

# Exelon Nuclear

## Job Performance Measure

### **LSRO Only – FUEL HANDLING DIRECTOR TURNOVER CONDITIONS NOT MEETING TECHNICAL SPECIFICATION REQUIREMENTS**

JPM Number: NLSRO2084

Revision Number: 000

Date: \_\_\_\_\_

Developed By: D. M Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date



**REVISION RECORD (Summary)**

1. Revision 00 N/A

**SIMULATOR SETUP INSTRUCTIONS**

1. N/A

**TASK CONDITIONS:**

- Unit 1 is in OPCON 5
- Unit 2 is in OPCON 1
- The Electronic OP's log is unavailable due to a software error

**INITIATING CUES:**

Review completed Fuel Handling Director Shift Turnover Checklist prior to taking shift.

- Identify any potential conflicts with Evolutions in Progress / Planned for next shift, including determination of Tech Spec compliance.

**TASK STANDARD(S):**

Determine the following Evolutions in Progress / Planned for next shift must be stopped, or **cannot occur**:

Spent fuel pool transfers: Tech Spec. 3.9.8 is not met as water level is not 22 feet above the irradiated fuel assemblies in the Fuel pool. Movement of fuel assemblies in the spent fuel pool must be suspended, after placing fuel assemblies and crane in a safe condition

Core Transfers: Tech Spec. 3.9.8 is not met as water level is not 22 feet above the reactor pressure vessel flange, Core Alterations cannot occur. Additionally, Tech Spec. 3.9.5 is not met as Control Room communications is intermittent, Core Alterations cannot occur.

The following can occur:

Control Rod withdrawal to support uncoupling: As this is occurring in defueled cells, and therefore is not a Core Alteration and not impacted the low water level, or intermittent communication.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

- \* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

### JPM SUMMARY

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  
 STAIA  OTHER

JPM Title: FUEL HANDLING DIRECTOR TURNOVER CONDITIONS NOT MEETING TECHNICAL SPECIFICATION REQUIREMENTS

JPM Number: NLSRO0284

Revision Number: 000

Task Number and Title: B2-1 FHD Turnover

K/A Number and Importance: G 2.1.3, RO: 3.7 SRO: 3.9

Suggested Testing Environment: quiet area with appropriate documents

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure OP-AA-112-101 Rev: 6

Procedure OP-LG-112-101-F-11 Rev: 1

Procedure   

Actual Testing Environment:  Simulator  Control Room  In-Plant  Other

Testing Method:  Simulate  Perform

Estimated Time to Complete: 20 minutes

Actual Time Used:        minutes

#### EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by "\*" in Performance Checklist.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	CUE: Provide candidate with the Fuel Handling Director Turnover Checklist AND Copy of Technical Specifications	N/A	_____	_____	_____
*1.	Evolutions in Progress / Planned for next shift: <ul style="list-style-type: none"> <li>• Current CCTAS is for Spent fuel pool transfers only</li> </ul>	Determine Movement of spent fuel in the Spent Fuel Pool <b>cannot</b> occur: Tech Spec. 3.9.8 is not met as water level is not 22 feet above the irradiated fuel assemblies in the Fuel pool. Movement of fuel assemblies in the spent fuel pool must be suspended, after placing fuel assemblies and crane in a safe condition			
*2	Evolutions in Progress / Planned for next shift: <ul style="list-style-type: none"> <li>• Core Transfers</li> </ul>	Determine Core Transfers <b>cannot</b> occur: Tech Spec. 3.9.8 is not met as water level is not 22 feet above the reactor pressure vessel flange, Core Alterations cannot occur. Tech Spec. 3.9.5 is not met as Control Room communications is intermittent, Core Alterations cannot occur.			

*3.	Control Rod withdrawal to support uncoupling:	<p>Determine Control Rod withdrawal to support uncoupling <b>can</b> occur:</p> <p>As this is occurring in defueled cells, and therefore is not a Core Alteration and not impacted the low water level, or intermittent communication.</p>			
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**You have met the termination criteria for this JPM**

JPM Stop Time: \_\_\_\_\_

**TASK CONDITIONS:**

- Unit 1 is in OPCON 5
- Unit 2 is in OPCON 1
- The Electronic OP's log is unavailable due to a software error

**INITIATING CUES:**

Review completed Fuel Handling Director Shift Turnover Checklist prior to taking shift.

- Identify any potential conflicts with Evolutions in Progress / Planned for next shift, including determination of Tech Spec compliance.

**FUEL HANDLING DIRECTOR  
SHIFT TURNOVER CHECKLIST**

**NOTE: Complete this form at turnover**

Date: MM/DD/YY

Oncoming Shift  X,  Y,  Z (circle one)

**Part A - Offgoing Fuel Handling Director (FHD)**

Evolutions in Progress / Planned for next shift:

-Current CCTAS is for Spent fuel pool transfers only

-When Current CCTAS is complete, Next CCTAS will include Core Transfers

-Control Rod withdrawal to support uncoupling is ongoing in defueled cells

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments and Problem Areas:

1. No Fuel moves into Core at this time

2. Spent Fuel Pool Water Level 1 inch below fuel pool weir plate bolts

3. Bridge experiencing Mild Crabbing

4. Control Room RO Console Communication Device intermittent, box to be replaced

5. IRM C and D Bypassed

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Offgoing FHD Signature: Tom Smith

1. FHD Log and information on page 1 reviewed. 1.   RAC
  2. Fuel Floor local panel annunciators (both units) and Refuel Platform Interlock/Controls reviewed. 2.   RAC
  3. Status of work reviewed with Maint. Supervisor and RP Technician. 3.   RAC
  4. RP Drywell Control Point contacted and has verified access control to upper elevations is in place as required. 4.   RAC    
**RP Contacted:**   Al Senter
  5. IF irradiated component transfers through cask pit will occur, RP has posted RB 313' areas as required. 5.   RAC
  6. Refueling Platform checkout per S97.1.A is complete as required. 6.   RAC
  7. FHDs, Refuel Platform Operators (RPOs), and Spotters are qualified and completed all required reading. 7.   RAC
  8. Continuous communications established between Control Room and Refueling Platform during CORE ALTERATIONS. 8.   RAC
  9. FHD conducted a pre-evolution brief with refuel platform personnel. 9.   RAC
  10. Work environment assessed for error-free challenges; actions taken as necessary. 10.   RAC    
(water clarity; water surface; ambient noise; ambient lighting; distractions on platform/floor; refuel platform operation - workarounds; time pressure)
  11. An RP qualified person is present on the Refuel Floor for any work in fuel pool, Reactor cavity, or equipment pit. 11.   RAC
  12. CCTAS reviewed, and verified same title/rev. as Reactor Operator and Spotter copies. 12.   RAC
  13. IF not in use, THEN GE RCWP Jib Hoist Booms rotated away from RPV center. 13.   RAC
  14. Dedicated Spotter present when:  
- Fuel handling concurrent with Areva RCWP hoist installed **OR**  
- Fuel handling concurrent with GE RCWP jib hoist load handling. 14.   RAC
  15. Auxiliary hoist jam blocks set properly during in-vessel maintenance. 15.   RAC
  16. Refuel Floor inflatable seal backup bottle cart staged (not blocked by other equipment) and diamond plate unobstructed at seal station for Seals No. 3 & 4. 16.   RAC
  17. Fuel Floor permanent ARMs, temporary ARM(s) if required, and Refuel Platform ARM(s) indicate on scale.  
- Refuel Platform rad monitor audible alarm check performed. 17.   RAC
- NOTE:** following step assures compliance with requirement for 22 ft of water over fuel seated in racks and RPV flange, and for 8 ft water over active fuel being handled.
18. \*Spent Fuel Pool water level at least touching bolts which secure spent fuel pool weir plates.

- |   |                              |
|---|------------------------------|
|   | 18. <u>  </u> <u>RAC</u>     |
| 19. Refueling Interlocks and Refuel Platform equipment operable as required by Tech Specs. ST-6-097-630-1(2) <b>OR</b> ST-6-107-633-1(2) .  | 19. <u>  </u> <u>RAC</u>     |
| 20. Reactor Mode switch locked in REFUEL position.  | 20. <u>  </u> <u>RAC</u>     |
| 21. All control rods are fully inserted and indicate full in as required by Tech Specs.   | 21. <u>  </u> <u>RAC</u>     |
| 22. For irradiated Fuel Handling, RPV Water Level verified as required by Tech Specs as follows:<br><br>Level as stated on OP Aid next to Shutdown and Upset Range instruments LI-42-*R605, LR-42-*R608<br><b>AND</b> is not to be less than 487.5" per Tech Specs. | 22. <u>  </u> <u>RAC</u>     |
| 23. Moderator temperature $\geq 68^{\circ}$ F <b>OR</b> a lower cycle-specific temperature specified by Reactor Engineering.  | 23. <u>  </u> <u>NOTE #1</u> |
| 24. Both Recirc pumps secured <b>OR</b> all In-core Instruments supported.  | 24. <u>  </u> <u>RAC</u>     |
| 25. RHR SDC flow $\leq 6000$ gpm<br><b>OR</b> all In-core instruments supported.  | 25. <u>  </u> <u>NOTE #2</u> |
| 26. LCO, PLCO, prior shift ops narrative log entries reviewed.  | 26. <u>  </u> <u>RAC</u>     |
| 27. Outage supervisor white board reviewed.   | 27. <u>  </u> <u>RAC</u>     |

**NOTE**

Tech Spec 3.9.2 requires at least two SRM channels to be OPERABLE and inserted to the normal operating level with:

- Continuous visual indication in the control room
- At least one with audible alarm in the control room
- One of the required SRM detectors located in the quadrant where CORE ALTERATIONS are being performed and the other required SRM detector located in an adjacent quadrant, and
- Unless adequate SHUTDOWN MARGIN has been demonstrated, the "shorting links" shall be removed from the RPS Circuitry prior to and during the time any control rod is withdrawn.

- |  |                          |
|--|--------------------------|
| 28. SRMs are operable as required by Tech Spec 3.9.2.<br>(Circle operable SRMs A B C D). | 28. <u>  </u> <u>RAC</u> |
| 29. Verify IRMs operable as required by Tech Specs.                                      | 29. <u>  </u> <u>RAC</u> |

- 30. \*Main Control Room Emergency Fresh Air Supply System **AND** instrumentation operable. 30.    RAC
- 31. \*SBGTS operable as required by Tech Specs. 31.    RAC
- 32. \*Secondary Containment, SCIVs **AND** instrumentation operable  
OR  
 Refuel Area HVAC is in service with operable ventilation exhaust radiation monitors  
OR Standby Gas Treatment is in service to the Refuel Area. 32.    RAC
- 33. ECCS operable as required by Tech Specs. 33.    RAC
- 34. \*Electrical systems **AND** instrumentation operable as required by Tech Specs. 34.    RAC
- 35. RHR method(s) set per Tech Spec requirements. 35.    RAC
- 36. Current plant status reviewed with Unit Reactor Operator. 36.    RAC

Comments \_\_\_\_\_

NOTE # 1 RPV temp at TE-051-1N004A is 98° F \_\_\_\_\_

NOTE # 2 "A" RHR in ADHR flow 5700 gpm \_\_\_\_\_

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Oncoming FHD Signature:       R. Nather       Time:   ####

**ATTACHMENT 8**  
**"Sample" CCTAS Instruction/Approval Page**  
**Page 1 of 1**  
CCTAS Instruction/Approval Page

Core Component Transfer Authorization Sheet Page  1  of  2

Unit  LIMERICK GENERATING STATION  Date  MM/DD/YY

Title  Fuel bundle moves in U1 Spent Fuel pool  (Rev.#)  ###

1. This CCTAS provides the moves necessary to Fuel bundles within the U1 Spent Fuel Pool
2. This CCTAS assumes that SRM A, B, C, D are in service.
3. Emergency Setdown Location
4. This CCTAS must be used in conjunction with appropriate maintenance procedures.
5. This CCTAS must be used in conjunction with appropriate fuel handling procedures.
6. All changes to this CCTAS must be made in accordance with procedure NF-AA-309.
7. This CCTAS involves the transfer of Special Nuclear Material (SNM). SNM transfers shall be controlled in accordance with procedure NF-AA-300.
8. Reactor Engineer contact: H Potter X####
9. List pen and ink revisions and affected pages here:

R Foust  /  MM/DD/YY   
Preparer DATE

G Snidert  /  MM/DD/YY   
Independent Reviewer DATE

H Potter  /  MM/DD/YY  Distribution Legible  YES   
Reactor Engineer DATE

-----  
Return completed CCTAS (or a copy if original is contaminated) to Reactor Engineering.

Review of Completed Move Sheets:   /    
SNM Custodian DATE

**ATTACHMENT 6  
CCTAS For Non Core Transfer  
Page 1 of 1**

Unit 1

Title CCTAS FOR NON CORE TRANSFERS

Written By: R Foust

Reviewed By: G Snidert

Authorized By: H Potter

STEP NO.	COMPONENT SERIAL NO.	MOVE FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	DATE	TIME
1	LY8487	L2SPENT KK-158	SW	L1SPENT T-58	SW				
2	LY8488	L2SPENT KK156	SW	L1SPENT U-57	SW				
3	LY8811	L2SPENT KK-154	SW	L1SPENT U-56	SW				
4	LYN091	L2SPENT KK-152	SW	L1SPENT V-58	SW				
5	LY8812	L2SPENT KK-150	SW	L1SPENT V-56	SW				
6	LY8813	L2SPENT KK148	SW	L1SPENT W-58	SW				
7	LYN104	L2SPENT KK146	SW	L1SPENT W-57	SW				

# Exelon Nuclear

## Job Performance Measure

### Calculate Stay Time

JPM Number: NLSRO2701

Revision Number: 001

Date: \_\_\_\_\_

Developed By: D. M. Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, simulator, or other)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating cues (and terminating cues if required) are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure(s) referenced by this JPM reflects the current revision:
 

Procedure _____	Rev: _____
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

**REVISION RECORD (Summary)**

1. Revision 01, updated procedure reference, calculation numbers, Location, Equipment and format, no rev markers used

**SIMULATOR SETUP INSTRUCTIONS**

N/A

**TASK CONDITIONS:**

- Unit 2 is in OPCON 5
- Monorail Auxiliary Hoist is in use for Control Rod Blade replacement
- The NES combined Grapple has broken and requires repair
- High radiation exposure controls are required for this repair
- During the initial entry the workers Maximum Stay Time was reached and the electronic dosimeter accumulated dose set point was **not** reached
- Additional high radiation exposure controls are required
- Workers have been removed from the Radiation Area until new stay times have been calculated
- Dose Rates in the Vicinity of the Grapple are 400 mrem/hr
- The Effective Dose Rate for the entry was determined to be 400 mrem/hr per RP-AA-460-002 step 4.4.4.2.B
- Job conditions and information are as follows:
  - Dose Rate Alarms Setpoints on their Electronic Dosimeter for both workers: 600 mrem/hr
  - Accumulated Dose Alarm Setpoints on their Electronic Dosimeter for both workers: 1200 mrem
  - RWP Approved Dose for both workers: 1200 mrem
  - Stop Work Dose Rate for both workers: 600 mrem/hr
  - Worker 1 has 900 mrem accumulated dose on his Electronic Dosimeter from his first entry
  - Worker 2 has 800 mrem accumulated dose on his Electronic Dosimeter from his first entry
  - 1.5 total man-hrs are required to finish the work
  - Work is to be performed on the Refuel Floor inside a quarantined area.

**INITIATING CUES:**

You are directed to determine:

1. Maximum Stay Times (Worst Case) to reach the Electronic Dosimeter accumulated dose alarms for worker 1 and worker 2.
2. If the workers can finish the work within 1.5 **TOTAL** man-hrs

**TASK STANDARD:**

Calculate stay time for workers 1 and 2 until electronic dosimeter accumulated dose alarms set point is reached, and that work can be finished in the allotted time.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

**JPM SUMMARY**

**Operator's Name:** \_\_\_\_\_ **Job Title:**  SED  SM  SRO  STA/IA  OTHER

JPM Title: Calculate Stay Time

JPM Number: NLSRO2701 Revision Number: 001

Task Number and Title: LP NLSRO-1760, Health Physics Procedures

K/A Number and Importance: 2.3.7 RO: 3.5 SRO: 3.6

Suggested Testing Environment: quiet area with appropriate documents

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure RP-AA-460-002 Rev: 0

Procedure \_\_\_\_\_ Rev: \_\_\_\_\_

**Actual Testing Environment:**  Simulator  Control Room  In-Plant  Other

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 20 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by "\*" in Performance Checklist.

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
(Cue: Provide copy of RP-AA-460-002 and survey map)	N/A			
1. Determine new Maximum Stay Time for the required entry	N/A			
2. For worker 1:				
*2.a Determine remaining margin to the electronic dosimeter accumulated does alarm setpoint by subtracting accumulated dose of 900 mr from accumulated dose alarm of 1200 mr to get remaining dose until alarm	$\begin{matrix} \text{Accum} & - & \text{Accum} & = & \text{Remain} \\ \text{Dose} & & \text{Dose} & & \text{Dose} \\ \text{Alarm} & & & & \text{Alarm} \\ 1200 \text{ mr} & - & 900 \text{ mr} & = & 300 \text{ mr} \end{matrix}$			
*2.b Divide remaining margin to alarm by the effective Dose Rate in work area to get Maximum Stay Time (Worst Case)	$\begin{matrix} \text{Remain} / & \text{Effective} & = & \text{Max} \\ \text{Margin} & \text{Dose} & & \text{Stay} \\ \text{Alarm} & \text{Rate} & & \text{Time} \\ 300\text{mr} / & 400 \text{ mr/hr} & = & .75 \text{ hrs} \end{matrix}$			
3. For worker 2:				
*3.a Determine remaining margin to the electronic dosimeter accumulated does alarm setpoint Subtract accumulated dose of 800 mr from accumulated dose alarm of 1200 mr to get remaining dose until alarm	$\begin{matrix} \text{Accum} & - & \text{Accum} & = & \text{Remain} \\ \text{Dose} & & \text{Dose} & & \text{Dose} \\ \text{Alarm} & & & & \text{Alarm} \\ 1200 \text{ mr} & - & 800 \text{ mr} & = & 400 \text{ mr} \end{matrix}$			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*3.b Divide remaining margin to alarm by the effective Dose Rate in work area to get Maximum Stay Time (Worst Case)	$\frac{\text{Remain Margin Alarm}}{\text{Effective Dose Rate}} = \text{Max Stay Time}$ $400\text{mr} / 400 \text{ mr/hr} = 1.0 \text{ hrs}$			
4. Calculate if man-hrs are exceeded:				
4.a Add worker 1 Maximum Stay Time of 45 minutes to worker 2 Maximum Stay Time of 60 minutes	$\text{Worker 1 Stay Time} + \text{Worker 2 Stay Time} = \text{Total Stay Time}$ $45 \text{ min} + 60 \text{ min} = 105 \text{ min}$			
*4.b Determine work can be competed due to combined stay time greater than the required 1.5 man-hrs	Determine work can be completed			
<b>You have met the termination criteria for this JPM</b>				

JPM Stop Time: \_\_\_\_\_

## TASK CONDITIONS:

- Unit 2 is in OPCON 5
- Monorail Auxiliary Hoist is in use for Control Rod Blade replacement
- The NES combined Grapple has broken and requires repair
- High radiation exposure controls are required for this repair
- During the initial entry the workers Maximum Stay Time was reached and the electronic dosimeter accumulated dose set point was **not** reached
- Additional high radiation exposure controls are required
- Workers have been removed from the Radiation Area until new stay times have been calculated
- Dose Rates in the Vicinity of the Grapple are 400 mrem/hr
- The Effective Dose Rate for the entry was determined to be 400 mrem/hr per RP-AA-460-002 step 4.4.4.2.B
- Job conditions and information are as follows:
  - Dose Rate Alarms Setpoints on their Electronic Dosimeter for both workers: 600 mrem/hr
  - Accumulated Dose Alarm Setpoints on their Electronic Dosimeter for both workers: 1200 mrem
  - RWP Approved Dose for both workers: 1200 mrem
  - Stop Work Dose Rate for both workers: 600 mrem/hr
  - Worker 1 has 900 mrem accumulated dose on his Electronic Dosimeter from his first entry
  - Worker 2 has 800 mrem accumulated dose on his Electronic Dosimeter from his first entry
  - 1.5 total man-hrs are required to finish the work
  - Work is to be performed on the Refuel Floor inside a quarantined area.

