Final Submittal

(Blue Paper)

BROWNS FERRY
EXAM 2002-301
50-259, 50-260, & 50-296

DECEMBER 13, 16-19, 2002

1. Administrative Questions/JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)

FINAL JPM's

The final JPM's are the same as the draft JPM's with the following exceptions:

JPM's added:

JPM 18F – EOI Appendix 5C – Injection System Lineup – RCIC
A3.10 – Review Gaseous Release SI
A3.12 – Review a Radiological Survey Map

JPM's replaced:

JPM Administrative Question – A3.1
JPM Administrative Question – A3.2
JPM Administrative Question – A3.3
JPM 114 – Standby Gas Treatment Train "C" Decay Heat Removal
JPM 133F – 2-EOI-APP118 Alternate Pressure Control, RCIC in the Test Mode
JPM 331 – 2-EOI Appendix 16J Bypass HPCI Interlocks

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: A3.10

TITLE: REVIEW 0-SI-4.8.B.1.a.1, AIRBORNE EFFLUENT RELEASE RATE, FOR THE SHIFT (SRO ONLY)

TASK NUMBER: S-090-SU-01

SUBMITTED BY: _____ DATE: _____

VALIDATED BY: _____ DATE: _____

APPROVED: _____ DATE: _____
TRAINING

PLANT CONCURRENCE: _____ DATE: _____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	11/17/02	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO _____ SRO _____ DATE:_____

JPM NUMBER: A3.10

JPM TITLE: REVIEW 0-SI-4.8.B.1.a.1, AIRBORNE EFFLUENT RELEASE RATE, FOR THE SHIFT

TASK NUMBER: S-090-SU-01

TASK TITLE: Review airborne effluent release rate SI

K/A NUMBER: 2.3.11 K/A RATING: RO 2.7 SRO: 3.2

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TASK STANDARD: Upon reviewing 0-SI-4.8.B.1.a.1 for the shift, determine all is acceptable except Attachment 9.

LOCATION OF PERFORMANCE: SIMULATOR x PLANT x CONTROL ROOM x

REFERENCES/PROCEDURES NEEDED: 0-SI-4.8.B.1.a.a, Airborne Effluent Release Rate, Revision 45 (Filled out), ODCM, REVISION 14

VALIDATION TIME: CONTROL ROOM: _____ LOCAL: _____

PERFORMANCE TIME: _____ CONTROL ROOM _____ LOCAL ___

COMMENTS:_____
_____
_____

Additional comment sheets attached? YES _____ NO ____

RESULTS: SATISFACTORY _____ UNSATISFACTORY _____

EXAMINER SIGNATURE:_____ DATE: _____
EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

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*

INITIAL CONDITIONS: You are the Unit 2 Unit Supervisor. The log AUO has given you 0-SI-4.8.B.1.a.1, Airborne Effluent Release Rate, to review for the shift.

INITIATING CUES: Review this SI and initial where appropriate.

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Performance Step: Critical__X__ Not Critical_____

Review the SR.

Standard:

Initials as Unit Supervisor Attachments 2,4,6,7 and 8 (Not Critical). Determines that Attachment 9, Unit 1, RM-90-251 is NOT within acceptance criteria (Critical).

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

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Performance Step: Critical___ Not Critical_X_

Request maintenance to determine the problem with the 1-RM-90-251 sample flow.

Standard:

Candidate requests maintenance to determine the problem with the 1-RM-90-251 sample flow.

SAT___UNSAT___N/A___ COMMENTS:_____

_____

_____

CUE: MAINTENANCE INFORMS CANDIDATE THAT THE FLOWMETER FOR 1-RM-90-251 MUST BE REPLACED.

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Performance Step: Critical X Not Critical

Determine appropriate actions.

Standard:

Candidate determines from the ODCM due to 1- RM-90-251 sampler flowmeter being inoperative ACTION D allows releases via this pathway provided the flow rate is estimated at least once per 4 hours.

