _____ Minutes

APPLICABLE METHOD OF TESTING

Performance:	Simulate:	_____	Actual:	<u>X</u>	Unit:	<u>2</u>
Setting:	In-Plant	_____	Simulator:	_____	Admin:	<u>X</u>
Time Critical:	Yes	<u>X</u>	No	_____	Time Limit:	<u>15 min.</u>

(Ensure reference section on previous page identifies the regulation or procedure that mandates this time limit requirement)

Alternate Path:	Yes	_____	No	<u>X</u>
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EVALUATION

Performer: _____

JPM Results: Pass _____ Fail _____

Remedial Training Required: Yes _____ No _____

Comments: _____

☐ Comments reviewed with Performer

Evaluator Signature: _____ Date: _____

Read the following to trainee:

TASK CONDITIONS:

****This is a time critical JPM****

Time begins when directed by the evaluator

You are the Site Emergency Coordinator. The following conditions exist on Unit 2:

Time = 0: A fire in the Unit 2 Cable Spread has required a Control Room Evacuation.

Time = +6 min: During the execution of 0AOP-32.0, Plant Shutdown from Outside the Control Room, Immediate Actions, the 2C Bus did not transfer to the SAT.

Time = +15 min: Diesel Generators 2 and 4 started and Diesel 4 is supplying power to E4.

Time = +20 min: Control of the plant has been established at the Remote Shutdown Panel.

INITIATING CUE:

Evaluate the current conditions to determine EAL applicability. Write the time, classification and EAL identifier in the table below.

TIME	CLASSIFICATION	EAL IDENTIFIER