## INITIATING CUES:

You are directed to determine:

1. Maximum Stay Times (Worst Case) to reach the Electronic Dosimeter accumulated dose alarms for worker 1 and worker 2.
2. If the workers can finish the work within 1.5 **TOTAL** man-hrs

# Attachment 1 - ARW Survey Form

RWP No. 10-55    Date: MM/DD/YY    Time: ####    Survey No.: 10-33

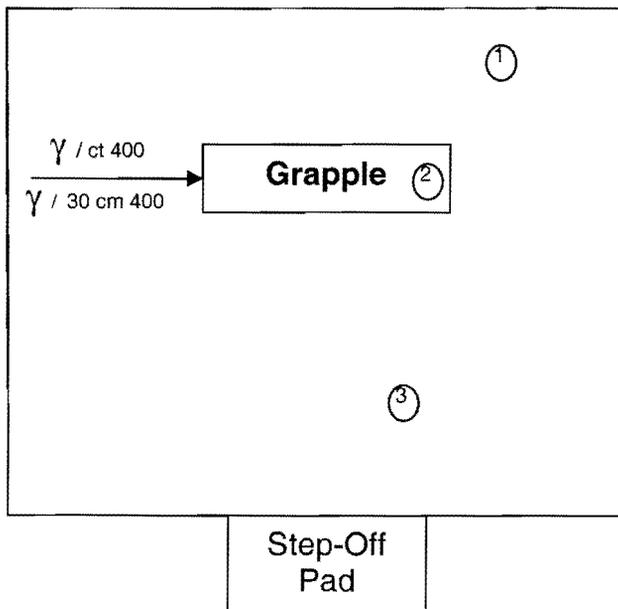
LOCATION: UNIT # 1 BLDG.: RX ELEV.: 352 AREA / LOCATION: RX 1 FUEL FLOOR  
 (i.e. room name/number)

WORK DESCRIPTION: Monorail Auxiliary Hoist Repair  
 (Task being performed, work order #, etc.)

SURVEYED BY: R Smith / RS    ARW SUPERVISOR: J Jones    NOTIFIED: K. Anderson  
 (Print name) / (Inits)    (Supv of ARW performing survey)    (RP Tech)

INSTRUMENT	SERIAL NO.	CAL. YES	DUE	VALID NO	INSTRUMENT	SERIAL NO.	CAL. YES	DUE	VALID NO
RO2A	##-####	X			RM-14	##-####	X		

R A D I A T I O N	ITEM / LOCATION	BETA mrad/hr	GAMMA mR/hr	DISTANCE (Circle one)	CONTAMINATION		
					SMEAR#	ITEM / LOCATION	dpm/100cm <sup>2</sup>
	Work Area	N/A	400			1	Laydown Area
Low Dose Area	N/A	50		Cont. $\gamma$ 30 cm / G.A.	2	Grapple	<10K
<b>NES Grapple Laydown Area</b>					3	Laydown Area	<2K
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		



1. X-X-X = Radiological Boundary    2. (#) = SMEAR    3. \*#/# =  $\beta/\gamma$  CONTACT    4. \*#/# =  $\beta/\gamma$  CONTACT  
 All dose rates in mR/hr unless otherwise noted.    #/#  $\beta/\gamma$  @ 30 cm

REMARKS: Survey to support Auxiliary Hoist Repair

REVIEWED BY: S Ward    DATE: MM/DD/YY

Y

**Limerick Generating Station**

**Job Performance Measure**

**Fuel Movement in the Spent Fuel Pool,  
Hoist Jam Light Illuminates  
(LSRO performs as RPO)  
(Alternate Path)**

JPM Number: 2035

Revision Number: 002

Date: \_\_/\_\_/\_\_

**Developed By:** \_\_\_\_\_  
**Instructor** **Date**

**Validated By:** \_\_\_\_\_  
**SME or Instructor** **Date**

**Review By:** \_\_\_\_\_  
**Operations Representative** **Date**

**Approved By:** \_\_\_\_\_  
**Training Department** **Date**

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

**NOTE:** All steps of this checklist should be performed upon initial validation.  
Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page.  
Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

## REVISION RECORD (SUMMARY)

Rev 002, updated based on procedure rev. Format updated no rev markers used

## TRAINEE BRIEFING

1. Perform PJB IAW HU-AA-1211.
  - a. Ensure Roles and Responsibilities are covered
    - i. Ensure trainee understands that in order to examine requirements of the LSRO program, they may be asked to switch roles during the JPM.
  - b. Ensure Safety is covered
  - c. Ensure Human Performance Fundamentals are covered.

## BRIDGE SETUP INSTRUCTIONS

1. **ENSURE** there is **NO** conflict with scheduled Refuel Floor and/or Fuel Pool work.
2. **ENSURE** personnel required for performance of S97.0.M are in attendance.
3. **PERFORM** PREREQUISITES of S97.0.M.
  - a. Bridge operation will be in Manual.
  - b. **ENSURE** there is **NO** potential for contact with the Auxiliary Platform during performance of any section of this procedure.
  - c. **PERFORM** the applicable sections of S97.1.A.
  - d. **PERFORM** FH-106.
4. **PERFORM** PRECAUTIONS of S97.0.M.
5. **PERFORM** S97.0.M, steps 4.2 through 4.5 as required to set-up Bridge for Candidate to perform S97.0.M step 4.8.

## TASK CONDITIONS:

1. All of the Prerequisites and Precautions of procedure S97.0.M have been completed.
2. A CCTAS has been developed to move the dummy fuel bundle to another location in the SFP, OR if a CCTAS is not available, the evaluator will provide instructions on the move.
3. This JPM is written from the standpoint that the LSRO is operating the refuel platform as RPO and the evaluator is providing the Fuel Handling Director verification function.
4. Refuel Floor Secondary Containment is not required.
5. The fuel prep machine is operable and visually verified full down.

**INITIAL CONDITIONS:**

1. A CCTAS has been developed to move the dummy fuel bundle to another location in the SFP, OR if a CCTAS is not available, the evaluator will provide instructions on the move.
2. Prerequisites of S97.0.M have been met.
3. All encoders are enabled for the bridge, trolley and hoist.
4. This JPM is written from the standpoint that the LSRO is operating the refuel platform as RPO.
5. Refuel Floor Secondary Containment is not required.
6. There are NO irradiated components grappled to any refueling platform hoist.
7. The Aux Hoists are full up with no tools attached.
8. The Unit \_\_\_\_ Refueling Platform has been aligned and checked out per S97.1.A, Electrical, Mechanical, and Pneumatic Alignment/Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation.
9. All Prerequisites of FH-106, Core Component and Irradiated Item Movement – No Core Transfer, are complete as applicable.

**INITIATING CUES:**

1. You have been directed to move the dummy bundle from one SFP location to another in accordance with (IAW) a CCTAS OR at the direction of the evaluator.
2. You are to PERFORM (simulate if Refuel Platform is not operable) this activity as the Refuel Platform Operator.
3. You are to perform Bridge Moves in Manual.

**TASK STANDARD:**

Appropriate actions are taken upon obtaining an unexpected hoist overload condition while moving the dummy fuel bundle.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

- Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  
 RO  STA/IA  OTHER

JPM Title: Fuel Movement in the Spent Fuel Pool, Hoist Jam Light Illuminates (Alternate Path)

JPM Number: NLSROJPM2035 Revision Number: 002

Task Number and Title: 234000-46 Direct fuel moves to/from a fuel prep machine

K/A Number and Importance: 234000 G2.2.28 IR: 3.5

Suggested Testing Environment: In-Plant

Alternate Path:  Yes  No SRO Only:  Yes  No  
Time Critical:  Yes  No

References:

- 1. S97.1.A, Electrical, Mechanical, and Pneumatic Alignment/Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation
- 2. FH-106, Core Component and Irradiated Item Movement – No Core Transfer
- 3. S97.0.M, Refueling Platform Operation

Actual Testing Environment:  Simulator  Control Room  In-Plant  Other

Testing Method:  Simulate  Perform

Estimated Time to Complete: 20 minutes Actual Time Used: \_\_\_minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>Provide candidate with a copy of S97.0.M</b>					
1.	Obtain current revision of S97.0.M	Current revision of S97.0.M obtained.	___	___	___
<b>Instructor Note:</b> Once the trainee demonstrates the ability to locate the current revision of the procedure, provide him/her a copy.					
<b>Instructor Note:</b> If trainee asks about bridge movement in Semi-Auto vs. Manual, the initiating cue requires manual bridge operation.					
2.	Pickup Location – Fuel Pool Storage Rack or Cask Pit	N/A	N/A	N/A	___
3.	<b>Spotter to RPO:</b> “next location is ___ - ___ ___” <b>RPO to Spotter:</b> “understand, ___ - ___ ___” <b>Spotter to RPO:</b> “correct”		___	___	___
4.	<b>POSITION</b> Refuel Platform Mast over desired core component in accordance with Core Component Move Sheet.  (CUE <b>IF</b> simulated: Refuel Platform is positioned over the dummy fuel bundle)	Refuel Platform positioned over dummy fuel bundle at location designated on the Core Component Move Sheet <u>OR</u> as directed by the evaluator.	___	___	___
5.	<b>NOTE:</b> The following step may be performed anytime prior to setting grapple on component bail in step 4.8.6.	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6.	<p><u>IF</u> HMI screen is functional, <u>THEN</u> RPO, <b>VERIFY</b> the "Current Location" displayed on HMI screen matches intended rack location.</p> <p>(CUE <u>IF</u> simulated: "Current Location" displayed matches intended rack location.)</p>	<p>RPO, <b>VERIFY</b> the "Current Location" displayed on HMI screen matches intended rack location.</p>	—	—	—
7.	<p><b>LOWER</b> grapple until grapple is near bail.</p> <p>(CUE <u>IF</u> simulated: Grapple has been lowered and is near the bail (180"))</p>	<p>Grapple lowered near bail.</p>	—	—	—
8.	<p><b>ENSURE</b> grapple is open.</p> <p>(CUE <u>IF</u> simulated: Grapple is open)</p>	<p>Grapple open.</p> <p>Verify indicating light is NOT lit</p> <p>Camera indicates grapple is open.</p>	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9.	<p><b>CAUTION</b></p> <p>Grapple switch guard located on LH Controller side of grapple head interferes with adjacent DBG bail handle when pickup component's bail handle is between the DBG legs and pickup component's bail handle is perpendicular to DBG handle.</p> <p>Grapple guard can also interfere with Spent Fuel Pool rack label pipe couplings.</p> <p>Contact of grapple guard can cause permanent damage to proximity switch electric cable causing refuel platform to be inoperable.</p> <p>Maintain switch guard away from adjacent seated DBG bail handle <b>OR</b> rack label pipe couplings.</p> <p>SBG bail handle will always be perpendicular to DBG bail handle in core. Therefore, for pickup of SBG's in pool, mast must be oriented with switch guard opposite corner of SBG with spacer buttons.</p> <p>CUE <b>IF</b> asked: There is no interference for this bundle.</p>	N/A	N/A	N/A	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
10.	<b>ROTATE</b> grapple as necessary to achieve grapple to bail alignment.  (CUE <b>IF</b> simulated: Grapple is rotated and aligned with bail)	Grapple rotated and aligned with bail.	___	___	___
11.	Slowly <b>LOWER</b> grapple until SLACK CABLE Light is lit.  (CUE <b>IF</b> simulated: SLACK CABLE Light is lit)	Grapple is lowered, SLACK CABLE Light is lit.	___	___	___
12.	FHD & Spotter, <b>PERFORM</b> Concurrent Verification of proper core component location <b>AND</b> orientation.  (CUE <b>IF</b> simulated: Dummy bundle location and orientation concurrently verified by FHD & Spotter)	N/A	N/A	N/A	___
13.	<b>Spotter to FHD:</b> "Location is ___-___-___"  <b>FHD to Spotter:</b> "agree, ___-___-___"  <b>Spotter to FHD:</b> "correct"		N/A	N/A	___
14.	<b>NOTE:</b> The verifications in the following two steps may be performed in parallel.	N/A	N/A	N/A	___

**Note to the examiner:**

Steps 4.8.8 (for the FHD and Spotter) and 4.8.9 (for the RPO) of the procedure have the same actions and they may be performed in parallel. This JPM is evaluating the RPO.

After the verifications are performed,  
***a cue needs to be given to direct the RPO to engage the grapple.***

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
15.	<p>FHD, VERIFY the following,</p> <ul style="list-style-type: none"> <li>• SLACK CABLE Light is lit</li> <li>• Grapple is centered over bail handle</li> <li>• Hoist Position indication agrees with Attachment 2 for item seated in Fuel Pool Storage Rack</li> <li>• Grapple appears seated on bail handle using underwater camera for component seated in cask</li> </ul> <p><b>THEN DIRECT</b> RPO to engage grapple.</p>	N/A	N/A	N/A	___
16.	RPO, <b>VERIFY</b> the following	N/A	N/A	N/A	___
17.	<p>SLACK CABLE Light is lit.</p> <p>(CUE <b>IF</b> simulated: Slack Cable Light is lit.)</p>	Verifies SLACK CABLE light is lit.	___	___	___
18.	<p>Grapple is centered over bail handle.</p> <p>(CUE <b>IF</b> simulated: Grapple is centered over bail handle.)</p>	Verifies SLACK CABLE light is lit.	___	___	___
19.	<p>Hoist Position indication agrees with Attachment 2 for item seated in Fuel Pool Storage Rack.</p> <p>(CUE <b>IF</b> simulated: Hoist Position indicates 197")</p>	<p>Verifies hoist position is between 198" and 196".</p> <p>(Depending on calibration, Unit 1 is about 196"-197" and Unit 2 is about 198")</p>	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
20.	Grapple appears seated on bail handle using underwater camera for component seated in cask.	N/A	N/A	N/A	___
21.	<b>THEN WHEN</b> directed by FHD, <b>ENGAGE</b> grapple.  (CUE <b>IF</b> simulated: The grapple is engaged).	Grapple is engaged.	___	___	___
22.	<b>FHD to RPO:</b> "engage grapple"  <b>RPO to FHD:</b> "understand, engage grapple"  <b>FHD to RPO:</b> "correct"		___	___	___
23.	FHD & RPO, <b>PERFORM</b> Peer Check that GRAPPLE ENGAGED Light is lit.  (CUE <b>IF</b> simulated: The GRAPPLE ENGAGED Light is lit).	Verify GRAPPLE ENGAGED Light is lit.	___	___	___
24.	<b>RPO to FHD:</b> "engaged light lit"  <b>FHD to RPO:</b> "agree, engaged light lit"  <b>RPO to FHD:</b> "correct"		___	___	___
25.	Slowly <b>RAISE</b> load while ensuring FUEL LOADED Light is lit (fuel/dummy bundle only).  (CUE <b>IF</b> simulated: If asked; Fuel Loaded light is lit.)		___	___	___
<b>ALTERNATE PATH STARTS HERE</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
26.	<p>After the candidate starts raising the bundle, provide the following</p> <p>Cue:</p> <ol style="list-style-type: none"> <li>1. STOP raising the hoist</li> <li>2. We are simulating that the hoist has automatically stopped moving.</li> <li>3. The HOIST LOADED and HOIST JAM lights are lit.</li> </ol> <p>Cue If asked: Hoist load cell indicates 1190 lbs.</p>				
27.	<p>IF during hoist operation</p> <p>*a HOIST JAM light comes on, THEN movement shall be stopped immediately AND lowered until HOIST JAM Light goes out, THEN the Fuel Handling Director shall be stopped immediately AND lowered until HOIST JAM Light goes out, THEN the Fuel Handling Director shall be contacted for instruction.</p> <p>Cue: After the candidate lowers the hoist, provide the following cue: "The hoist Jam light is out."</p>	<p>RPO immediately stops attempting to raise the bundle <u>AND</u> RPO immediately stops attempting to raise the bundle <u>AND</u> RPO lowers the hoist until Hoist Jam light goes out, <u>AND</u> The FHD is notified</p>			
<p>(Cue: You can stop here. You have met the termination criteria for this JPM.)</p>					

JPM Stop Time \_\_\_\_\_

## **INITIAL CONDITIONS:**

1. A CCTAS has been developed to move the dummy fuel bundle to another location in the SFP, OR if a CCTAS is not available, the evaluator will provide instructions on the move.
2. Prerequisites of S97.0.M have been met.
3. All encoders are enabled for the bridge, trolley and hoist.
4. This JPM is written from the standpoint that the LSRO is operating the refuel platform as RPO.
5. Refuel Floor Secondary Containment is not required.
6. There are NO irradiated components grappled to any refueling platform hoist.
7. The Aux Hoists are full up with no tools attached.
8. The Unit \_\_\_\_ Refueling Platform has been aligned and checked out per S97.1.A, Electrical, Mechanical, and Pneumatic Alignment/Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation.
9. All Prerequisites of FH-106, Core Component and Irradiated Item Movement – No Core Transfer, are complete as applicable.

## **INITIATING CUES:**

1. You have been directed to move the dummy bundle from one SFP location to another in accordance with (IAW) a CCTAS OR at the direction of the evaluator.
2. You are to PERFORM (simulate if Refuel Platform is not operable) this activity as the Refuel Platform Operator.
3. You are to perform Bridge Moves in Manual.

Exelon Nuclear

Job Performance Measure

**Dummy Bundle Movement within the Spent Fuel Pool  
(LSRO performs as RPO)  
(Alternate Path)**

JPM Number: NLSRO2083

Revision Number: 000

Date: \_\_\_\_\_

Developed By: J. A. Mihm \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date



## **REVISION RECORD (Summary)**

1. Revision 00 N/A

## **TRAINEE BRIEFING**

1. Perform PJB IAW HU-AA-1211.
  - a. Ensure Roles and Responsibilities are covered
    - i. Ensure trainee understands that in order to examine requirements of the LSRO program, they may be asked to switch roles during the JPM.
  - b. Ensure Safety is covered
  - c. Ensure Human Performance Fundamentals are covered.

## **BRIDGE SETUP INSTRUCTIONS**

1. **ENSURE** there is **NO** conflict with scheduled Refuel Floor and/or Fuel Pool work.
2. **ENSURE** personnel required for performance of S97.0.M are in attendance.
3. **PERFORM** PREREQUISITES of S97.0.M.
  - a. Bridge operation will be in Manual.
  - b. **ENSURE** there is **NO** potential for contact with the Auxiliary Platform during performance of any section of this procedure.
  - c. **PERFORM** the applicable sections of S97.1.A.
  - d. **PERFORM** FH-106.
4. **PERFORM** PRECAUTIONS of S97.0.M.
5. **PERFORM** S97.0.M, steps 4.2 through 4.5 as required to set-up Bridge for Candidate to perform S97.0.M step 4.8.

**TASK CONDITIONS:**

1. A CCTAS has been developed to move the dummy fuel bundle to another location in the SFP, OR if a CCTAS is not available, the evaluator will provide instructions on the move.
2. Prerequisites of S97.0.M have been met.
3. All encoders are enabled for the bridge, trolley and hoist.
4. This JPM is written from the standpoint that the LSRO is operating the refuel platform as RPO.
5. Refuel Floor Secondary Containment is not required.
6. There are NO irradiated components grappled to any refueling platform hoist.
7. The Aux Hoists are full up with no tools attached.
8. The Unit \_\_\_\_ Refueling Platform has been aligned and checked out per S97.1.A, Electrical, Mechanical, and Pneumatic Alignment/Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation.
9. All Prerequisites of FH-106, Core Component and Irradiated Item Movement – No Core Transfer, are complete as applicable.

**INITIATING CUES:**

1. You have been directed to move the dummy bundle from one SFP location to another in accordance with (IAW) a CCTAS OR at the direction of the evaluator.
2. You are to PERFORM (simulate if Refuel Platform is not operable) this activity as the Refuel Platform Operator.
3. You are to perform Bridge Moves in Manual.