SAT UNSAT N/A COMMENTS:

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Table 1.1-2 (Page 1 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels/ Devices OPERABLE	Applicability	ACTION
1. STACK (RM-90-147B & -148B)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Cartridge	1	*	B/C
c. Particulate Filter	1	*	B/C
d. Sampler Flow Abnormal	1	*	D
e. Stack Flow (FT, FM, FI-90-271)	1	*	G
2. REACTOR/TURBINE/REFUEL BUILDING VENTILATION ZONE (RM-90-250)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Sampler	1	*	B/C
c. Particulate Sampler	1	*	B/C
d. Sampler Flowmeter	1	*	D

3. TURBINE BUILDING EXHAUST (RM-90-249, -251)			
a. Noble Gas Monitor	1	**	A/C
b. Iodine Sampler	1	**	B/C
c. Particulate Sampler	1	**	B/C
e. Sampler Flowmeter	1	**	D
4. RADWASTE BUILDING VENT (RM-90-252)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Sampler	1	*	B/C
c. Particulate Sampler	1	*	B/C
e. Sampler Flowmeter	1	*	D
5. OFFGAS POST TREATMENT			
a. Noble Gas Activity Monitor (RM-90-265, -266)	1	**	F
b. Sample Flow Abnormal (PA-90-262)	1	**	D

* At all times.
** During releases via this pathway.

ACTION D

With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: A3.12

TITLE: REVIEW A RADIOLOGICAL SURVEY MAP

TASK NUMBER: N/A

SUBMITTED BY: _____ DATE: ____

VALIDATED BY: _____ DATE: ____

APPROVED: _____ DATE: ____
TRAINING

PLANT CONCURRENCE: _____ DATE: ____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0	9/9/02	ALL	NEW

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR: _____

RO ___ SRO ___ DATE: _____

JPM NUMBER: A3.12

TASK NUMBER: ADMIN

TASK TITLE: N/A

K/A NUMBER: 2.3.10 K/A RATING: RO 2.9 SRO: 3.3

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TASK STANDARD: REVIEW A RADIOLOGICAL SURBEY MAP TO DETERMINE IF A TASK CAN BE COMPLETED WITHOUT EXCEEDING EXPOSURE LIMITS.

LOCATION OF PERFORMANCE: SIMULATOR __ PLANT _ CONTROL ROOM _

REFERENCES/PROCEDURES NEEDED: N/A

VALIDATION TIME: CONTROL ROOM: _____ LOCAL: ___

MAX. TIME ALLOWED: ___ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: _____ CONTROL ROOM __ LOCAL __

COMMENTS: _____

_____

_____

Additional comment sheets attached? YES __ NO _

RESULTS: SATISFACTORY ___ UNSATISFACTORY ___

EXAMINER SIGNATURE: _____ DATE: ____

EXAMINER

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

STUDENT HANDOUT

INITIAL CONDITIONS: You are a Browns Ferry employee who has obtained an accumulative yearly dose of 750 mrem.

INITIATING CUES: Given the following survey map, DETERMINE if you can complete a task in the area without exceeding your TVA administrative yearly dose limit.

The job will require you to transport a heavy air operated valve wrench through the designated walkway (marked as walkway), open the valve and bring the tool back outside the room. The walkway is marked on the survey map, and will require approximately 10 minutes each way to transport the tool. Once the valve area on the survey map is reached (marked as valve), it will require 30 minutes to open the valve and then transport the tool out of the area. The map of the room has radiological survey information you must interpret to successfully complete this JPM.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

EXAMINER'S KEY

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IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

****

INITIAL CONDITIONS: You are a Browns Ferry employee who has obtained an accumulative yearly dose of 750 mrem.

INITIATING CUES: Given the attached survey map, DETERMINE if you can complete a task in the area without exceeding your TVA administrative yearly dose limit.

The job will require you to transport a heavy air operated valve wrench through the designated walkway (marked as walkway), open the valve and bring the tool back outside the room. The walkway is marked on the survey map, and will require approximately 10 minutes each way to transport the tool. Once the valve area on the survey map is reached (marked as valve), it will require 30 minutes to open the valve and then transport the tool out of the area. The map of the room has radiological survey information you must interpret to successfully complete this JPM.

ANSWER

No - The candidate would receive 12 mr to transport the wrench in and out and an additional 250 mr to open the valve. This would give the candidate 1012 mr for the year and exceed the TVA administrative yearly dose limit.

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

JPM NUMBER: 18F

TITLE: EOI APPENDIX 5C - INJECTION SYSTEM LINEUP - RCIC

TASK NUMBER: U-000-EM-31

SAFETY FUNCTION: 2

02 TYPE CODE: S,D,A

SUBMITTED BY:_____ DATE :_____

VALIDATED BY:_____ DATE:_____

APPROVED: _____ DATE:_____
TRAINING

PLANT CONCURRENCE: _____ DATE:_____
OPERATIONS

* Examination JPMs Require Operations Training Manager or Designee Approval and Plant Concurrence

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

REVISION LOG

Revision Number	Effective Date	Pages Affected	Description of Revision
0		All	New
1		All	Updated/Revised for NRC Exam

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

OPERATOR:_____

RO ___ SRO ___ DATE:_____

JPM NUMBER: 18F.
TASK NUMBER: U-000-EM-31

TASK TITLE: LINE UP INJECTION SYSTEMS - RCIC IN ACCORDANCE WITH EOI APPENDIX 5C

K/A NUMBER: 217000A4.04 K/A RATING: RO 3.6 SRO: 3.6
****

TASK STANDARD: MANIPULATE CONTROLS REQUIRED TO INJECT WATER TO THE RPV USING THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM AND MAINTAIN LEVEL AS REQUIRED.