**TASK STANDARD(S):**

1. Dummy Bundle is moved from one SFP location to another through an alternate path due to a fault.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

**JPM SUMMARY**

**Operator's Name:** \_\_\_\_\_ **Job Title:**  SED  SM  SRO  
 STA/IA  OTHER

JPM Title: Dummy Bundle Movement within Spent Fuel Pool (LGS)

JPM Number: NLSRO0283 Revision Number: 000

Task Number and Title:

K/A Number and Importance: RO: SRO:

Suggested Testing Environment: Refuel Platform

Alternate Path:  Yes  No SRO Only:  Yes  No  
No Time Critical:  Yes  No

Reference(s):

Procedure S97.0.K Rev: 14  
Procedure S97.0.M Rev: 28

**Actual Testing Environment:**  Simulator  Control Room  In-Plant  Other

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 40 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Evaluator's Name:** \_\_\_\_\_ (Print)  
**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by “\*” in Performance Checklist.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>Provide candidate with a copy of S97.0.M</b>					
1.	Obtain current revision of S97.0.M	Current revision of S97.0.M obtained.	___	___	___
<b>Instructor Note:</b> Once the trainee demonstrates the ability to locate the current revision of the procedure, provide him/her a copy.					
<b>Instructor Note:</b> If trainee asks about bridge movement in Semi-Auto vs. Manual, the initiating cue requires manual bridge operation.					
2.	Pickup Location – Fuel Pool Storage Rack or Cask Pit	N/A	N/A	N/A	___
3.	<b>Spotter to RPO:</b> “next location is ___ - ___ ___” <b>RPO to Spotter:</b> “understand, ___ - ___ ___” <b>Spotter to RPO:</b> “correct”		___	___	___
*4.	<b>POSITION</b> Refuel Platform Mast over desired core component in accordance with Core Component Move Sheet. (CUE <b>IF</b> simulated: Refuel Platform is positioned over the dummy fuel bundle)	Refuel Platform positioned over dummy fuel bundle at location designated on the Core Component Move Sheet <u>OR</u> as directed by the evaluator.	___	___	___
5.	<b>NOTE:</b> The following step may be performed anytime prior to setting grapple on component bail in step 4.8.6.	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6.	<p><u>IF</u> HMI screen is functional, <u>THEN</u> RPO, <b>VERIFY</b> the "Current Location" displayed on HMI screen matches intended rack location.</p> <p>(CUE <u>IF</u> simulated: "Current Location" displayed matches intended rack location.)</p>	<p>RPO, <b>VERIFY</b> the "Current Location" displayed on HMI screen matches intended rack location.</p>	---	---	---
*7.	<p><b>LOWER</b> grapple until grapple is near bail.</p> <p>(CUE <u>IF</u> simulated: Grapple has been lowered and is near the bail (180"))</p>	<p>Grapple lowered near bail.</p>	---	---	---
8.	<p><b>ENSURE</b> grapple is open.</p> <p>(CUE <u>IF</u> simulated: Grapple is open)</p>	<p>Grapple open.</p> <p>Verify indicating light is NOT lit</p> <p>Camera indicates grapple is open.</p>	---	---	---

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9.	<p><b>CAUTION</b></p> <p>Grapple switch guard located on LH Controller side of grapple head interferes with adjacent DBG bail handle when pickup component's bail handle is between the DBG legs and pickup component's bail handle is perpendicular to DBG handle.</p> <p>Grapple guard can also interfere with Spent Fuel Pool rack label pipe couplings.</p> <p>Contact of grapple guard can cause permanent damage to proximity switch electric cable causing refuel platform to be inoperable.</p> <p>Maintain switch guard away from adjacent seated DBG bail handle <b>OR</b> rack label pipe couplings.</p> <p>SBG bail handle will always be perpendicular to DBG bail handle in core. Therefore, for pickup of SBG's in pool, mast must be oriented with switch guard opposite corner of SBG with spacer buttons.</p> <p>CUE <b>IF</b> asked: There is no interference for this bundle.</p>	N/A	N/A	N/A	___
*10.	<p><b>ROTATE</b> grapple as necessary to achieve grapple to bail alignment.</p> <p>(CUE <b>IF</b> simulated: Grapple is rotated and aligned with bail)</p>	Grapple rotated and aligned with bail.	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*11.	Slowly <b>LOWER</b> grapple until SLACK CABLE Light is lit. (CUE <b>IF</b> simulated: SLACK CABLE Light is lit)	Grapple is lowered, SLACK CABLE Light is lit.	___	___	___
12.	FHD & Spotter, <b>PERFORM</b> Concurrent Verification of proper core component location <b>AND</b> orientation. (CUE <b>IF</b> simulated: Dummy bundle location and orientation concurrently verified by FHD & Spotter)	N/A	N/A	N/A	___
13.	<b>Spotter to FHD:</b> "Location is ___ - ___ ___" <b>FHD to Spotter:</b> "agree, ___ - ___ ___" <b>Spotter to FHD:</b> "correct"		N/A	N/A	___
14.	<b>NOTE:</b> The verifications in the following two steps may be performed in parallel.	N/A	N/A	N/A	___

**Note to the examiner:**

Steps 4.8.8 (for the FHD and Spotter) and 4.8.9 (for the RPO) of the procedure have the same actions and they may be performed in parallel. This JPM is evaluating the RPO.

After the verifications are performed,  
***a cue needs to be given to direct the RPO to engage the grapple.***

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
15.	<p>FHD, VERIFY the following,</p> <ul style="list-style-type: none"> <li>• SLACK CABLE Light is lit</li> <li>• Grapple is centered over bail handle</li> <li>• Hoist Position indication agrees with Attachment 2 for item seated in Fuel Pool Storage Rack</li> <li>• Grapple appears seated on bail handle using underwater camera for component seated in cask</li> </ul> <p><b>THEN DIRECT RPO</b> to engage grapple.</p>	N/A	N/A	N/A	___
16.	RPO, <b>VERIFY</b> the following	N/A	N/A	N/A	___
17.	SLACK CABLE Light is lit. (CUE <b>IF</b> simulated: Slack Cable Light is lit.)	Verifies SLACK CABLE light is lit.	___	___	___
18.	Grapple is centered over bail handle. (CUE <b>IF</b> simulated: Grapple is centered over bail handle.)	Verifies SLACK CABLE light is lit.	___	___	___
19.	Hoist Position indication agrees with Attachment 2 for item seated in Fuel Pool Storage Rack. (CUE <b>IF</b> simulated: Hoist Position indicates 197")	Verifies hoist position is between 198" and 196". (Depending on calibration, Unit 1 is about 196"-197" and Unit 2 is about 198")	___	___	___
20.	Grapple appears seated on bail handle using underwater camera for component seated in cask.	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*21.	<b>THEN WHEN</b> directed by FHD, <b>ENGAGE</b> grapple. (CUE <b>IF</b> simulated: The grapple is engaged).	Grapple is engaged.	___	___	___
22.	<b>FHD to RPO:</b> "engage grapple" <b>RPO to FHD:</b> "understand, engage grapple" <b>FHD to RPO:</b> "correct"		___	___	___
23.	FHD & RPO, <b>PERFORM</b> Peer Check that GRAPPLE ENGAGED Light is lit. (CUE <b>IF</b> simulated: The GRAPPLE ENGAGED Light is lit).	Verify GRAPPLE ENGAGED Light is lit.	___	___	___
24.	<b>RPO to FHD:</b> "engaged light lit" <b>FHD to RPO:</b> "agree, engaged light lit" <b>RPO to FHD:</b> "correct"		___	___	___
*25.	Slowly <b>RAISE</b> load while ensuring FUEL LOADED Light is lit (fuel/dummy bundle only). (CUE <b>IF</b> simulated: If asked; Fuel Loaded light is lit.)	Slowly raise load	___	___	___
<b>ALTERNATE PATH STARTS HERE</b>					
<b>NOTE: As part of the next step the candidate will assume the role of the FHD.</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
26.	<p><b>WHEN HOIST POSITION indicates between 100” and 50”,</b></p> <p><b>THEN, CUE:</b></p> <ol style="list-style-type: none"> <li>1. STOP raising the hoist</li> <li>2. We are simulating that the hoist has automatically stopped moving.</li> <li>3. For the purpose of this JPM, you are now performing the role of the FHD.</li> <li>3. PAR representative reports that a hoist tube hang-up is the likely cause of the hoist motion stop.</li> <li>4. IF requested, screen on RIGHT (interlock status) is displaying a FAULT LOCKOUT.</li> <li>5. IF requested, screen on left (HMI) indicates a red system fault detected button is lit.</li> </ol>	<p>Per S97.0.M step 3.12.6, Student will reference S97.0.K</p>	---	---	---
<p>Note: The following steps are per S97.0.K</p>					
27.	<p>Obtain current revision of S97.0.K</p> <p>Cue: Once the trainee demonstrates the ability to locate the current revision of the procedure, provide him/her a copy.</p>	<p>Current revision of S97.0.K obtained.</p>	---	---	---
28.	<p>Correct revision of procedure being used.</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	---
29.	<p>Procedure printed on white paper.</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	---

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
30.	Briefing performed as required. <b>Cue: If asked;</b> brief was performed during the job PJB.	N/A	___	___	___
31.	To avoid extensive physical damage, slow <b>OR</b> Jog speed <b>only</b> shall be used in approaching any wall <b>OR</b> obstruction.	N/A	N/A	N/A	___
32.	<b>NOTE:</b> Conditional <b>IF...THEN</b> steps that are <b>not</b> applicable <b>AND</b> steps to be skipped per direction of the <b>IF..THEN</b> step shall be marked N/A <b>AND</b> initialed.	N/A	N/A	N/A	___
33.	<b>VERIFY</b> all prerequisites satisfied.	N/A	N/A	N/A	___
34.	<b>VERIFY</b> procedure being performed on correct Unit.	N/A	N/A	N/A	___
35.	<b>NOTE:</b> The performance steps section of this procedure are separated into the following subsections that may be performed independently: <b>4.2 RESPONSE TO SYSTEM FAULTS AND ALARMS.</b> <b>4.3 PLC OVERRIDE</b> <b>4.5 BYPASSING A FAULTED ENCODER</b> <b>4.6 RESETTING A DISABLED ENCODER</b> <b>4.7 CALIBRATING ENCODER(S)</b>	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
36.	<b>NOTE:</b> 1. The PLC monitors individual faults <b>AND</b> alarms. The "System Fault Screen" grey button indicates normal operation (no faults/alarms on the system). When a fault <b>OR</b> alarm condition occurs, the "System Fault Detected" red button will appear. Touching the "System Fault Detected" button displays the "SYSTEM FAULTS" screen.	N/A	N/A	N/A	___
37.	<b>NOTE:</b> 2. Touching the "FAULT" <b>OR</b> "ALARM" button activated on "SYSTEM FAULTS" screen displays popup screen explaining the condition.	N/A	N/A	N/A	___
38.	<b>Caution:</b> Troubleshooting system faults should <b>not</b> preclude taking action to place the machine <b>AND/OR</b> associated load in a safe condition.	N/A	N/A	N/A	___
39.	To respond to a system fault/alarm condition, <b>PERFORM</b> the following:	N/A	___	___	___
40.	<b>VERIFY</b> "System Fault Detected" button is illuminated on Operator Touch Screen. (Cue: System Fault detected button is illuminated)	Verifies "System Fault Detected" button is illuminated on Operator Touch Screen.	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
41.	<p><b>NOTE:</b> Buttons on the SYSTEM FAULTS screen are designated as follows: Normal condition: Green backlight. Fault condition: Red backlight Alarm condition: Yellow backlight</p>	N/A	N/A	N/A	___
*42.	<p><b>TOUCH</b> "System Fault Detected" <b>AND VERIFY</b> "SYSTEM FAULT" screen appears with individual System fault/alarm condition(s). (Cue: "System Fault" screen appears. <b>(Show Applicant ATTACHMENT A)</b>)</p>	Touches "System Fault Detected" and Verifies the fault is displayed.	___	___	___
*43.	<p><b>TOUCH</b> the activated "FAULT/ALARM" button(s) <b>AND VERIFY</b> pop-up screen is displayed explaining the condition. (Cue: "System Fault indicates HOIST TUBE HANGUP <b>(Show Applicant ATTACHMENT B)</b>)</p>	Touches button for activated fault and Verifies the explanation of the fault condition.	___	___	___
44.	<p><b>REFER</b> to Appendices for possible causes <b>AND</b> effects on equipment <b>AND</b> potential follow up actions for responding to the fault/alarm condition.</p>	<b>REFER</b> to APPENDIX 1 - LIMERICK REFUEL PLATFORM FAULT RESPONSE TABLE	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
45.	<p><b>Review</b> initiating conditions:</p> <p>1.Hoist hang up detected</p> <p>2.Hoist was not moving through transition zone <b>AND</b> did not maintain a stable load reading</p> <p>(Cue if simulated: Hoist Position indication reads approximately 75")</p>	Reviews Screen	___	___	___
46.	<p><b>Review</b> effect on equipment</p>	Hoist motion inhibited	___	___	___
47.	<p><b>Review</b> POTENTIAL FOLLOW UP ACTIONS</p>	N/A	N/A	N/A	___
48.	<p>1. <b>IF</b> picking up test weight <b>THEN RESET</b> Fault per section 4.2 of this procedure.</p>	N/A	N/A	N/A	___
49.	<p>2. <b>CHECK</b> cables and hose for proper config. and tension.</p> <p>(<b>Cue:</b> The PAR representative has verified the cables and hoses have the proper configuration and tension.)</p>	Verifies cables and hoses for proper configuration and tension.	___	___	___
<p><b>NOTE: As part of the next step the candidate will resume the role of the RPO.</b></p>					
50.	<p>3. <b>CONFIRM</b> that load indication is normal.</p> <p>(Cue if simulated: Load gauge reads normal)</p> <p>(Cue: For the purpose of this JPM, you are now performing the role of the RPO).</p>	Reads Load Gauge and identifies it is reading normal	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*51.	<p>4. <b>IF</b> no problem is detected, <b>CLEAR</b> fault by moving hoist using Travel Override.</p> <p><b>Cue:</b> The hoist raises and the hoist tube hangup fault has cleared</p>	<p>Attempt to clear fault by moving hoist using Travel Override.</p>	—	—	—
<b>NOTE:</b> The following steps are from S97.0.M					
*52.	<p>Slowly <b>RAISE</b> load while ensuring FUEL LOADED Light is lit (fuel/dummy bundle only). (CUE <b>IF</b> simulated: Raised to Normal-Up)</p>	<p>Raises load slowly to normal-up</p>	—	—	—
53.	<p><b>NOTE:</b></p> <p>1. <b>IF</b> operating in Automatic AND Quick Auto is enabled, <b>THEN:</b></p> <ul style="list-style-type: none"> <li>- The Refueling Platform will begin automatically moving toward the setdown location as soon as Hoist Clear is reached.</li> <li>- Once the auto move begins, the operator will be required to release the hoist joystick within 5 seconds or the auto move will be terminated.</li> </ul> <p>2.  <b>IF</b> Quick Auto is enabled AND manual hoist motion stops for more than 5 seconds before the auto move begins, the Quick Auto function will time out. Quick Auto can be enabled again when hoist raise command is provided, <b>HOWEVER</b> step will <b>INCREMENT AND</b> require resetting.</p>	<p>N/A</p>	N/A	N/A	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
54.	IF operating in Full Auto AND use of QUICK AUTO is desired, THEN PERFORM the following:	N/A	N/A	N/A	___
55.	TOUCH "QUICK AUTO"	N/A	N/A	N/A	___
56.	TOUCH "AUTO RUN"	N/A	N/A	N/A	___
57.	WHEN prompted, THEN RELEASE joystick	N/A	N/A	N/A	___
*58.	CONTINUE raising until grapple is fully raised, THEN VERIFY NORMAL UP Light is lit. (CUE IF simulated: Raised to Normal-Up)	Slowly raise to normal-up	___	___	___
59.	GO TO appropriate "Release Location" section of this procedure as directed by FHD.	Trainee goes to Section 4.12	___	___	___
60.	4.12 RELEASE LOCATION - FUEL POOL STORAGE RACK OR CASK PIT	N/A	N/A	N/A	___
61.	NOTE: IF a fuel assembly is being transferred to the Cask Pit for loading into a Dry Shielded Canister, AND refueling platform is operating in Semi Automatic mode, THEN the platform will automatically stop with the bundle centered over the Cask. At that point, manual positioning of the fuel bundle is necessary to properly locate the bundle in the desired Dry Shielded Canister (DSC) location.	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
62.	<p><b>Spotter to FHD:</b> "location is ___ - ___ - ___"</p> <p><b>FHD to Spotter:</b> "agree, ___ - ___ - ___"</p> <p><b>Spotter to FHD:</b> "correct"</p>		___	___	___
*63.	<p>POSITION core component over desired location in accordance with Core Component Move Sheet. (Cue IF simulated: Refuel Platform is positioned over the release location)</p>	<p>Refuel Platform positioned over location designated on the Core Component Move Sheet or as directed by the evaluator.</p>	___	___	___
64.	<p>NOTE: The following step may be performed anytime prior to component insertion in step 4.12.5 .</p>	N/A	N/A	N/A	___
65.	<p>IF HMI screen is functional, THEN RPO, VERIFY the "Current Location" displayed on HMI screen matches intended rack location. (ref. 5.32). (Cue <b>IF</b> simulated: Current location displayed matches the intended rack location)</p>	<p>Verifies the current location matches the move sheet or instructions from evaluator.</p>	___	___	___
66.	<p>Caution: Grapple switch guard located on LH Controller side of grapple head interferes with adjacent seated DBG bail handle when handled component's bail handle is perpendicular to DBG handle. (Cue IF simulated: There is no interference.)</p>	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
67.	Caution: Grapple guard can also interfere with Spent Fuel Pool rack label pipe couplings. (Cue IF simulated: There is no interference.)	N/A	N/A	N/A	—
68.	Caution: Contact of grapple guard can cause permanent damage to proximity switch electric cable causing refuel platform to be inoperable. (Cue IF simulated: There is no interference.)	N/A	N/A	N/A	—
69.	Caution: Maintain switch guard away from adjacent seated DBG bail handle OR rack label pipe couplings. (Cue IF simulated: There is no interference.)	N/A	N/A	N/A	—
*70.	ROTATE core component as necessary to achieve proper orientation. (Cue IF simulated: Component rotated.)		—	—	—
71.	NOTE: Component may be inserted into the fuel rack, up to hoist position "30", in parallel with verification of core component location and orientation.	N/A	N/A	N/A	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
72.	FHD & Spotter, PERFORM Concurrent Verification of proper core component location AND orientation.  (Cue IF simulated: 4.12.4 is complete, lower the hoist)	N/A	N/A	N/A	___
73.	<b>FHD to RPO:</b> "lower hoist" <b>RPO to FHD:</b> "understand, lower hoist" <b>FHD to RPO:</b> "correct"		___	___	___
*74.	LOWER hoist until core component is seated AND SLACK CABLE Light is lit. (Cue IF simulated: Slack Cable light is lit.)	Lowers hoist until component is seated and slack cable light is lit.	___	___	___
75.	NOTE: The verifications in the following two steps may be performed in parallel.	N/A	N/A	N/A	___
76.	FHD, VERIFY the following: SLACK CABLE Light is lit Component elevation appears equivalent to other stored components in the rack. Hoist Position indication agrees with Attachment 2 for item seated in Fuel Storage Rack, OR ISFSI cask. THEN DIRECT RPO to release and raise grapple. (Cue <b>IF</b> simulated: FHD directs you to raise grapple.)	N/A	N/A	N/A	___
77.	RPO, VERIFY the following,	N/A	N/A	N/A	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
78.	SLACK CABLE Light is lit (Cue <b>IF</b> simulated: Slack cable light is lit.)	Verifies slack cable light lit.	—	—	—
79.	Component elevation appears equivalent to other stored components in the rack. (Cue <b>IF</b> simulated: Component appears at the same elevation as other components in the rack.)	Verifies elevation is equivalent to other components in rack.	—	—	—
80.	Hoist Position indication agrees with Attachment 2 for item seated in Fuel Storage Rack, OR ISFSI cask. (Cue <b>IF</b> simulated: Hoist position indicates 198".)	Hoist Position indicates about 198"	—	—	—
81.	<b>FHD to RPO:</b> "release grapple" <b>RPO to FHD:</b> "understand, release grapple" <b>FHD to RPO:</b> "correct"		—	—	—
*82.	THEN WHEN directed by FHD, RELEASE grapple. (Cue <b>IF</b> simulated: FHD directs you to release grapple.)	Receives communication from FHD to release grapple.	—	—	—
83.	VERIFY grapple is "OPEN". (Cue <b>IF</b> simulated: Grapple is open.)	Verifies grapple open.	—	—	—
84.	Slowly RAISE grapple while verifying FUEL LOADED remains out. (Cue <b>IF</b> simulated: Grapple is raising.)	Slowly raises grapple and verifies fuel loaded light remains NOT lit.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
85.	<b>RPO to FHD: "clear"</b> <b>FHD to RPO: "agree clear"</b> <b>RPO to FHD: "correct"</b>		—	—	—
86.	FHD & RPO, PERFORM Peer Check that grapple is clear of component. (Cue <b>IF</b> simulated: I agree, grapple is clear.)	Performs peer check with FHD that grapple is clear.	—	—	—
<b>You have met the termination criteria for this JPM</b>					
<b>CUE: I'd like you to raise the grapple to Normal-up</b>					

JPM Stop Time: \_\_\_\_\_

### **INITIAL CONDITIONS:**

1. A CCTAS has been developed to move the dummy fuel bundle to another location in the SFP, OR if a CCTAS is not available, the evaluator will provide instructions on the move.
2. Prerequisites of S97.0.M have been met.
3. All encoders are enabled for the bridge, trolley and hoist.
4. This JPM is written from the standpoint that the LSRO is operating the refuel platform as RPO.
5. Refuel Floor Secondary Containment is not required.
6. There are NO irradiated components grappled to any refueling platform hoist.
7. The Aux Hoists are full up with no tools attached.
8. The Unit \_\_\_\_ Refueling Platform has been aligned and checked out per S97.1.A, Electrical, Mechanical, and Pneumatic Alignment/Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation.
9. All Prerequisites of FH-106, Core Component and Irradiated Item Movement – No Core Transfer, are complete as applicable.

### **INITIATING CUES:**

1. You have been directed to move the dummy bundle from one SFP location to another in accordance with (IAW) a CCTAS OR at the direction of the evaluator.
2. You are to PERFORM (simulate if Refuel Platform is not operable) this activity as the Refuel Platform Operator.
3. You are to perform Bridge Moves in Manual.

Attachment A

System Fault Reset	<h1>SYSTEM FAULTS</h1>				Close
Primary Bridge Encoder Fault	Primary Trolley Encoder Fault	Primary Hoist Encoder Fault	Hoist Limit Error	Power Monitor Relay Fault	Bridge Handwheel Fault
Redundant Bridge Encoder Fault	Redundant Trolley Encoder Fault	Redundant Hoist Encoder Fault	Hoist Hang Up Error	Control Power Off	Trolley Handwheel Fault
Bridge Encoder Compare Error	Trolley Encoder Compare Error	Hoist Encoder Compare Error	Hoist Load Error	PLC I/O Fault	Hoist Handwheel Fault
Bridge Drive Fault	Trolley Drive Fault	Hoist Drive Fault	Grapple Error	DeviceNet Fault	Door Switch Alarm
Bridge Motion Error	Trolley Motion Error	Hoist Motion Error	Hoist Cable Keeper Error	Load Cell Module Fault	Cabinet Temperature Alarm
Bridge Thermal Fault	Trolley Thermal Fault	Hoist Thermal Fault		Joy Stick Fault	PLC Battery Alarm

<b>System Fault Reset</b>		<h1>SYSTEM FAULTS</h1>				<b>Close</b>	
<b>Primary Bridge Encoder Fault</b>	<b>Primary Trolley Encoder Fault</b>	<b>Primary Hoist Encoder Fault</b>	<b>Hoist Limit Error</b>	<b>Power Monitor Relay Fault</b>	<b>Bridge Handwheel Fault</b>		
<b>Redundant Bridge Encoder Fault</b>	<b>Hoist Hang Up Error</b>			<b>Close</b>	<b>Trolley Handwheel Fault</b>		
<b>Bridge Encoder Compare Error</b>	<b>A Hoist Hang Up has been detected.</b>				<b>Hoist Handwheel Fault</b>		
<b>Bridge Drive Fault</b>	<b>The Hoist was not moving through a transition zone and did not maintain a stable load reading.</b>				<b>Door Switch Alarm</b>		
<b>Bridge Motion Error</b>	<b>Trolley Motion Error</b>	<b>Hoist Motion Error</b>	<b>Hoist Cable Keeper Error</b>	<b>Load Cell Module Fault</b>	<b>Cabinet Temperature Alarm</b>		
<b>Bridge Thermal Fault</b>	<b>Trolley Thermal Fault</b>	<b>Hoist Thermal Fault</b>		<b>Joy Stick Fault</b>	<b>PLC Battery Alarm</b>		

**Limerick Generating Station**

**Job Performance Measure**

**Install Rod Position Test Box (LGS)**

JPM Number: 2029

Revision Number: 005

Date: \_\_/\_\_/\_\_

**Developed By:** \_\_\_\_\_  
**Instructor** **Date**

**Validated By:** \_\_\_\_\_  
**SME or Instructor** **Date**

**Review By:** \_\_\_\_\_  
**Operations Representative** **Date**

**Approved By:** \_\_\_\_\_  
**Training Department** **Date**

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
           Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
           Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
           Procedure \_\_\_\_\_ Rev. \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page.  
Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

**REVISION RECORD (SUMMARY)**

Rev 005, Updated based on procedure revision, new format no rev marks used

**INITIAL CONDITIONS:**

1. ST-6-097-630-\_\_\_ is in progress and has been completed through step \_\_\_\_\_

**INITIATING CUES:**

You have been directed to directed you to perform ST-6-097-630-\_\_\_ step \_\_\_\_\_ to install the Rod Position Test Box on Unit \_\_\_\_\_.

**TASK STANDARD:**

Test Box Cable connected at AER panel, activity controls numbers verified.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

- Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  RO  
 STA/IA  OTHER

JPM Title: Install Rod Position Test Box (LGS)

JPM Number: NLSROJPM2029 Revision Number: 005

Task Number and Title: 234000-8L, Refuel Platform Surveillance Testing

K/A Number and Importance: 214000 A4.01 3.2 / 3.3

Suggested Testing Environment: In-Plant

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

**References:**

- 1. ST-6-097-630-\*, Core Alteration Testing for Offloading, Shuffling and Reloading the Core **Actual**

Testing Environment:  Simulator  Control Room  In-Plant  Other

Testing Method:  Simulate  Perform

Estimated Time to Complete: 20 minutes Actual Time Used: \_\_\_minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p><b>Evaluator notes:</b></p> <ul style="list-style-type: none"> <li>• <b>Prior to each candidate starting JPM place single rod test box switch to position "02"</b></li> <li>• If candidate asks for a peer check, cue them that for the purposes of this JPM no peer check will be provided.</li> <li>• The Candidate can be directed to go to the Refuel floor to obtain a Single Rod Test Box.</li> <li>• If the box is stationed in the AER, the examiner can ask where the candidate would get the box, and provide it when appropriate.</li> </ul>				
<p>1. Perform the following to install test box in Auxiliary Equipment Room</p>	<p>N/A</p>	<p>N/A</p>		
<p>2. <b>REQUEST</b> Reactor Operator to select rod 38-59.</p> <p>CUE: Unit RO reports that rod 38-59 is selected.</p>	<p>LSRO requests the Unit RO select rod 38-59.</p>			
<p><b>Evaluator Note:</b></p> <ul style="list-style-type: none"> <li>- The front of the cabinet reads *0C615 (BAY A) the back of the cabinet reads *0C615 (BAY B) the cabinet should be entered from the back.</li> <li>- The cannon plug connections are labeled at the bottom of each connection point.</li> </ul>				
<p>*3. <b>DISCONNECT</b> four rod group J38-63 at panel *0C615 (BAY B).</p> <p>CUE: Four rod group cannon plug J38-63 is disconnected.</p>	<p>Four rod group J38-63 cannon plug is disconnected.</p>			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*4. <b>IF</b> using single rod test box, <b>THEN POSITION</b> test box as follows, <b>OTHERWISE ENTER</b> N/A.  <u>ROD</u> <u>SWITCH_</u> <u>POSITION</u>  38-59                      00	Single Rod Test box switch moved to position "00".			
5. <b>IF</b> using 4-rod test box, <b>THEN POSITION</b> test box switches as follows, <b>OTHERWISE ENTER</b> N/A.	N/A	N/A		
6. All test box switches initially in the DOWN position.	N/A	N/A		
7. Cable end 1,0 (Rod 38-59) switch "00" in the UP position.	N/A	N/A		
8. Cable end 1,0 (Rod 34-59) switch "00" in the UP position.	N/A	N/A		
*9. <b>CONNECT</b> test box cable to connector J38-63 at panel *0C615 (Bay B).  CUE: Test box group cannon plug is connected to J38-63.	Test box cannon+ plug connected.			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p>10. <b>REQUEST</b> Reactor Operator to verify that indicated position of rods 38-59 <b>AND</b> 34-59 is 00 on the 4 rod display. <b>OR</b> PMS Control Rod Position Screen.</p> <p>CUE: Reactor Operator has verified that indicated position of rods 38-59 <b>AND</b> 34-59 is 00 on the 4 rod display.</p>	<p>Reactor Operator Requested to verify that indicated position of rods 38-59 AND 34-59 is 00 on the 4 rod display. OR PMS Control Rod Position Screen.</p>			
<p>11. VERIFY the following at panel *0C616 Activity Control No's 1 AND 2:</p>	<p>N/A</p>	<p>N/A</p>		
<p>11a. Rods Not Full In, Box Fi LEDs are <b>not</b> Lit</p> <p>CUE: Rods Not Full In, Box Fi LEDs are <b>not</b> Lit</p>	<p>Rods Not Full In, Box Fi LEDs are verified not lit</p>			
<p>11b. Grapple Load, Box Pg LEDs are <b>not</b> Lit</p> <p>CUE: Grapple Load, Box Pg LEDs are <b>not</b> Lit</p>	<p>Grapple Load, Box Pg LEDs verified not lit</p>			
<p>11c. Overcore, Box Pc LEDs are <b>not</b> Lit</p> <p>CUE: Overcore, Box Pc LEDs are <b>not</b> Lit</p>	<p>Overcore, Box Pc LEDs verified not lit</p>			
<p>(Cue: You can stop here. You have met the termination criteria for this JPM.)</p>				

JPM Stop Time \_\_\_\_\_

**INITIAL CONDITIONS:**

1. ST-6-097-630-\_\_\_ is in progress and has been completed through step \_\_\_\_\_

**INITIATING CUES:**

You have been directed to directed you to perform ST-6-097-630-\_\_\_ step \_\_\_\_\_ to install the Rod Position Test Box on Unit \_\_\_\_\_.

# Exelon Nuclear

## Job Performance Measure

### **LSRO Only – GP-13, CONTROL ROD DRIVE AND MAINTENANCE COORDINATION / ALTERNATE PATH – TWO CELL SEPARATION NOT ENSURED**

JPM Number: NLSRO2087

Revision Number: 000

Date: \_\_\_\_\_

Developed By: D. M. Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
 Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, simulator, or other)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating cues (and terminating cues if required) are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure(s) referenced by this JPM reflects the current revision:
 

Procedure _____	Rev: _____
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

**REVISION RECORD (Summary)**

1. Revision 00 N/A

**SIMULATOR SETUP INSTRUCTIONS**

1. N/A

**TASK CONDITIONS:**

- Unit 1 is in OPCON 5
- GP-13, Control Rod Drive/ Control Rod Blade Outage Maintenance Coordination is in progress:
  - o Control Rod Drive Exchange is in progress per Section 3.3 "CRD EXCHANGE ONLY", and Attachment 2 (page 2 of 6)
    - OUTAGE SERVICES has removed Control Rod Drive 26-35
  - o Control Rod Blade Shuffle/Replacement is in progress per Section 3.2 "CRB SHUFFLE/ REPLACEMENT ONLY", and Attachment 2 (page 1 of 6)
  - o Maintenance Locations are noted on Core Map Attachment 3

**INITIATING CUES:**

OUTAGE SERVICES Requests permission to remove Control Rod Blade 22-27 per in progress CCTAS.

The GP-13 Coordinator has requested you review the above request, and determine permissible actions.

**TASK STANDARD(S):**

Identify that Control Rod Blade 22-27 cannot be removed. Identify that Control Rod Blades 38-43 and 54-31 can be removed.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

**JPM SUMMARY**

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  
 STA/IA  OTHER

JPM Title: GP-13, CONTROL ROD DRIVE AND MAINTENANCE COORDINATION / ALTERNATE PATH – TWO CELL SEPARATION NOT ENSURED

JPM Number: NLSRO0287 Revision Number: 000

Task Number and Title: 234000-19, Direct actions for installation and removal of fuel support piece and control rod blades

K/A Number and Importance: 295003, AA2.01 RO: 3.6 SRO: 4.0

Suggested Testing Environment: quiet area with appropriate documents

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure GP-13 Rev: 26

Procedure \_\_\_\_\_ Rev: \_\_\_\_\_

Actual Testing Environment:  Simulator  Control Room  In-Plant  Other

Testing Method:  Simulate  Perform

Estimated Time to Complete: 20 minutes Actual Time Used: \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by "\*" in Performance Checklist.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
1.	CUE: OUTAGE SERVICES Requests permission to remove Control Rod Blade 22-27	N/A	N/A	N/A	___
*2.	3.2.3 VERIFY that no CRD work is performed on the selected location AND that two cell separation exits between the CRD work location AND surrounding work locations prior to CRB removal.	Review Attachment 3 to identify CRB and CRD location  Determine Control Rod Blade 22-27 cannot be removed and inform Outages Services			
3.	CUE: This is OUTAGE SERVICES I Understand we do not have permission to remove Control Rod Blade 22-27	N/A	N/A	N/A	___
4.	CUE: OUTAGE SERVICES Requests identification of all Control Rod Blades that can be scheduled for replacement while Control Rod Drive 26-35 is removed	N/A	N/A	N/A	___
*5.	3.2.3 VERIFY that no CRD work is performed on the selected location AND that two cell separation exits between the CRD work location AND surrounding work locations prior to CRB removal.	Determine Control Rod Blade 38-43 and 54-31 can be removed and inform Outages Services			
<b>You have met the termination criteria for this JPM</b>					

JPM Stop Time: \_\_\_\_\_

## **TASK CONDITIONS:**

- Unit 1 is in OPCON 5
- GP-13, Control Rod Drive/ Control Rod Blade Outage Maintenance Coordination is in progress:
  - o Control Rod Drive Exchange is in progress per Section 3.3 “CRD EXCHANGE ONLY”, and Attachment 2 (page 2 of 6)
    - OUTAGE SERVICES has removed Control Rod Drive 26-35
  - o Control Rod Blade Shuffle/Replacement is in progress per Section 3.2 “CRB SHUFFLE/ REPLACEMENT ONLY”, and Attachment 2 (page 1 of 6)
  - o Maintenance Locations are noted on Core Map Attachment 3

## **INITIATING CUES:**

OUTAGE SERVICES Requests permission to remove Control Rod Blade 22-27 per in progress CCTAS.

The GP-13 Coordinator has requested you review the above request, and determine permissible actions.

Exelon Nuclear

Job Performance Measure

**LSRO Only – Limerick, Movement of fuel from the fuel prep machine  
(Alternate Path, New Fuel Drops)**

JPM Number: NLSRO2080

Revision Number: 000

Date: \_\_\_\_\_

Developed By: D. M Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date



**REVISION RECORD (Summary)**

1. Revision 00 N/A

**SIMULATOR SETUP INSTRUCTIONS**

1. N/A for In plant

**TASK CONDITIONS:**

1. New Fuel Receipt is in progress
2. A New Fuel Bundle is ready for pickup in the Unit \_\_\_\_North fuel preparation machine and release in the spent fuel pool
3. Prerequisites of S97.0.M have been met
4. The refueling platform is in operation and positioned over the fuel preparation machine
5. GE personnel are stationed at the fuel preparation machine

**INITIATING CUES:**

You are the Fuel Handling Director and have been directed to perform the fuel transfer listed in the attached CCTAS

**TASK STANDARD(S):**

ON-120 has been entered for new fuel bundle or New Fuel Rod (pin) Dropped or Damaged AND no other symptoms present:

- Health Physics has been notified to evaluate radiological conditions
- Reactor Engineering has been notified

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

**JPM SUMMARY**

**Operator's Name:** \_\_\_\_\_ **Job Title:**  SED  SM  SRO  
 STA/IA  OTHER

JPM Title: Movement of fuel from the fuel prep machine (Alternate Path, New Fuel Drops)

JPM Number: NLSRO0280 Revision Number: 000

Task Number and Title: 295023-2, Perform Actions for Dropped or Damaged Fuel

K/A Number and Importance: 295023, AA2.04 RO: 3.4 SRO: 4.1

Suggested Testing Environment: Refuel Platform

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure ON-120 Rev: 19

Procedure S97.0.M Rev: 28

**Actual Testing Environment:**  Simulator  Control Room  In-Plant  Other

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 20 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by “\*” in Performance Checklist.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Evaluator note: Give the following to the candidate at the start of the JPM: <ul style="list-style-type: none"> <li>• UNIT specific CCTAS</li> <li>• S97.0.M, “Refuel Platform Operation”</li> </ul>					
S97.0.M Section 4.10, Pickup Location – Fuel Preparation Machine					
1.	<b>VERIFY</b> Fuel Prep Machine carriage is fully <u>LOWERED</u> . CUE: Fuel Prep Machine Carriage is fully lowered	Verify fuel prep machine is fully lowered <i>(Note: Normally performed by NMD, not the LSRO)</i>	—	—	—
2.	<b>CAUTION:</b> Use extreme care to avoid entanglement of main mast or grappled fuel bundle with fuel inspection and test equipment located in the vicinity of the fuel prep machines.	N/A	—	—	—
*3.	Carefully <b>POSITION</b> Refuel Platform Mast over fuel prep machine in accordance with Core Component Move Sheet. CUE: The bridge is positioned over the fuel prep machine.	The bridge is positioned over the fuel prep machine.	—	—	—
*4.	<b>LOWER</b> grapple until grapple is near bail. CUE: RPO directed to Lower the grapple until the grapple is near the bail handle. The grapple is lowered, and the encoder reads 157 inches	RPO directed to Lower grapple until the grapple is near bail handle	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
5.	ENSURE grapple is open. CUE: The grapple switch is in RELEASE with no backlight	Grapple Ensured open	___	___	___
*6.	ROTATE grapple as necessary to achieve grapple to bail alignment. CUE: The grapple head is aligned to the bail handle with a north east orientation	RPO directed to ROTATE grapple as necessary to achieve grapple to bail alignment.	___	___	___
*7.	Slowly LOWER grapple until SLACK CABLE Light is lit. CUE: RPO directed to Slowly LOWER grapple until SLACK CABLE Light is lit. The grapple is lowered the SLACK CABLE Light is lit	RPO directed to Slowly LOWER grapple until SLACK CABLE Light is lit.	___	___	___
8.	FHD & Spotter, PERFORM Concurrent Verification of proper core component location AND orientation. CUE: Spotter has verified The bundle is in the North Fuel Prep Machine, and the bundle is oriented north east. Concurrent Verification is satisfied for this step of the JPM	Spotter directed to PERFORM Verification of proper core component location AND orientation.	___	___	___
*9.	FHD, VERIFY the following,	N/A	N/A	N/A	___
9.a	• SLACK CABLE Light is lit CUE: SLACK CABLE Light is lit	SLACK CABLE Light is verified lit	___	___	___
9.b	• Grapple is centered over bail handle CUE: Grapple is centered over the bail handle	Grapple is verified centered over the bail handle	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9.c	Hoist Position indication agrees with Attachment 2 for item seated in fuel prep machine. CUE: Hoist position indicates 167.5 inches	Hoist position verified	—	—	—
10.	RPO, VERIFY the following, • SLACK CABLE Light is lit • Grapple is centered over bail handle • Hoist Position indication agrees with Attachment 2 for item seated in fuel prep machine. CUE: RPO verified: SLACK CABLE Light is lit, Grapple is centered over the bail handle, and Hoist position indicates 167.5 inches	N/A	—	—	—
*11.	THEN WHEN directed by FHD, ENGAGE grapple CUE: RPO is directed to engage grapple. Grapple is engaged.	FHD Directs RPO to ENGAGE grapple	—	—	—
12.	FHD & RPO, PERFORM Peer Check that GRAPPLE ENGAGED Light is lit. CUE: RPO verifies Grapple engaged light is light, Peer Check is satisfied for this step of the JPM	Grapple control switch verified to have green backlight lit	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
* 13.	Slowly RAISE load AND VERIFY FUEL LOADED Light is lit  CUE: RPO is directed to Slowly Raises the bundle and verify FUEL LOADED light is lit. Bundle is slowly being raised.	RPO directed to Slowly RAISE load AND VERIFY FUEL LOADED Light is lit			
<b>Alternate Path Starts Here</b>					
<b>CUE:</b> You feel a vibration of the refuel platform structure, and observe the fuel assembly dropping. Next to the fuel prep machine, and landing on the fuel pool liner.					
*14.	Recognize Dropped New Fuel Assembly, exit S97.0.M and enter ON-120  CUE, If Asked: No Fuel Floor ARM are in alarm No Irradiated fuel was damaged		---	---	---
15.	Obtain copy of ON-120, Fuel Handling Problems – Procedure	Procedure ON-120 Obtained			
16.	Refer to section for: IF a new fuel bundle OR new Fuel Rod (Pin) is dropped or damaged AND no other symptoms are present THEN PERFORM the following:	N/A			
17.	NOTIFY Health Physics to evaluate radiological conditions. CUE: Health Physics has been notified to evaluate radiological conditions.	Health Physics notified to evaluate radiological conditions.			
18.	NOTIFY Reactor Engineering. CUE: Reactor Engineering has been notified	Reactor Engineering notified			
<b>You have met the termination criteria for this JPM</b>					