LOCATION OF PERFORMANCE: SIMULATOR _ PLANT _ CONTROL ROOM _

REFERENCES/PROCEDURES NEEDED: 2-EOI APPENDIX 5C - INJECTION SYSTEM LINEUP - RCIC, REV 4

VALIDATION TIME: CONTROL ROOM: 5:00 LOCAL: _____

MAX. TIME ALLOWED: ___ (Completed for Time Critical JPMs only)

PERFORMANCE TIME: ____ CONTROL ROOM __ LOCAL __

COMMENTS: _____
_____
_____
Additional comment sheets attached? YES __ NO __

RESULTS: **SATISFACTORY ___UNSATISFACTORY __**

EXAMINER: _____DATE: _____

BROWNS FERRY NUCLEAR PLANT
JOB PERFORMANCE MEASURE

****

IN-SIMULATOR: I will explain the initial conditions and state the task to be performed. I will provide initiating cues and reports on other actions when directed by you. When you complete the task successfully, the objective for this job performance measure will be satisfied. When your task is given, you will repeat the task and I will acknowledge "That's Correct". (OR "That's Incorrect", if applicable). When you have completed your assigned task, you will say, "my task is complete" and I will acknowledge that your task is complete.

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INITIAL CONDITIONS: You are the Unit 2 Operator. The reactor has scrammed and RPV water level is lowering slowly. EOI-1 has been entered and followed to RC/L-4.

INITIATING CUES: The US has directed you to restore RPV water level +2 to +51 inches using the Reactor Core Isolation Cooling System as directed by 2-EOI Appendix 5C, INJECTION SYSTEM LINEUP - RCIC.

START TIME_____

EXAMINERS'S NOTE: UNLESS OTHERWISE NOTED, ALL COMPONENTS TO BE OPERATED AND ALL INDICATIONS ARE LOCATED ON PANEL 2-9-3.

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Performance Step: Critical_____ Not Critical__X__

WHEN REQUESTED BY EXAMINER identify/obtain copy of required EOI Appendix.

Standard:

IDENTIFIED OR OBTAINED copy of 2-EOI Appendix 5C.

SAT_UNSAT_N/A_ COMMENTS:_____

_____

****

Performance Step: Critical_ Not Critical_X_

1. IF.....BOTH of the following exist:

   - Rx Pressure is at or below 50 psig,

   AND

   - Bypass of RCIC low RPV pressure isolation interlocks is necessary,

   ..... *THEN*
   .....**PERFORM** the following:

   a. **EXECUTE** EOI Appendix 16K concurrently with this procedure.

   b. **RESET** auto isolation logic using RCIC *AUTO-ISOL LOGIC A(B) RESET* 2-XS-71-51A(B) pushbuttons.

Standard:

DETERMINED RPV PRESSURE >50 PSIG, as indicated by 2-PI-207A, Panel 2-9-5.

SAT_____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical__ Not Critical X

2. IF.....BOTH of the following exist:

! High temperature exists in the RCIC area,

AND

! SRO directs bypass of RCIC High Temperature Isolation interlocks,

THEN...**EXECUTE** EOI Appendix 16K concurrently with this procedure.

Standard:

DETERMINED high temperature does not exist in the RCIC area, as indicated by Panel 2-9-21 (2-TS-69-71-41A,B,C) alarms clear or no alarm on Panel 2-9-3D window 10 (2-TA-71-41).

SAT_____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

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CAUTION

! Operating *RCIC turbine below 2100 rpm may* result in unstable system operation and equipment damage.

! High Suppression Chamber pressure may trip RCIC. (Trips at 25#)

! Operating RCIC Turbine with suction (CST Suction) temperatures above 140°F may result in equipment damage.

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Performance Step: Critical_ Not Critical X

3. **VERIFY RESET** and **OPEN** 2-FCV-71-9, RCIC TURB TRIP/ THROT VALVE RESET.

Standard:

VERIFIED illuminated RED indicating lamp 2-ZI-71-9.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical__ Not Critical X

4. **VERIFY** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller in AUTO with set-point at 600 gpm.