JPM Stop Time: \_\_\_\_\_

**TASK CONDITIONS:**

1. New Fuel Receipt is in progress
2. A New Fuel Bundle is ready for pickup in the Unit \_\_\_\_North fuel preparation machine and release in the spent fuel pool
3. All prerequisites are complete, with FH-106 and S97.0.M in progress
4. The refueling platform is in operation and positioned over the fuel preparation machine
5. GE personnel are stationed at the fuel preparation machine

**INITIATING CUES:**

You are the Fuel Handling Director and have been directed to perform the fuel transfer listed in the attached CCTAS

TRANSFER AUTHORIZATION FOR FH-106  
TRAINING USE ONLY  
RECORD TYPE #3B.108

Page 1 of 1  
#A## MV U# TRAINING USE ONLY

Written By: TRAINING USE ONLY

Unit LIMERICK GENERATING STATION UNIT 1 Date ##/##/##

Reviewed By: TRAINING USE ONLY

Title TRAINING CCTAS

Authorized By: TRAINING USE ONLY

STEP NO.	COMPONENT SERIAL NO.	MOVE FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	CRO	DATE	TIME
1	LYN521	NFPM	NE	L2SPENT C-21	SW					

TRANSFER AUTHORIZATION FOR FH-106  
TRAINING USE ONLY  
RECORD TYPE #3B.108

Page 1 of 1  
#A## MV U# TRAINING USE ONLY

Written By: TRAINING USE ONLY

Unit LIMERICK GENERATING STATION UNIT 2 Date ##/##/##

Reviewed By: TRAINING USE ONLY

Title TRAINING CCTAS

Authorized By: TRAINING USE ONLY

STEP NO.	COMPONENT SERIAL NO.	MOVE FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	GRO	DATE	TIME
1	LYN521	NFPM	NE	L1SPENT C-21	SW					

# Exelon Nuclear

## Job Performance Measure

### **LSRO Only – Limerick Emergency Classification (TIME CRITICAL)**

JPM Number: NLSRO2081

Revision Number: 000

Date: \_\_\_\_\_

Developed By: D. M. Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
 Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, simulator, or other)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating cues (and terminating cues if required) are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure EP-AA-1008 Rev: \_\_\_\_\_  
 Procedure EP-AA-111 Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

## REVISION RECORD (Summary)

1. Revision 00 N/A

## SIMULATOR SETUP INSTRUCTIONS

1. This JPM can be performed in any quiet area
2. Provided appropriate Emergency Plan documents

## INITIAL CONDITIONS

1. Unit 1 is at 100% power
2. Unit 2 plant conditions are as follows:
  - Day 4 of refueling outage
  - Reactor cavity is flooded to + 494"
  - "2B" RHR is in SDC
  - "2A" RHR heat exchanger out-of-service
  - Reactor coolant temperature 167 °F
  - Secondary Containment Closure is not established
3. The following sequence of events occurs:

0200	"2B" RHR Pump trips. Restart attempts are unsuccessful
0215	"2B" Reactor Recirculation Pump is started. Reactor coolant temperature is 195°F and rising.
0226	Cause of "2B" RHR Pump trip identified as breaker fault. The breaker will be swapped out. Reactor coolant temperature is 201°F and rising.
0238	"2B" RHR Pump restarted. Reactor coolant temperature is 225°F and going down.

## INITIATING CUE

This task is Time Critical

1. This JPM will start when you tell the evaluator that you are aware of task conditions and are ready to begin. The starting time will be 0323.
2. No prior classifications or notifications have been made. You are required to:

- Make the highest classification based on the given plant conditions

### AND

- Determine the time the associated EAL Threshold Value(s) was/were exceeded

SRRS: 3D.105 (when utilized for operator initial or continuing training)

**TASK STANDARD(S):**

Trainee makes the highest classification and determines the time the threshold was exceeded in the appropriate time.

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

**JPM SUMMARY**

**Operator's Name:** \_\_\_\_\_ **Job Title:**  SED  SM  SRO  STA/IA  OTHER

JPM Title: SRO Only - Emergency Classification

JPM Number: NLSRO2081 Revision Number: 000

Task Number and Title: 295023-6, Determine Emergency Classification relative to fuel handling and storage

K/A Number and Importance: 2.4.41 RO: 2.9 SRO: 4.6

Suggested Testing Environment: Simulator or quiet area with appropriate Emergency Plan documents

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure EP-AA-1008 Rev: 17

Procedure EP-AA-111 Rev: 15

**Actual Testing Environment:**  Simulator  Control Room  In-Plant  Other

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p><b>NOTE:</b>  <b>IF another SRO is requested to perform an independent Peer Check</b>  <b><u>CUE:</u> A Peer Check will <u>not</u> be provided for this JPM</b></p>					
1.	Review the Initiating Conditions applicable to the operating mode	EAL Matrix(s) used to classify event	___	___	___
*2.	Determine Threshold Value has been met or exceeded,	Determine <b>Alert</b> initiating conditions have been exceeded <b>MA5 Threshold 1</b>	___	___	___
*3.	Determine the time the associated EAL Threshold Value was exceeded	<b>MA5 Threshold 1</b> , was exceeded at 0226	___	___	___
<p><b>You have met the termination criteria for this JPM</b></p>					

JPM Stop Time: \_\_\_\_\_

## INITIAL CONDITIONS:

1. Unit 1 is at 100% power
2. Unit 2 plant conditions are as follows:
  - Day 4 of refueling outage
  - Reactor cavity is flooded to + 494"
  - "2B" RHR is in SDC
  - "2A" RHR heat exchanger out-of-service
  - Reactor coolant temperature 167 °F
  - Secondary Containment Closure is not established
3. The following sequence of events occurs:

0200	"2B" RHR Pump trips. Restart attempts are unsuccessful
0215	"2B" Reactor Recirculation Pump is started. Reactor coolant temperature is 195°F and rising.
0226	Cause of "2B" RHR Pump trip identified as breaker fault. The breaker will be swapped out. Reactor coolant temperature is 201°F and rising.
0238	"2B" RHR Pump restarted. Reactor coolant temperature is 225°F and going down.

## INITIATING CUE:

1. This JPM will start when you tell the evaluator that you are aware of task conditions and are ready to begin.
2. No prior classifications or notifications have been made. You are required to:
  - Make the highest classification based on the given plant conditions**AND**
  - Determine the time the associated EAL Threshold Value(s) was/were exceeded

# Exelon Nuclear

## Job Performance Measure

### **LSRO Only – Limerick, Spent Fuel Pool Makeup using Fire System standpipes (TSG-4.1)**

JPM Number: NLSRO2082

Revision Number: 000

Date: \_\_\_\_\_

Developed By: D. M. Monahan \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date



## REVISION RECORD (Summary)

1. Revision 00 N/A

## SIMULATOR SETUP INSTRUCTIONS

1. N/A for In-plant

## TASK CONDITIONS:

- Unit 1 is in OPCON 5
- Fuel Pool Gates are installed
- An earthquake results in the a Loss of Offsite Power, NO Unit 1 Diesels are running
- As a result of the earthquake a small leak has developed in the Unit 1 Fuel Pool
- The Diesel Driven Fire Pump is running
- Health Physics is monitoring Radiological conditions on the Refuel Floor

## INITIATING CUES:

You are directed to supply an internal 500 gpm makeup source to the UNIT 1 Spent Fuel Pool from the fire system using:

- TSG 4.1 "LIMERICK GENERATING STATION OPERATIONAL CONTINGENCY GUIDELINES", Attachment 1 "INTERNAL SPENT FUEL POOL MAKEUP STRATEGY". OPTION 1- "ADD Fire Water to spent fuel pool using two (2) Fire System standpipes"

## TASK STANDARD(S):

1st Refuel Floor Fire Protection System Standpipe valves opened with flow directed into the Unit 1 Fuel pool.

## Information for Evaluator's Use:

Any UNSAT requires written comments on respective step.

\* Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

SRRS: 3D.105 (when utilized for operator initial or continuing training)

### JPM SUMMARY

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  
 STA/IA  OTHER

JPM Title: Limerick, Spent Fuel Pool Makeup using Fire System standpipes (TSG-4.1)

JPM Number: NLSRO0282 Revision Number: 000

Task Number and Title: 295023-1, Perform Actions to respond to unexpected loss of level in the spent fuel pool, reactor cavity, and the equipment pit

K/A Number and Importance: 295023, AA2.02 RO: 3.4 SRO: 3.7

Suggested Testing Environment: Refuel Platform

Alternate Path:  Yes  No SRO Only:  Yes  No Time Critical:  Yes  No

Reference(s):

Procedure TSG-4.1 Rev: 8

Procedure \_\_\_\_\_ Rev: \_\_\_\_\_

Actual Testing Environment:  Simulator  Control Room  In-Plant  Other

Testing Method:  Simulate  Perform

Estimated Time to Complete: 20 minutes Actual Time Used: \_\_\_\_\_ minutes

#### EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

Critical Element(s) indicated by “\*” in Performance Checklist.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
LGS OPERATIONAL CONTINGENCY GUIDELINES TSG-4.1 ATTACHMENT 1 INTERNAL SPENT FUEL POOL MAKEUP STRATEGY					
<b>Evaluator Note:</b> - Exam Key rings contain a Cat 198 Key, required to open cabinets. - Storage cabinet on U1 North wall is behind the office hallway in a contaminated area. - All actions will be simulated including entry into contaminated areas.					
1.	This guidance can be used to supply an internal 500 gpm makeup source to the spent fuel pool from the fire system.	N/A	___	___	___
2.	WARNING: Radiological conditions and plant damage state must be considered when selecting fire systems standpipes to be used for this strategy.  IF Asked:  CUE: Health Physics reports Radiation levels are normal	N/A	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
3.	<p>NOTE:</p> <p>400 ft of 3" hose is staged in each cabinet, one along the north wall of the Unit 1 fuel floor behind the reactor services office AND the second near the PCMs on the east end of the Unit 2 refuel floor.</p> <p>To obtain the 500 gpm makeup flow rate 2 - 3" hoses are required. Two different hose routing options are provided below.</p> <p>Refer to Figure 1 AND Figure 2 for fire standpipe locations.</p> <p><b>IF</b> hose on refuel floor is inaccessible, additional 3" hose can be obtained from the B.5.b Hose Trailer.</p>	<p>N/A</p> <p>NOTE: Initial conditions direct performance of OPTION 1- "ADD Fire Water to spent fuel pool using two (2) Fire System standpipes"</p>	_____	_____	_____
4.	<p>OPTION 1- ADD Fire Water to spent fuel pool using two (2) Fire System standpipes located on refuel floor as follows:</p>	<p>N/A</p>	_____	_____	_____
<p><b>Evaluator Note</b></p> <p><b>Cue</b> the Candidate:</p> <ul style="list-style-type: none"> <li>- Access to the cabinet on the North Wall of Unit 1 is not accessible due to equipment damage from the earthquake.</li> <li>- For the purposes of this JPM you are not expected to enter any Contaminated areas. Simulate the performance of these steps using equipment found outside Contaminated areas.</li> </ul>					
*5.	<p><b>ROUTE</b> fire hoses from affected spent fuel pool to two different fire standpipes (Figures 1 and 2 show standpipe locations)</p> <p>CUE: Hoses have been routed</p>	<p>Hoses routed from two different fire standpipes to Unit 1 fuel pool</p>	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6	<p>SECURE hose ends at rail to spent fuel pool at floor elevation using ty-wraps staged in the storage cabinets.</p> <p>CUE: Hose ends are ty-wrapped to fuel pool rail</p>	<p>Hose ends secured at rail to spent fuel pool using ty-wraps</p>	_____	_____	_____
*7	<p><b>REMOVE</b> existing hose at fire standpipe <b>AND</b> reducing coupling from 1<sup>st</sup> selected fire standpipe valve.</p> <p>CUE: Hose is removed from Standpipe, and coupling is removed from standpipe valve</p>	<p>Hose removed from standpipe AND reducing coupling removed from 1<sup>st</sup> standpipe valve</p>	_____	_____	_____
*8	<p><b>CONNECT</b> 2 ½" X 3" Storz adapter to fire standpipe valve <b>AND CONNECT</b> hose to adapter.</p> <p>CUE: Storz adapter connected to fire standpipe valve and hose connected to adapter</p>	<p>Storz adapter connected to fire standpipe valve and hose connected to adapter</p>	_____	_____	_____
*9	<p>Slowly <b>OPEN</b> 1<sup>st</sup> standpipe valve to obtain desired flow rate.</p> <p>after 20 seconds Cue: You have obtained the desired flow rate</p>	<p>Standpipe slowly opened</p>	_____	_____	_____
<b>You have met the termination criteria for this JPM</b>					

JPM Stop Time: \_\_\_\_\_

### **TASK CONDITIONS:**

- Unit 1 is in OPCON 5
- Fuel Pool Gates are installed
- An earthquake results in the a Loss of Offsite Power, NO Unit 1 Diesels are running
- As a result of the earthquake a small leak has developed in the Unit 1 Fuel Pool
- The Diesel Driven Fire Pump is running
- Health Physics is monitoring Radiological conditions on the Refuel Floor

### **INITIATING CUES:**

You are directed to supply an internal 500 gpm makeup source to the UNIT 1 Spent Fuel Pool from the fire system using:

- TSG 4.1 "LIMERICK GENERATING STATION OPERATIONAL CONTINGENCY GUIDELINES", Attachment 1 "INTERNAL SPENT FUEL POOL MAKEUP STRATEGY". OPTION 1- "ADD Fire Water to spent fuel pool using two (2) Fire System standpipes"

**Limerick Generating Station**

**Job Performance Measure**

**Refuel Floor ARM Return to Service**

JPM Number: 2086

Revision Number: 000

Date: \_\_/\_\_/\_\_

**Developed By:** \_\_\_\_\_  
**Instructor** **Date**

**Validated By:** \_\_\_\_\_  
**SME or Instructor** **Date**

**Review By:** \_\_\_\_\_  
**Operations Representative** **Date**

**Approved By:** \_\_\_\_\_  
**Training Department** **Date**

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
 Prior to JPM usage, revalidate JPM using steps 9 and 12 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev. \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page.  
 Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

**REVISION RECORD (SUMMARY)**

Rev 000, N/A

**INITIAL CONDITIONS:**

1. Unit \_\_\_ Reactor pressure vessel disassembly is in progress per M-041-200
2. The Steam Separator has been placed in the equipment pool, Shift Management permission to return Refuel Floor ARMs to service per M-041-200 Attachment 5 has been obtained.
3. Unit \_\_\_ RO communication is established

**INITIATING CUES:**

You have been directed to perform M-041-200 Attachment 5, " REFUEL FLOOR ARM RETURN TO SERVICE" to return Unit \_\_\_ Refuel Floor ARM to service.

**TASK STANDARD:**

1. ARMs are returned to service and all communications are complete
2. Tech Spec limitations identified for failed ARM

**Information for Evaluator's Use:**

Any UNSAT requires written comments on respective step.

- Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

**The JPM Start Time clock starts when the candidate acknowledges the initiating cue**

Operator's Name: \_\_\_\_\_ Job Title:  SED  SM  SRO  RO  
 STA/IA  OTHER

JPM Title: Removing Refuel ARM from Service to support Transport of Steam Dryer

JPM Number: NLSROJPM2086 Revision Number: 000

**Task Number and Title:** 272000-1 Perform actions to remove are radiation monitors from service / return area radiation monitors to service

K/A Number and Importance: 272000 G2.1.30 IR: 4.4 / 4.0

**Suggested Testing Environment:** In-Plant

**Alternate Path:**  Yes  No **SRO Only:**  Yes  No **Time Critical:**  Yes  No

**References:**

1. M-041-200, Rev 026 REACTOR PRESSURE VESSEL DISASSEMBLY
2. Technical Specifications

**Actual Testing Environment:**  Simulator  Control Room  In-Plant  Other

**Testing Method:**  Simulate  Perform

**Estimated Time to Complete:** 20 minutes **Actual Time Used:** \_\_minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily?  Yes  No

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:  Satisfactory  Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator's Name: \_\_\_\_\_(Print)

Evaluator's Signature: \_\_\_\_\_ Date \_\_\_\_\_

JPM Start Time: \_\_\_\_\_

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p>Evaluator Note:</p> <p>1. Blue Equipment Status tags would be on the mode switches for the following ARM:</p> <ul style="list-style-type: none"> <li>• RIS30-M1-*K600</li> <li>• RIS33-M1-*K600</li> <li>• RIS29-M1-*K600</li> </ul> <p>2. For the purpose of this JPM the evaluator will provide a cue that a Blue Equipment Status Tag is on the equipment when the candidate identifies a ARM to be operated. If the candidate asks for a Peer Check, inform them: "For the purposes of this JPM no Peer check will be provided"</p> <p>3. If step 4C of this JPM is to be performed in the AER, a Copy of Unit Technical Specification must be supplied.</p>				
<p>1. Obtain current revision of M-041-200</p> <p>Cue: Once the trainee demonstrates the ability to locate the current revision of the procedure, provide him/her a copy of Attachment 5 "REFUEL FLOOR ARM RETURN TO SERVICE"</p>	<p>Current revision of M-041-200 Attachment 5 "REFUEL FLOOR ARM RETURN TO SERVICE" obtained</p>			
<p>2. NOTE: This activity returns three (3) fuel floor ARMs to service (2 of which are Criticality Monitors).</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
3. NOTE: The following steps place Refuel Outage Unit ARM RIS 30-M1- *K600, Steam Separator Area EI 352, ARM RIS 33-M1- *K600, Pool Plug Laydown Area EI 352 AND ARM RIS 29-M1-*K600, D/W Head Laydown Area EI 352 into service. Once the mode switch is back in operate the Reset Button may be pressed on the ARM Trip unit to clear the low or high lights.	N/A	N/A	N/A	
4. CAUTION: Placement of the ARM's back to operate may cause a spike and a high set point alarm. For this reason the operator shall be in constant communication with the outage unit Reactor Operator while placing the switches to the operate position. IF this occurs THEN the reset shall be pressed immediately.	N/A	N/A	N/A	

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p>5. At Auxiliary Equipment Room Panel *0C605 PLACE: Mode Switch for ARM RIS30-M1-*K600, Steam Separator Area EI 352, to the "OPERATE" position AND REMOVE Blue Equipment Status Tag.</p> <p>Cue: IF Candidate is at correct ARM:</p> <ul style="list-style-type: none"> <li>-ARM mode switch is in "ZERO" position</li> <li>-White LOW light is lit.</li> <li>-There is a Blue Equipment status tag on that ARM</li> </ul>	<p>Mode Switch for ARM RIS30-M1-*K600, Steam Separator Area EI 352, to the "OPERATE" position AND REMOVE Blue Equipment Status Tag.</p>			
<p>*5.a Mode Switch for ARM RIS30-M1-*K600, Steam Separator Area EI 352, placed "OPERATE"</p> <p>CUE: Mode Switch is in "OPERATE"</p> <p>The White LOW light is NOT lit.</p>	<p>Mode Switch for ARM RIS30-M1-*K600, Steam Separator Area EI 352, rotated to "OPERATE"</p>			
<p>5.b AND REMOVE Blue Equipment Status Tag.</p> <p>CUE: Equipment Status Tag is removed</p>	<p>Equipment Status Tag is removed</p>			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p>6. At Auxiliary Equipment Room Panel *0C605 PLACE: Mode Switch for ARM RIS 33-M1-*K600, Pool Plug Laydown Area EI 352, to the "OPERATE" position AND REMOVE Blue Equipment Status Tag.</p> <p>CUE: IF Candidate is at correct ARM:</p> <ul style="list-style-type: none"> <li>-ARM mode switch is in "ZERO" position</li> <li>-White LOW light is lit.</li> <li>-There is a Blue Equipment status tag on that ARM</li> </ul>				
<p>*6.a Mode Switch for ARM ARM RIS 33-M1-*K600, Pool Plug Laydown Area EI 352, placed "OPERATE"</p> <p>CUE: -Mode Switch will NOT rotate to "OPERATE"</p> <ul style="list-style-type: none"> <li>-White LOW light is lit.</li> </ul>	<p>Mode Switch for ARM RIS33-M1-*K600, Steam Separator Area EI 352, rotated to "OPERATE"</p>			
<p>*6.b Take action to identify broken component.</p> <p>CUE: Actions have been taken to address Failed ARM</p> <p>IF Asked if task should be completed:</p> <p>CUE: You are directed to continue with remaining ARM</p>	<p>Take action to generate an IR, or contact Personnel contacted regarding failed ARM</p>			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p>7. At Auxiliary Equipment Room Panel *0C605 PLACE: Mode Switch for ARM RIS 29-M1-*K600, D/W Head Laydown Area EI 352, to the "OPERATE" position AND REMOVE Blue Equipment Status Tag.</p> <p>CUE: IF Candidate is at correct ARM:</p> <ul style="list-style-type: none"> <li>-ARM mode switch is in "ZERO" position</li> <li>-White LOW light is lit.</li> <li>-There is a Blue Equipment status tag on that ARM</li> </ul>				
<p>*7.a Mode Switch for ARM RIS 29-M1-*K600, D/W Head Laydown Area EI 352, placed "OPERATE"</p> <p>CUE: Mode Switch is in "OPERATE"</p> <p>Amber HIGH light is lit</p> <p>RO reports UNIT ____ Refueling Area Hi Radiation Annunciator has be received</p>	<p>Mode Switch for ARM RIS29-M1-*K600, Steam Separator Area EI 352, rotated to "OPERATE"</p>			
<p>When Mode switch in operate</p> <p>*7.b From CAUTION: Placement of the ARM's back to operate may cause a spike and a high set point alarm. IF this occurs THEN the reset shall be pressed</p> <p>CUE: Amber HIGH light is NOT lit</p> <p>RO reports UNIT ____ Refueling Area Hi Radiation Annunciator has cleared.</p>	<p>ARM reset pressed</p>			

<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
7.c AND REMOVE Blue Equipment Status Tag. CUE: Equipment Status Tag is removed	Equipment Status Tag is removed			
*8. CUE: Refuel Floor coordinator request you determine the Technical Specification implications, if any, of the failure of ARM RIS 33-M1-*K600,. Pool Plug Laydown Area EI 352	Determine that failed ARM is a Criticality monitor, and Technical Specification 3.3.7.1 is applicable.  Determine that minimum channel operable requirement of 2 is met by remaining ARMS			
(Cue: You can stop here. You have met the termination criteria for this JPM.)				

JPM Stop Time \_\_\_\_\_

**INITIAL CONDITIONS:**

1. Unit \_\_\_ Reactor pressure vessel disassembly is in progress per M-041-200
2. The Steam Separator has been placed in the equipment pool, Shift Management permission to return Refuel Floor ARMs to service per M-041-200 Attachment 5 has been obtained.
3. Unit \_\_\_ RO communication is established

**INITIATING CUES:**

You have been directed to perform M-041-200 Attachment 5, " REFUEL FLOOR ARM RETURN TO SERVICE" to return Unit \_\_\_ Refuel Floor ARM to service.

**EXELON NUCLEAR  
Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE																				
PROGRAM:	NLSRO Initial and NLSRO Requal	CODE #:	NLSRO-3069																				
COURSE:	NLSRO	REV #:	000																				
AUTHOR:	G. W. Zellmer	TYPIST:	gwz																				
TITLE:	Bridge End Structure Panel Lineup																						
APPROVALS:	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;"><i>Donald W. Zellmer</i> / INSTRUCTOR</td> <td style="width:30%; text-align: right;">5/28/10</td> </tr> <tr> <td style="text-align: center;">Signature / Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td><i>[Signature]</i> SRO</td> <td style="text-align: right;">5/28/10</td> </tr> <tr> <td style="text-align: center;">Signature / Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td><i>[Signature]</i> SRO</td> <td style="text-align: right;">5/29/10</td> </tr> <tr> <td style="text-align: center;">Signature / Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td><i>[Signature]</i> / SRO</td> <td style="text-align: right;">6-1-10</td> </tr> <tr> <td style="text-align: center;">Signature / Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td>APPROVED FOR USE: <i>[Signature]</i> OTM</td> <td style="text-align: right;">6/10/10</td> </tr> <tr> <td style="text-align: center;">Signature / Title</td> <td style="text-align: center;">Date</td> </tr> </table>			<i>Donald W. Zellmer</i> / INSTRUCTOR	5/28/10	Signature / Title	Date	<i>[Signature]</i> SRO	5/28/10	Signature / Title	Date	<i>[Signature]</i> SRO	5/29/10	Signature / Title	Date	<i>[Signature]</i> / SRO	6-1-10	Signature / Title	Date	APPROVED FOR USE: <i>[Signature]</i> OTM	6/10/10	Signature / Title	Date
<i>Donald W. Zellmer</i> / INSTRUCTOR	5/28/10																						
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Signature / Title	Date																						
EFFECTIVE DATE: <u>6 / 1 / 10</u>																							

NAME: _____ Last                      First                      M.I.	ISSUE DATE: _____
EMPLOYEE ID NO. _____	COMPLETION DATE: _____
COMMENTS:   	
Training Review for Completeness:  _____	LMS CODE: _____
Signature/Date	LMS ENTRY: _____

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 234000-11 – NLSRO-3069

K/A: 234000K5.01

RO: 2.9      SRO: 3.4

TASK DESCRIPTION:      Refuel Platform Pre Operational Checkoff List

A.    NOTES TO EVALUATOR:

1.    An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2.    System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3.    JPM Performance
  - a.    "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b.    When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4.    Satisfactory performance of this JPM is accomplished if:
  - a.    The task standard is met.
  - b.    JPM completion time requirement is met.
    - 1)    For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2)    For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5.    The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

6. Evaluator(s) must be particularly cognizant of the potential for a foreign material event (FME) to occur. Beside the need for exam security (maintaining control of the JPM and associated exam paperwork), there is a risk for the evaluator to lose control of paper and/or pens (refer to issue 01001205).
7. This JPM is designed to be given on the Refuel Floor (either Unit 2 or Unit 3). This JPM may be performed on the Refuel Platform.

#### B. TOOLS AND EQUIPMENT

1. Access to PBAPS procedure SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform
2. Access to Limerick procedure S97.1.A 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation'
3. 'Task Conditions / Prerequisites & Initiating Cue' sheet

#### C. REFERENCES

1. SO 18.1.C-2(3) Rev. 2; Electrical, Mechanical And Pneumatic Alignment/Checkout Of Refueling Platform
2. S97.1.A Rev. 21 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform Bridge, Trolley, and Main Hoist for Operation.

#### D. TASK STANDARD

1. Satisfactory task completion is indicated when SO 18.1.C-2(3) section 4.2 'Bridge End Structure Panel Lineup' is complete.
2. Estimated time to complete: 20 minutes Non-Time Critical

#### E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to align the (Unit 2 / Unit 3) Refuel Platform Bridge 'End Structure' for operation using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The Refuel Platform is being returned to service following maintenance.
2. The Refuel Platform clearances have been removed by operations; tags were removed with the equipment out of service so the system operating procedures would be used to lineup the Refuel Platform.
3. All SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' procedure prerequisites and precautions are met and step 4.1 is complete.

G. INITIATING CUE

The Control Room Supervisor directs you to perform the (Unit 2 / Unit 3) Refuel Platform Bridge End Structure Panel Lineup in accordance with SO 18.1.C-2(3) step 4.2. The Control Room Supervisor gives you permission to operate the components identified in SO 18.1.C-2(3) as necessary to place the Refuel Platform into alignment with step 4.2 of SO 18.1.C-2(3).

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p>Notes to Evaluator</p> <p>A. In addition to the Task Conditions/Prerequisites and Initiating Cue Sheet, the examinee should also be given a copy of SO 18.1.C-2 or SO 18.1.C-3 as appropriate.</p> <p>B. Evaluator may record the JPM start time here: _____</p>			
1	<p>Verify the 2(3)0S947A 'Main Disconnect Switch' is 'ON'.</p> <p>(CUE: The Disconnect 2(3)0S947A Disconnect Handle is in the 'Full Down' position.)</p> <p>(CUE: If the examinee reports to the Control Room Supervisor that while performing SO 18.1.C-2[3] an unexpected condition occurred [component not in position as stated in the procedure], Then provide the following –                      "The Refuel Platform is being returned to service following maintenance via the system operating procedures, you have permission to operate the components identified in SO 18.1.C-2[3] as necessary to place the Refuel Platform into alignment with step 4.2 of SO 18.1.C-2[3].")</p>	S	Verify the 2(3)0S947A 'Main Disconnect Switch' is in the "ON" position.
*2	<p>Examinee moves the operating handle of the 2(3)0S947A in the up direction until handle is aligned with the 'ON' position label.</p> <p>(CUE: The component that you identified is in the condition that you described.)</p>	S	Operating handle of the 2(3)0S947A is moved from the 'Full Down - OFF' position to the 'Full Up -- ON' position

STEP NO	STEP	ACT	STANDARD
3	<p>Verify the 2(3)0S261A 'Mono Hoist Disconnect Switch' is 'ON'.</p> <p>(CUE: The Disconnect 2(3)0S261A Disconnect Handle is in the 'Full Down' position.)</p>	S	<p>Verify the 2(3)0S261A 'Mono Hoist Disconnect Switch' is in the 'ON' position.</p>
*4	<p>Examinee moves the operating handle of the 2(3)0S261A Disconnect in the up direction until handle is aligned with the 'ON' position label.</p> <p>(CUE: The component that you identified is in the condition that you described.)</p>	S	<p>Operating handle of the 2(3)0S261A is moved from the 'Full Down - OFF' position to the 'Full Up -- ON' position</p>
5	<p>Verify the CB-D 'Air Dryer Breaker' is 'ON'.</p> <p>(CUE: The CB-D 'Air Dryer Breaker' toggle is in the 'Full Up' position.)</p>	S	<p>Verify the CB-D 'Air Dryer Breaker' toggle is in the 'ON' position.</p>
6	<p>Verify the CB-2 'GFI Outlet Breaker' is 'ON'.</p> <p>(CUE: CB-2 'GFI Outlet Breaker' toggle is in the 'Full Up' position.)</p>	S	<p>Verify the CB-2 'GFI Outlet Breaker' toggle is in the 'ON' position.</p>
7	<p>Verify the CB-3 'GFI Outlet Breaker' is 'ON'.</p> <p>(CUE: CB-2 'GFI Outlet Breaker' toggle is in the 'Full Up' position.)</p>	S	<p>Verify the CB-3 'GFI Outlet Breaker' toggle is in the 'ON' position.</p>
8	<p>Verify the 2(3)0S261B 'Air Compressor Disconnect Switch' is 'ON'.</p> <p>(CUE: The 2(3)0S261B Disconnect Handle is in the 'Full Up' position.</p>	S	<p>Verify the 2(3)0S261B 'Air Compressor Disconnect Switch' is in the "ON" position.</p>

STEP NO	STEP	ACT	STANDARD
*9	<p>Verify the 'Main Hoist Pneumatic Shut-Off Valve' is OPEN.</p> <p>(CUE: If the examinee describes attempting to operate the 'Main Hoist' hand-wheel in the clockwise direction, THEN provide the following – "The hand-wheel will not rotate.")</p> <p>(CUE: When the examinee describes operating the hand-wheel for the 'Main Hoist' in the counter-clockwise direction, THEN provide the following – "The hand-wheel rotates in the counter-clockwise direction until the hand-wheel moves away from the valve body ½ inch and resistance is felt; hand-wheel will not turn any further.")</p>	S	Verify the 'Main Hoist Pneumatic Shut-Off Valve' is OPEN (hand-wheel rotated in the fully counter-clockwise direction).
*10	<p>Verify the 'Mono Hoist Pneumatic Shut-Off Valve' is OPEN.</p> <p>(CUE: If the examinee describes attempting to operate the 'Mono Hoist' hand-wheel in the clockwise direction, THEN provide the following – "The hand-wheel will not rotate.")</p> <p>(CUE: When the examinee describes operating the hand-wheel for the 'Mono Hoist' in the counter-clockwise direction, THEN provide the following – "The hand-wheel rotates in the counter-clockwise direction until the hand-wheel moves away from the valve body ½ inch and resistance is felt; hand-wheel will not turn any further.")</p>	S	Verify the 'Mono Hoist Pneumatic Shut-Off Valve' is OPEN (hand-wheel rotated in the fully counter-clockwise direction).

STEP NO	STEP	ACT	STANDARD
11	<p>Notify the Control Room Supervisor that the Refuel Platform Bridge End Structure Panel Lineup has been completed in accordance with SO 18.1.C-2(3) step 4.2.</p> <p>(CUE: Acknowledge the report.)</p>	S	<p>Notify the Control Room Supervisor of task completion.</p> <p>Note: Notification may be simulated as in-person or via radio / phone.</p>

**NOTES to Evaluator**

- A. When the examinee has completed SO 18.1.C-2(3) step 4.2, then the evaluator may terminate the JPM.
- (CUE: You may stop here; you have met the termination criteria for this JPM.)
- B. JPM stop time may be recorded here. \_\_\_\_\_
- C. If this JPM is being performed as part of Initial LSRO training/testing, then this JPM is complete and the next step (step 12) may be marked as 'N/A'. If this JPM is being performed as part of LSRO REQUAL, then the next step MUST be completed.

12	<p>Follow-up Question:</p> <p>(CUE: If you were performing the Refuel Platform 'Bridge' End Structure Electrical Lineup at Limerick (S97.1.A section 4.3), Then what would be different between the actions you just performed / simulated here and what you would expect to do at Limerick?)</p> <p>If the examinee asks for a copy of S97.1.A, then provide the following: (CUE: Give the examinee a copy of S97.1.A.)</p>	D	<p>The Bridge End Structure Panel Lineup verifications at PBAPS and at Limerick are similar. However, other than different models of equipment that would be actuated, the Bridge Structure End Panel Lineup verifications at Limerick include a check for each phase of the Bridge Surge Suppressor.</p> <p>Note to Evaluator – The answer to the follow up question does not have to be answered by the trainee using the exact words that are shown above.</p>
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**Note to Evaluator**

As an Evaluator, ensure you have positive control of all exam material provided to the examinee ('Task Conditions / Prerequisites & Initiating Cue' sheet' AND all procedures).

Under "ACT" P - must perform  
S - must simulate  
D – must discuss

**I. TERMINATING CUE**

When the examinee has completed SO 18.1.C-2(3) step 4.2 'Bridge End Structure Panel Lineup', the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

# Task Conditions / Prerequisites & Initiating Cue

## TASK CONDITIONS/PREREQUISITES

1. The Refuel Platform is being returned to service following maintenance.
2. The Refuel Platform clearances have been removed by operations; tags were removed with the equipment out of service so the system operating procedures would be used to lineup the Refuel Platform.
3. All SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' procedure prerequisites and precautions are met and step 4.1 is complete.

## INITIATING CUE

The Control Room Supervisor directs you to perform the (Unit 2 / Unit 3) Refuel Platform Bridge End Structure Panel Lineup in accordance with SO 18.1.C-2(3) step 4.2. The Control Room Supervisor gives you permission to operate the components identified in SO 18.1.C-2(3) as necessary to place the Refuel Platform into alignment with step 4.2 of SO 18.1.C-2(3).

**EXELON NUCLEAR  
Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	Limited Senior Reactor Operator	CODE #:	NLSRO-3068
COURSE:	LSRO Initial & LSRO Requalification	REV #:	000
AUTHOR:	G. W. Zellmer	TYPIST:	gwz
TITLE:	Drywell to Reactor Well Bellows Failure		
APPROVALS:	<i>Samuel W. Zellmer</i> / Instructor Signature / Title		6/1/10 Date
	<i>[Signature]</i> / Instructor Signature / Title		6/1/10 Date
	<i>John J. Miller</i> / LSRO Signature / Title		6/1/10 Date
	<i>[Signature]</i> / 5081 Signature / Title		6-1-10 Date
APPROVED FOR USE:	<i>[Signature]</i> / OJM Signature / Title		6/10/10 Date
EFFECTIVE DATE: <u>6 / 10 / 10</u>			

NAME: _____ Last                      First                      M.I.	ISSUE DATE: _____
EMPLOYEE ID NO. _____	COMPLETION DATE: _____
COMMENTS:   	
Training Review for Completeness:  _____	LMS CODE: _____
Signature/Date	LMS ENTRY: _____



## B. TOOLS AND EQUIPMENT

1. Access to either the 20C075 Panel OR the 30C075 Panel.
2. Access to the PBAPS Alarm Response Procedure ARC-2(3)0C075 A-1 Seal Rupture Drain High Flow.
3. Access to the PBAPS Alarm Response Procedure ARC-2(3)0C075 B-3 Skimmer Surge Tank Low Level.
4. Access to the PBAPS Alarm Response Procedure ARC-2(3)0C075 B-1 Fuel Storage Pool High / Low Level.
5. Access to the PBAPS Abnormal Operating Procedure AO 10.4-2(3) Residual Heat Removal System – Fuel Pool to Reactor Mode.
6. Access to the PBAPS Fuel Handling Procedure FH-74 Actions in Response to an Unexpected Loss of Fuel Pool, Reactor Cavity, or Equipment Storage Pool Water Inventory.
7. Access to the PBAPS ON-124 'Fuel Floor and Fuel Handling Problems' procedure.
8. Access to the Limerick Annunciator Response Procedure ARC-BOP-1(2)0C222 D3 Reactor Well Seal Rupture Drain Hi Flow.
9. Access to the Limerick Annunciator Response Procedure ARC-BOP-1(2)0C222 B4 1(2)BT208 Skimmer Surge Tank Lo Level.
10. Access to the Limerick system procedure S53.3.A Direct Makeup to Fuel Storage Pool.
11. Access to the Limerick System procedure S53.3.G Skimmer Surge Makeup and Letdown.
12. Access to Limerick General Procedure GP-6.1 Shutdown Operations – Refueling Core Alternation, and Core Off-Loading.
13. Access to the Limerick System Procedure S51.8.L RHR Alternate Decay Heat Removal Startup and Shutdown.
14. 'Task Conditions / Prerequisites & Initiating Cue' sheet (Evaluator understands to specify the JPM for either PBAPS Unit 2 or Unit 3).