Standard:

VERIFIED 2-FIC-71-36A in AUTO and tape set-point at 60 (X10).

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical X Not Critical__

5. **OPEN** the following valves:

   ! 2-FCV-71-39, RCIC PUMP INJECTION VALVE.

Standard:

PLACED 2-HS-71-39A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical_ Not Critical X

! 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE.

Standard:

PLACED 2-HS-71-34A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

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****

Performance Step: Critical X Not Critical_

! 2-FCV-71-25, RCIC LUBE OIL CLR COOLING WTR VLV.

Standard:

PLACED 2-HS-71-25A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

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Performance Step: Critical_ Not Critical X

6. **PLACE** 2-HS-71-31A, RCIC VACUUM PUMP, handswitch in START.

Standard:

PLACED 2-HS-71-31A in the START position and **OBSERVED** illuminated RED motor breaker position indicating lamp above associated handswitch.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

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EXAMINER NOTE : AFTER 71-8 OPENS, THE FLOW CONTROLLER WILL FAIL TO CONTROL IN AUTOMATIC.

****

Performance Step: Critical_X__ Not Critical___

7. **OPEN** 2-FCV-71-8, RCIC TURBINE STEAM SUPPLY VLV, to start RCIC Turbine.

Standard:

PLACED 2-HS-71-8A in the OPEN position and **OBSERVED** illuminated RED valve position indicating lamp above associated control switch. (Steam flow and turbine speed increase)

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical____ Not Critical_X_

8. **CHECK** proper RCIC operation by observing the following:

   a. RCIC Turbine speed accelerates above 2100 rpm.

Standard:

VERIFIED RCIC turbine speed > 2100 by **OBSERVING** 2-SI-71-42A.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

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Performance Step: *Critical_ Not Critical X*

b. RCIC flow to RPV stabilizes and is controlled automatically at *600 gpm.*

Standard:

OBSERVED 2-FIC-71-36A and **VERIFIED** RCIC flow to RPV stabilized at 600 GPM.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical_ Not Critical X

c. 2-FCV-71-40, RCIC Testable Check Vlv, opens by observing 2-ZI-71-40A, DISC POSITION, red light illuminated.

Standard:

OBSERVED illuminated RED check valve DISC POSITION indicating lamp.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical_ Not Critical X

d. 2-FCV-71-34, RCIC PUMP MINIMUM FLOW VLV, closes as flow rises above 120 gpm.

Standard:

OBSERVED RCIC system flow to RPV > 120 GPM as indicated on 2-FIC-71-36A and **VERIFIED** illuminated GREEN valve position indicating lamp above 2-HS-71-34A.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

****

Performance Step: Critical_ Not Critical X

9. IF.....BOTH of the following exist:

   ! RCIC Initiation signal is NOT present,

   AND

   ! RCIC flow is below 60 gpm,

   THEN...**VERIFY OPEN** 2-FCV-71-34, RCIC PUMP MIN FLOW VALVE.

Standard:

VERIFIED RCIC initiation signal not present as indicated by 2-IL-71-52, RCIC AUTO-INIT, amber lamp being extinguished.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

Performance Step: Critical_X__ Not Critical____

10. **ADJUST** 2-FIC-71-36A, RCIC SYSTEM FLOW/CONTROL, controller as necessary to control injection.

Standard:

DETERMINES the automatic flow controller is failed and takes manual control of RCIC. Adjusted 2-FIC-71-36A setpoint as necessary to obtain 600 gpm flow, or a level of +2 inches.

SAT____ UNSAT_____ N/A ____ COMMENTS:_____

_____

_____

EXAMINER'S NOTE: IT WILL NOT BE NECESSARY FOR THE PERFORMER TO OBTAIN A LEVEL > +2". AN INCREASING RPV WATER LEVEL WILL SUFFICE.

****

Performance Step: Critical_ Not Critical X

PERFORMER demonstrated the use of TOUCH STAAR during this JPM.

Standard:

PERFORMER verified applicable components by utilizing TOUCH STAAR (Standard is subjective and instructor must evaluate the need for additional training on TOUCH STAAR to maintain plant standards).

SAT____UNSAT____N/A____COMMENTS:_____

_____

_____

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Performance Step: Critical_ Not Critical X

PERFORMER demonstrated the use of 3-WAY COMMUNICATION during is JPM.

Standard:

PERFORMER utilized 3-WAY COMMUNICATION (Standard is subjective and instructor must evaluate the need for additional training on 3-WAY COMMUNICATION to maintain plant standards).

SAT____UNSAT____N/A____COMMENTS:_____

_____

_____

END OF TASK

STOP TIME _____