## C. REFERENCES

1. ARC-2(3)0C075 A-1 Rev. 2, Seal Rupture Drain High Flow.
2. ARC-2(3)0C075 B-3, Rev. 2, Skimmer Surge Tank Low Level.
3. ARC-2(3)0C075 B-1 Rev. 2, Fuel Storage Pool High / Low Level.

4. AO 10.4-2(3), Rev. 21(20), Residual Heat Removal System – Fuel Pool to Reactor Mode.
5. FH-74, Rev. 6, Actions in Response to an Unexpected Loss of Fuel Pool, Reactor Cavity, or Equipment Storage Pool Water Inventory.
6. ON-124 Rev. 14 'Fuel Floor and Fuel Handling Problems' procedure.
7. ARC-BOP-1(2)0C222 D3 'Reactor Well Seal Rupture Drain Hi Flow' Revision 0.
8. ARC-BOP-1(2)0C222 B4 '1(2)BT208 Skimmer Surge Tank Lo Level' Revision 1.
9. S53.3.A Direct Makeup to Fuel Storage Pool Revision 17.
10. S53.3.G Skimmer Surge Makeup and Letdown Revision 22.
11. GP-6.1 Shutdown Operations – Refueling Core Alternation, and Core Off-Loading Revision 20 (Unit 1) / Revision 23 (Unit 2).
12. S51.8.L RHR Alternate Decay Heat Removal Startup and Shutdown Revision 15.

D. TASK STANDARD

1. Satisfactory task completion is indicated when the examinee has notified the Control Room to shut down the 'A' RHR Pump and directed non-essential personnel to evacuate the Refuel Floor, then the evaluator may terminate the JPM.
2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to continuously monitor the Unit 2(3) Skimmer Surge Tank level until the remote monitoring can be restored in accordance with AO 10.4-2(3) step 3.10(3.12) and to respond to any local Fuel Pool alarm condition(s) on the Fuel Pool System Panel 2(3)0C075. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Reactor is in MODE 5.
2. Fuel Pool Gates to the Reactor Cavity are removed.
3. Fuel Pool water level is 232' 10"
4. Refueling Operations are in progress (grapple change out is taking place).

5. The Residual Heat Removal System is currently removing decay heat from the reactor in accordance with AO 10.4-2(3) Residual Heat Removal System – Fuel Pool to Reactor Mode using the 'A' RHR Pump.
6. The 'A' RHR Pump is the ONLY available Pump for Shutdown Cooling / Injection.
7. The Fuel Pool Cooling system has been shutdown.
8. The Reactor Water Clean Up System has been shutdown.
9. I&C has just been dispatched to investigate the loss of camera functions on the Refuel Floor.
10. The overhead crane is NOT in use.
11. You (the Fuel Handling Director) and the NMD Reactor Services Foreman have radios set to the 'Operations' channel.

#### G. INITIATING CUE

The Control Room Supervisor directs you (the current Fuel Handling Director) to continuously monitor the Unit 2(3) Skimmer Surge Tank level until the remote monitoring can be restored in accordance with AO 10.4-2(3) step 3.10 (3.12) and to respond to any local Fuel Pool alarm condition(s) on the Fuel Pool System Panel 2(3)0C075.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p>Notes to Evaluator</p> <p>A) Before the start of the JPM, If the examinee asks to see a copy of AO 10.4-2(3), then            (Cue: After the examinee describes how they would obtain a copy of AO 10.4-2(3), provide the examinee with a copy of AO 10.4-2(3).)</p> <p>B) At any time during this JPM that an alarm condition is indicated on the 2(3)0C075 Panel (alarm annunciator flashing), IF the examinee momentarily depresses the 2(3)0C075 Panel Alarm Acknowledge push-button, then provide the following cue:            (Cue: "Horn noise has stopped and alarm light(s) is/are no longer flashing – indicated alarm light(s) is/are lit [steady]").)</p> <p>C) JPM start time may be recorded here: _____</p> <p>D) The examinee may perform the below listed communications / notifications in any order.</p>			
1	<p>Locate the Fuel Pool System Panel 2(3)0C075</p> <p>(Cue: When examinee has located the 2[3]0C075 Panel, provide the examinee with the 2[3]0C075 Panel Conditions sheet #1 [Attachment #1] and state that "You hear the noise of an alarm horn.")</p>	P / S	2(3)0C075 Panel is located on the Refuel Floor – General Area (elevation 234')
2	Identify alarm condition(s).	S	Identifies Alarm A-1 in alarm.
3	<p>Obtain a copy of the Alarm Response Card ARC-2(3)0C075 A-1</p> <p>(Cue: If examinee does NOT use the alarm response procedure located in the ARC Book (at the Panel), then the evaluator may provide the examinee with a copy of ARC-2[3]0C075 A-1 <b>AFTER</b> the examinee discusses the method for obtaining the procedure from the EDMS system or other controlled location.)</p>	P / D	Obtain a copy of ARC-2(3)0C075 A-1 from the ARC book at the Panel or from the EDMS system or other controlled location.

STEP NO	STEP	ACT	STANDARD
4	<p>Notify the Unit Reactor Operator that alarm "Seal Rupture Drain High Flow" is in on the 2(3)0C075 Panel.</p> <p>(Cue: Evaluator acknowledges the examinee's report.)</p>	S	<p>Inform the Unit Reactor Operator that the alarm "Seal Rupture Drain High Flow" is in.</p> <p>Note to evaluator – The communications may be made using the radio or telephone.</p>
<p><b>Notes to Evaluator</b></p> <p>A) At any time during this JPM, the examinee enters OR recommends entering/performing the FH-74 'Actions in Response to an Unexpected Loss of Fuel Pool, Reactor Cavity, or Equipment Storage Pool Water Inventory' procedure, then provide the following --  (CUE: Acknowledge the recommendation to enter the FH-74 procedure <b>AND</b> state "The Control Room Supervisor directs you to evaluate the Refuel Floor conditions and execute the Refuel Floor portions of the FH-74 procedure.") <i>Note-This is the same cue as found in step 16.</i></p> <p>B) At any time during this JPM, the examinee enters OR recommends entering/performing the ON-124 'Fuel Floor and Fuel Handling Problems' procedure, then provide the following --  (CUE: Acknowledge the recommendation to enter the ON-124 procedure <b>AND</b> state "The Control Room Supervisor directs you to evaluate the Refuel Floor conditions and execute the Refuel Floor portions of the ON-124 procedure.") <i>Note-This is the same cue as found in step 18.</i></p>			
5	<p>Notify the LSRO (and/or NMD Reactor Services Foreman) of the "Seal Rupture Drain High Flow" alarm.</p> <p>(Cue: Evaluator acknowledges the examinee's report.)</p> <p>(Cue: If the candidate asks for /checks Fuel Pool / Reactor Cavity water level, then state that --"Fuel Pool water / Reactor Cavity level is now at 232' 8".")</p>	S	<p>Inform the LSRO (and/or NMD Reactor Services Foreman) of the "Seal Rupture Drain High Flow" alarm.</p>
6	<p>Notify the Reactor Operator that Fuel Pool / Reactor Cavity water level is 232' 8" going down.</p> <p>(Cue: Evaluator acknowledges the examinee's report <b>AND</b> inform the examinee that Equipment Operators have been dispatched and the Equipment Operators will perform ALL make-up water additions and ALL required valve line-ups.)</p> <p><b><u>Immediately following report (or when candidate enters FH-74), then --</u></b>  (Cue: Provide the examinee with the 2[3]0C075 Panel Conditions sheet #2 [Attachment #2].)</p>	S	<p>Report any reduction in Reactor Cavity water level to the Unit RO.</p>

STEP NO	STEP	ACT	STANDARD
7	Identify alarm condition(s).	P / D	Identifies Alarm B-3 in alarm.
8	<p>Obtain a copy of the Alarm Response Card ARC-2(3)0C075 B-3</p> <p>(Cue: If examinee does NOT use the alarm response procedure located in the ARC Book (at the Panel), then the evaluator may provide the examinee with a copy of ARC-2[3]0C075 B-3 AFTER the examinee discusses the method for obtaining the procedure from the EDMS system or other controlled location.)</p>	P / D	Obtain a copy of ARC-2(3)0C075 B-3 from the ARC book at the Panel or from the EDMS system or other controlled location.
9	Identifies Level indicator LI-2(3)695 indicates pegged low (< 0 inches).	S	Verify that a "Low Level" condition is indicated on LI-2(3)695 located on the 20C075 Panel.
<p>Note to Evaluator</p> <p>Steps 10 and 11 (below) may be done through a single communication with the Control Room.</p>			
10	<p>Notify the Unit Reactor Operator that the alarm "Skimmer Surge Tank Low Level" is in on the 2(3)0C075 Panel and that the Skimmer Surge Tank water level is pegged low (&lt; 0 inches).</p> <p>(Cue: Evaluator acknowledges the examinee's report and informs the examinee that an Equipment Operator has been dispatched to add make-up water to the Skimmer Surge Tanks.)</p>	S	Inform the Unit Reactor Operator that the alarm "Skimmer Surge Tank Low Level" is in and report the indicated level on LI-2(3)695.

STEP NO	STEP	ACT	STANDARD
*11	<p>Notify the Control Room that the currently operating RHR Pump ('A') must be immediately shutdown.</p> <p>(Cue: Evaluator acknowledges the examinee's report and informs the examinee that the running RHR pump is being shutdown.)</p> <p><b><u>Immediately following report, then --</u></b>  (Cue: Provide the examinee with the 2[3]0C075 Panel Conditions sheet #3 [Attachment #3].)</p> <p>(Cue: If the candidate asks for /checks Fuel Pool / Reactor Cavity water level, then state that --"Fuel Pool water / Reactor Cavity level is now at 232' 4".")</p>	S	<p>If level is low and RHR SDC – Fuel Pool to Reactor mode is in operation in accordance with AO 10.4-2(3), then immediately shutdown the running RHR Pump.</p>
12	Identify alarm condition(s).	P / D	Identifies Alarm B-1 in alarm.
13	<p>Obtain a copy of the Alarm Response Card ARC-2(3)0C075 B-1</p> <p>(Cue: If examinee does NOT use the alarm response procedure located in the ARC Book (at the Panel), then the evaluator may provide the examinee with a copy of ARC-2[3]0C075 B-1 AFTER the examinee discusses the method for obtaining the procedure from the EDMS system or other controlled location.)</p>	P / D	<p>Obtain a copy of ARC-2(3)0C075 B-1 from the ARC book at the Panel or from the EDMS system or other controlled location.</p>
14	<p>Visually check Fuel Pool water level.</p> <p>(Cue: If the candidate asks for /checks Fuel Pool / Reactor Cavity water level, then state that --"Fuel Pool water / Reactor Cavity level is now at 231' 10".")</p>	S	<p>Visually check Fuel Pool level to determine if the alarm is due to high water level or low water level.</p>

STEP NO	STEP	ACT	STANDARD
15	<p>Notify the Unit Reactor Operator that the alarm "Fuel Storage Pool Low Level" is in on the 2(3)0C075 Panel and that the Fuel Pool water level is at the 231' 10" mark and going down.</p> <p>(Cue: Evaluator acknowledges the examinee's report.)</p>	S	<p>Notify the Unit Reactor Operator that the alarm "Fuel Storage Pool Low Level" is in and report current Spent Fuel Pool water level.</p>
16	<p>Recommends entering the FH-74 "Actions in Response to an Unexpected Loss of Fuel Pool, Reactor Cavity, or Equipment Storage Pool Water Inventory" procedure.</p> <p>(CUE: Acknowledge the recommendation to enter the FH-74 procedure <b>AND</b> state "The Control Room Supervisor directs you to evaluate the Refuel Floor conditions and execute the Refuel Floor portions of the FH-74 procedure.")</p>	S	<p>Recommend that FH-74 "Actions in Response to an Unexpected Loss of Fuel Pool, Reactor Cavity, or Equipment Storage Pool Water Inventory" be implemented.</p>
17	<p>Obtain a copy of the FH-74 procedure</p> <p>(CUE: When the examinee states that he would find a copy of the procedure in the Refuel Floor Office area, or on the Refuel Platform, or from the EDMS system, then provide the examinee with a copy of the FH-74 procedure.)</p>	D	<p>Obtain a copy of the FH-74 procedure from the EDMS system or other controlled location.</p>
18	<p>Notifies Shift Management to enter ON-124 "Fuel Floor and Fuel Handling Problems".</p> <p>(CUE: Acknowledge the recommendation to enter the ON-124 procedure <b>AND</b> state "The Control Room Supervisor directs you to evaluate the Refuel Floor conditions and execute the Refuel Floor portions of the ON-124 procedure.")</p>	S	<p>Notify Shift Management to enter ON-124 "Fuel Floor And Fuel Handling Problems".</p>

STEP NO	STEP	ACT	STANDARD
19	<p>Obtain a copy of the ON-124 procedure</p> <p>(CUE: When the examinee states that he would find a copy of the procedure in the Refuel Floor Office area, or on the Refuel Platform, or from the EDMS system, then provide the examinee with a copy of the ON-124 procedure.)</p>	D	<p>Obtain a copy of the ON-124 procedure from the EDMS system or other controlled location.</p>
20	<p>Notify Rad Protection to continuously evaluate radiological conditions on the Fuel Floor and recommend evacuation or allowance to continue with steps</p> <p>(CUE: Rad Pro Technician acknowledges your direction and begins surveys.)</p>	S	<p>Notify Radiation Protection to continuously evaluate radiological conditions on the Fuel Floor and recommend evacuation or allowance to continue with the remaining procedural steps.</p>
*21	<p>Direct all personnel non-essential for placing the Fuel Floor in a radiologically safe condition to immediately evacuate the Fuel Floor.</p>	S	<p>All personnel not essential to place the Refueling Floor in a radiologically safe condition shall immediately evacuate the Fuel Floor.</p>
<p>Notes to Evaluator</p> <p>A) Satisfactory task completion is indicated when the examinee has notified the Control Room to shut down the 'A' RHR Pump and directed non-essential personnel to evacuate the Refuel Floor, then the evaluator may terminate the JPM.</p> <p>B) The below step ONLY applies if this JPM is being used for LSRO Requal training / testing (i.e. The below step is N/A for LSRO initial training / testing).</p>			

STEP NO	STEP	ACT	STANDARD
22	<p>Follow-up Question (Evaluator to ask the examinee): "If you had similar conditions at Limerick unit 1 – Refueling Operations in progress and an ARC-BOP-10C222 D3 'Reactor Well Seal Rupture Drain Hi Flow' alarm in concurrent with Reactor Cavity water level going down, then how would your actions be different than what you just demonstrated here?"</p> <p>If the LSRO examinee wants to see a copy of the Limerick Procedure ARC-BOP-10C222 D3 'Reactor Well Seal Rupture Drain Hi Flow' alarm response card, then: (CUE: Present a copy of ARC-BOP-10C222 D3 to the LSRO examinee.)</p>	D	<p>Answer: The Limerick procedures directions are similar. The Limerick ARC-BOP-10C222 D3 will direct the operator to verify operation of the inflatable Reactor Well seals. The PBAPS Seals are NOT inflatable and therefore there are no directions to verify seal operability.</p> <p>(Examinee may include that the ON-120 procedure would be entered at Limerick vice the ON-124 / FH-74 procedures at PBAPS [not required for correct answer].)</p> <p>Note to Evaluator – The answer to the follow up question does not have to be answered by the trainee using the exact words that are shown above.</p>

Notes to Evaluator

- A) Satisfactory task completion is indicated when the examinee has notified the Control Room to shut down the 'A' RHR Pump and directed non-essential personnel to evacuate the Refuel Floor, then the evaluator may terminate the JPM.
- B) The stop time for the JPM may be entered here: \_\_\_\_\_
- C) As an evaluator, ensure you have positive control of all exam material provided to the examinee ('Task Conditions / Prerequisites & Initiating Cue' sheet', ALL Attachments, AND procedures).

Under "ACT" P - must perform  
S - must simulate  
D – must discuss

I. TERMINATING CUE

When the examinee has notified the Control Room to shut down the 'A' RHR Pump and directed non-essential personnel to evacuate the Refuel Floor, then the evaluator may terminate the JPM.

## TASK CONDITIONS & PREREQUISITES

1. Reactor is in MODE 5.
2. Fuel Pool Gates to the Reactor Cavity are removed.
3. Fuel Pool water level is 232' 10"
4. Refueling Operations are in progress (grapple change out is taking place).
5. The Residual Heat Removal System is currently removing decay heat from the reactor in accordance with AO 10.4-2(3) Residual Heat Removal System – Fuel Pool to Reactor Mode using the 'A' RHR Pump.
6. The 'A' RHR Pump is the ONLY available Pump for Shutdown Cooling / Injection.
7. The Fuel Pool Cooling system has been shutdown.
8. The Reactor Water Clean Up System has been shutdown.
9. I&C has just been dispatched to investigate the loss of camera functions on the Refuel Floor.
10. The overhead crane is NOT in use.
11. You (the Fuel Handling Director) and the NMD Reactor Services Foreman have radios set to the 'Operations' channel.

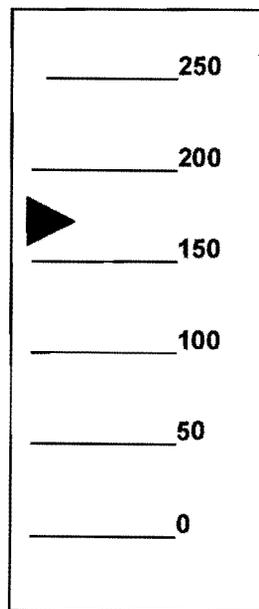
## INITIATING CUE

The Control Room Supervisor directs you (the current Fuel Handling Director) to continuously monitor the Unit 2(3) Skimmer Surge Tank level until the remote monitoring can be restored in accordance with AO 10.4-2(3) step 3.10 (3.12) and to respond to any local Fuel Pool alarm condition(s) on the Fuel Pool System Panel 2(3)0C075.

Attachment #1 – Panel 2(3)0C075 Panel Initial Indications (#1)

	A	B	C
1	SEAL RUPTURE DRAIN HIGH FLOW	FUEL STORAGE POOL HIGH/LOW LEVEL	FUEL STORAGE POOL HI RADIATION
2	BELLOWS LEAK HIGH FLOW	SKIMMER SURGE TANK HIGH LEVEL	FLASHER
3	GATE DRAIN HIGH FLOW	SKIMMER SURGE TANK LOW LEVEL	

LI-2(3)695



SKIMMER SURGE  
TANK LEVEL



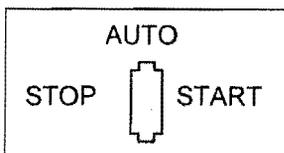
'A' FUEL POOL PUMP



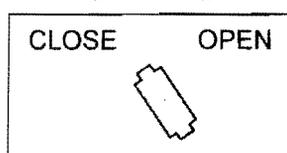
'B' FUEL POOL PUMP



'C' FUEL POOL PUMP



HIGH PRESSURE  
DECON PUMP

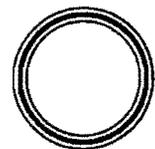
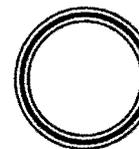
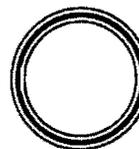


AO-2(3)698  
FUEL POOL MAKEUP

ACK

RESET

TEST

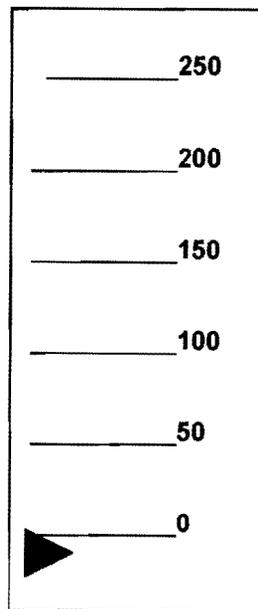


Attachment #2 – Panel 2(3)0C075 Panel Indications (#2)

	A	B	C
1	<b>SEAL RUPTURE DRAIN HIGH FLOW</b>	FUEL STORAGE POOL HIGH/LOW LEVEL	FUEL STORAGE POOL HI RADIATION
2	BELLOWS LEAK HIGH FLOW	SKIMMER SURGE TANK HIGH LEVEL	FLASHER
3	GATE DRAIN HIGH FLOW	<b>SKIMMER SURGE TANK LOW LEVEL</b>	

↖ Flashing

LI-2(3)695



SKIMMER SURGE  
TANK LEVEL



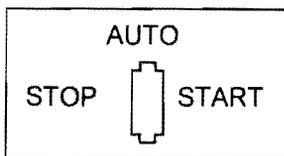
'A' FUEL POOL PUMP



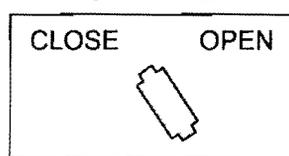
'B' FUEL POOL PUMP



'C' FUEL POOL PUMP



HIGH PRESSURE  
DECON PUMP



AO-2(3)698  
FUEL POOL MAKEUP



ACK

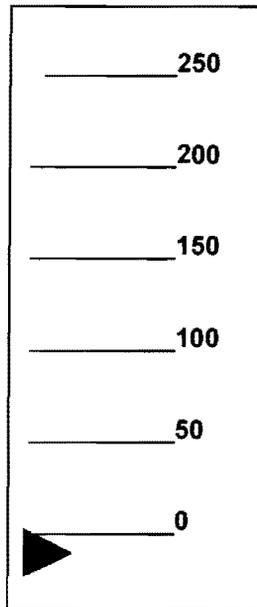
RESET

TEST

Attachment #3 – Panel 2(3)0C075 Panel Indications (#3)

	A	B	C
1	SEAL RUPTURE DRAIN HIGH FLOW	FUEL STORAGE POOL HIGH/LOW LEVEL	FUEL STORAGE POOL HI RADIATION
2	BELLOWS LEAK HIGH FLOW	SKIMMER SURGE TANK HIGH LEVEL	FLASHER
3	GATE DRAIN HIGH FLOW	SKIMMER SURGE TANK LOW LEVEL	

LI-2(3)695



SKIMMER SURGE  
TANK LEVEL



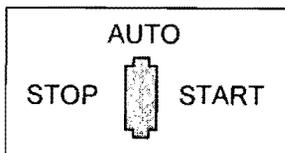
'A' FUEL POOL PUMP



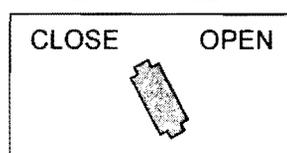
'B' FUEL POOL PUMP



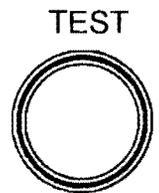
'C' FUEL POOL PUMP



HIGH PRESSURE  
DECON PUMP



AO-2(3)698  
FUEL POOL MAKEUP



**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	Limited Senior Reactor Operator	CODE #:	NLSRO-3066
COURSE:	LSRO Initial & LSRO Requalification	REV #.:	000
AUTHOR:	G. W. Zellmer	TYPIST:	gwz
TITLE:	Transfer of Recently Irradiated Fuel – Alternate Path (Loss of SGBT)		
APPROVALS:	<i>Donald W. Zellmer / LSRO</i> Signature / Title		6/19/2010 Date
	<i>William J. Branos / LSRO</i> Signature / Title		6/23/2010 Date
	<i>John J. [unclear] / LSRO</i> Signature / Title		6/28/2010 Date
	<i>J. [unclear] / 545</i> Signature / Title		7/1/10 Date
APPROVED FOR USE:	<i>Jim [unclear]</i> Signature / Title		7/1/10 Date
EFFECTIVE DATE: <u>7 / 1 / 10</u>			

NAME: _____ Last                      First                      M.I.	ISSUE DATE: _____
EMPLOYEE ID NO. _____	COMPLETION DATE: _____
COMMENTS:	
Training Review for Completeness:	LMS CODE: _____
_____ Signature/Date	LMS ENTRY: _____



6. Verify the prerequisites of FH-35 and SO 18.1.A-2(3) are satisfied AND permission is obtained from Shift Supervision to perform dummy fuel bundle moves BEFORE the JPM begins (evaluator). The evaluator must indicate on the 'Task Conditions/Prerequisites & Initiating Cue' sheet which unit is to be used for the JPM (and have the appropriate CCTAS, procedures, and Prerequisites met if applicable).
7. This JPM may be used for PBAPS Unit 2 or Unit 3. However, the evaluator must make certain that all prerequisites and approvals are obtained on the unit that is going to be used prior to starting this JPM.
8. The design activity level for this JPM is 'PERFORMED' (P). It is an expectation that the LSROs will use the Refuel Platform to move a dummy fuel bundle for evaluation. However, setting up the Refuel Platform for operation requires coordination between Reactor Services, Radiation Protection, Reactor Engineers, and Shift Operations, as well as requiring multiple Refuel Platform subsystems to be working correctly. Therefore, the activity level for this JPM is designated as Perform/Simulate (P/S) to provide a POSSIBLE contingency for the infrequent condition that despite proper planning, actual Refuel Bridge operation is precluded. Use of simulate for this JPM requires the approval of the PBAPS Operations Training Manager. If dummy fuel bundle is moved, then all required stations MUST be filled by qualified individuals.
9. Most JPMs that involve the use of Concurrent Verification or Peer Checks are performed with the Concurrent Verification / Peer Checks being simulated (not leading the examinee). This JPM is different because an actual component is being moved in the Fuel Storage Pool. Therefore, all required verifications and checks will be performed per procedure. Any errors by the examinee discovered during a Concurrent Verification / Peer Check will be documented by the JPM evaluator.
10. JPM paperwork that is used on the Refueling Bridge may be contaminated and not be available for record retention. Unless the JPM Pre-job brief determines otherwise, if JPM material used on the Refueling Bridge becomes contaminated, then, it is acceptable for the JPM evaluator to transfer JPM notes/scores to a JPM summary sheet and destroy original JPM paperwork (AFTER accounting for ALL exam material).
11. The DA is in charge of all evolutions on that occur on the Refuel Platform. It is required that the DA perform a Pre-Job Brief / 2 Minute Drill with the RPO (LSRO examinee) for this evolution. The Pre-Job Brief / 2 Minute Drill are human performance tools that do NOT constitute inappropriate coaching or exam compromise.
12. Evaluator(s) must be particularly cognizant of the potential for a foreign material event (FME) to occur. Beside the need for exam security (maintaining control of the JPM and associated exam paperwork), there is a risk for the evaluator to lose control of paper and/or pens (refer to issue 01001205).

## B. TOOLS AND EQUIPMENT

1. Task Conditions / Prerequisites and Initiating Cue Sheet
2. Access to FH-6C 'Core Component Movement' procedure
3. Access to SO 18.1.A –2(3) 'Operation of Refueling Platform' procedure
4. Access to Unit 2(3) Tech Specs and Unit 2(3) Tech Spec Bases
5. Access to ST-O-09A-2 'SBGT Subsystem Operability Test'
6. Access to FH-35 'Control of Material Movement In the Fuel Pool'
7. Access to Limerick Unit 1 Tech Specs
8. Access to Limerick Procedure FH-105 'Core Component Movement – Core Transfers'

## C. REFERENCES

1. FH-6C Rev. 63 'Core Component Movement'
2. PBAPS Tech Specs Unit 2(3) [Rev. 275/279] and Bases
3. SO 18.1.A –2(3) Rev. 22 'Operation of Refueling Platform' procedure
4. ST-O-09A-325-2 Rev. 5 'SBGT Subsystem Operability Test'
5. FH-35 Rev 36 'Control of Material Movement In the Fuel Pool'
6. Limerick Unit 1 Tech Specs (Rev. 198)
7. Limerick procedure FH-105 Rev. 45 'Core Component Movement – Core Transfers'

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the Dummy Fuel Bundle is re-seated in the Spent Fuel Pool.
2. Estimated time to complete: 25 minutes Non-Time Critical

## E. DIRECTIONS TO EXAMINEE

When given the initiating cue, you (the Refuel Platform Operator [RPO]) are to continue transferring Recently Irradiated Fuel in accordance with the approved CCTAS. I will describe initial plant conditions and provide you access to the materials required to complete this task.

## F. TASK CONDITIONS/PREREQUISITES

1. Refuel Bridge is removing Recently Irradiated Fuel Assemblies out of the Reactor and arranging the Irradiated Fuel Assemblies in the Spent Fuel Pool as directed by:
  - a. FH-6C Core Component Movement
  - b. SO 18.1.A –2(3) Operation of Refueling Platform
  - c. Core Component Transfer Authorization Sheet (CCTAS)

2. For the purpose of this evolution, you will treat the Dummy Fuel Bundle as if it is a Fuel Assembly that has been recently irradiated (irradiated 8 hours ago).
3. There are NO irradiated components grappled to any Refuel Platform Hoist.
4. The auxiliary hoists are full up.
5. All of the applicable Prerequisites for procedure FH-35 AND FH6C have been completed for Dummy Bundle transfer (simulated Recently Irradiated Fuel Assembly) in the Spent Fuel Pool.
6. All applicable Prerequisites of procedure SO 18.1.A-2(3) have been completed for recently irradiated Fuel transfer in the Core and Spent Fuel Pool.
7. All applicable portions of SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' have been completed.
8. Rad Protection Technicians are currently performing a survey of the Fuel Pool using a Teletector (complete Fuel Pool survey – will measure radiological conditions in all Fuel Pool areas).

#### G. INITIATING CUE

1. The Fuel Handling Director directs you to perform the necessary steps to move the (Unit 2 / Unit 3) Dummy Fuel Bundle (simulated Recently Irradiated Fuel Assembly) in accordance with the attached CCTAS and in accordance with SO 18.1.A-2(3). You will perform the next indicated step on the attached CCTAS. The Refuel Platform must be operated in the Manual mode.
2. For the entire evolution, you will treat the Dummy Fuel Bundle as if the Dummy Fuel Bundle is actual Recently Irradiated Fuel.
3. You are to PERFORM this activity as the Refuel Platform Operator (RPO).

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
Notes to Evaluator			
A)	If PRIOR to the JPM start (before examinee is given the Initiating Cue), the examinee questions how it is possible to be moving Recently Irradiated Fuel, then the evaluator may state that an inadvertent criticality event occurred 8 hours ago due to simultaneous HCU Blocking evolutions concurrent with a failure of the CRD Hydraulic System (SEN 264). If the question is asked AFTER the Initiating Cue is given, then the evaluator may NOT provide an answer to the question until after the JPM is complete (the question / answer has no bearing on the examinee's ability to perform the task).		
B)	If at any time during this JPM the examinee asks if there are any 'special' engineering analyses in effect, then the evaluator should provide the following -- (Cue: Only those engineering analyses associated with in progress procedures are currently in effect).		
C)	Provide a copy of SO 18.1.A-2(3) and a copy of the CCTAS for dummy bundle movement prior to starting JPM. IF this JPM is being administered immediately following NLSRO-3064, THEN the SO 18.1.A-2(3) and CCTAS given to the examinee for NLSRO-3064 JPM may be used by the examinee for this JPM (it may not be necessary to supply another SO 18.1.A-2(3) or CCTAS).		
D)	The examinee may validate any and all prerequisites associated with FH-6C / SO 18.1.A-2(3) / RWP's / FME plans including verifying that Shift Operations has given permission for the move and verifying Refuel Platform Computer log in (step 4.1 of SO 18.1.A-2[3]).		
E)	Examinee is permitted to communicate with the FHD and/or Spotter in order to 'setup' for task, concurrent verifications, and documentation on the CCTAS. FHD and Spotter are NOT to lead the examinee in performing the task.		
F)	This JPM may be started from the associated Refueling Platform.		
G)	The examinee may request permission to pick up the dummy fuel bundle as a 'Hard Pick'. The FHD evaluating the move as a 'Hard Pick' and giving permission to grapple the dummy fuel bundle as a 'Hard Pick' is acceptable and expected (i.e. This is NOT coaching and it is NOT an exam compromise).		
H)	The FHD must give a Pre-Job Brief / 2 Minute Drill to the RPO (LSRO examinee) before the start of the JPM. IF this JPM is being administered immediately following the NLSRO-3064 JPM, THEN (At the FHD's discretion) the FHD's Pre-Job Brief / 2 Minute Drill that was given as part of the NLSRO-3064 JPM may be applied to this JPM without being repeated; the start time for the JPM may be recorded here _____.		

STEP NO	STEP	ACT	STANDARD
1	Position Refuel Platform Mast over desired core component in accordance with Core Component Transfer Authorization Sheet (CCTAS).	P	The Refuel platform is positioned over the dummy fuel bundle.  Note to Evaluator – If this JPM is being performed immediately following NLSRO-3064, then this step may already have been performed and this step may be marked N/A.
*2	Lower hoist until grapple is near bail.	P	The hoist is lowered using the variable speed control, located on the right hand console until the hoist position indication is between 176 – 182 (approximately).
3	Verify grapple is open.	P	The backlight on the GRAPPLE ENGAGED switch is verified to be extinguished.
4	Rotate grapple as necessary to achieve grapple to bail alignment	P	The mast is rotated so that the grapple is aligned with the dummy fuel bundle bail handle.
*5	Slowly lower hoist until SLACK CABLE light is lit.	P	The hoist is slowly lowered down over the bail of the dummy bundle. The SLACK CABLE light, located on the left hand console is verified ON.
6	<u>CONCURRENT VERIFICATION</u> FHD and Spotter perform concurrent verification of proper core component location and orientation.	P	Proper core component location and orientation concurrently verified.  (This standard is N/A for the RPO unless the RPO is also acting as the Spotter)
<p>Note to Evaluator</p> <p>The verifications in the following two steps may be performed in parallel.</p>			
7	FHD verify the following:	N/A	N/A

STEP NO	STEP	ACT	STANDARD
7a	<ul style="list-style-type: none"> <li>• SLACK CABLE light is lit</li> </ul>	N/A	N/A
7b	<ul style="list-style-type: none"> <li>• Grapple is centered over bail handle</li> </ul>	N/A	N/A
7c	<ul style="list-style-type: none"> <li>• Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	N/A	N/A
7d	<ul style="list-style-type: none"> <li>• THEN direct RPO to engage grapple</li> </ul> <p>(Cue: evaluator will have the FHD direct the examinee to engage the grapple.)</p>	N/A	N/A
8	RPO verify the following:	N/A	See below
8a	<ul style="list-style-type: none"> <li>• SLACK CABLE light is lit</li> </ul>	P	SLACK CABLE light is verified to be ON
8b	<ul style="list-style-type: none"> <li>• Grapple is centered over bail handle</li> </ul>	P	Grapple is verified to be centered over the bail handle
8c	<ul style="list-style-type: none"> <li>• Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack (~ 188")</li> </ul>	P	Hoist position indication is verified to be in agreement with Attachment 9 (~ 188")
*8d	<ul style="list-style-type: none"> <li>• WHEN directed by FHD, engage grapple</li> </ul>	P	Grapple is engaged by using the Hoist Control Station
9	FHD and RPO perform Peer Check that "GRAPPLE ENGAGED" light is lit	P	GRAPPLE ENGAGED light is verified (peer checked with FHD) to be 'ON'.

STEP NO	STEP	ACT	STANDARD
*10	<p>Slowly raise load while verifying HOIST LOADED light is lit.</p> <p>(CUE: When the Hoist Loaded indicating light comes on [while the Fuel Assembly is being raised, Then to the examinee provide the following –            “The Fuel Handling Director notifies you that the [‘A’ &amp; ‘B’ / ‘B’ &amp; ‘C’] Standby Gas Treatment System Fans both tripped during testing and neither fan can be started. The FHD is asking for your recommendations.”)</p>	P	<p>The dummy fuel bundle is slowly raised (using the Hoist Control Station) while ensuring the HOIST LOADED light is ‘ON’.</p> <p>*****</p> <p>When the cue is given, then that marks the start of the Alternate Path.</p> <p>*****</p>
*11	<p>The examinee (RPO) stops raising the Dummy Fuel Bundle.</p> <p>(CUE: If examinee recommends that the FHD stop movement of all Fuel, then acknowledge the recommendation.)</p> <p>(CUE: If examinee recommends that the FHD notify the control room / Reactor Operators of the ‘Stop Order’ for Fuel Movement and/or the re-insertion of the Fuel Assembly, then acknowledge the recommendation.)</p> <p>(CUE: If the examinee recommends re-inserting the Recently Irradiated Fuel Assembly (Dummy Fuel Bundle) into it’s previous location, then acknowledge the recommendation.)</p> <p>+++++</p> <p>When the examinee has completed their recommendations, then the EVALUATOR will notify the FHD that the FHD may now direct the examinee to re-insert and re-seat the Recently Irradiated Fuel Assembly (the Dummy Fuel Bundle).</p> <p>+++++</p>	<p>P</p> <p>←</p>	<p>FH-6C step 7.1.5 - [FHD] shall determine the proper immediate corrective action if an abnormal event or instrument response occurs.</p> <p>FH-6C step 7.1.7 - [FHD] shall be responsible for review of the prerequisites to this procedure to assure that all applicable prerequisites are met during core component movement.</p> <p>FH-6C step 5.11 - SBTG system is in compliance with the requirements of Tech Spec 3.6.4.3. (FH-35 steps 4.7 &amp; 9.6)</p> <p>Tech Spec 3.6.4.3 Condition ‘E’ (Two SBTG subsystems inoperable during movement of Recently Irradiated Fuel assemblies in the Secondary Containment or during OPDRVs):</p> <p>Required Action E.1 – Suspend movement of Recently Irradiated Fuel Assemblies in secondary containment (immediately)</p> <p>← This is NOT a CUE. The evaluator to let the <u>actual FHD</u> know that the JPM is at the point to direct the examinee (now the acting RPO) to re-insert and re-seat the Dummy Fuel Bundle.</p>

STEP NO	STEP	ACT	STANDARD
12	FHD and Spotter perform Concurrent Verification of proper core component location and orientation	N/A	N/A  (This standard is N/A for the examinee (RPO) unless the RPO is also acting as the Spotter)
13	Spotter and RPO discuss the 'Push' or 'Pull' (twist left / twist right) motion required for seating the Fuel Assembly (if required)	P	Fuel Assembly may need to be either pushed or pulled while being seated to prevent the channel fasteners from contacting the fuel rack (if required).
*14	Lower hoist until component is seated and the 'SLACK CABLE' light is lit.	P	The dummy fuel bundle is lowered (using the Hoist Control Station) until the component is seated and the SLACK CABLE light is energized.  Note to evaluator – This guidance is from the SO 18.1.A procedure at step 4.13.4.
<p>Note to Evaluator</p> <ul style="list-style-type: none"> <li>The verifications in the following two steps may be performed in parallel (steps 15 &amp; 16).</li> </ul>			
15	FHD verify the following:	N/A	N/A
15a	<ul style="list-style-type: none"> <li>SLACK CABLE light is lit</li> </ul>	N/A	N/A
15b	<ul style="list-style-type: none"> <li>Component elevation appears equivalent to other stored components in the rack</li> </ul>	N/A	N/A
15c	<ul style="list-style-type: none"> <li>Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	N/A	N/A
15d	<ul style="list-style-type: none"> <li>THEN direct RPO to release grapple</li> </ul>	N/A	N/A

STEP NO	STEP	ACT	STANDARD
16	RPO verify the following:	P/S	N/A
16a	<ul style="list-style-type: none"> <li>SLACK CABLE light is lit</li> </ul>	P	SLACK CABLE light is verified to be ON
16b	<ul style="list-style-type: none"> <li>Component elevation appears equivalent to other stored components in the rack</li> </ul>	P	Bundle is verified to be at the same elevation as other fuel bundles in the racks.
16c	<ul style="list-style-type: none"> <li>Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	P	Hoist position indication is verified to be in agreement with Attachment 9 (~188 inches)
*16d	<ul style="list-style-type: none"> <li>THEN WHEN directed by FHD, release grapple</li> </ul>	P	<p>Grapple is released by using the Hoist Control Station</p> <p>If necessary, the Evaluator will ask the FHD to direct the examinee to release the grapple. (This is a possible cue for the FHD – NOT a cue for the examinee.)</p>
17	Verify grapple is open.	P	GRAPPLE ENGAGED light is verified to be 'OFF'.
18	Slowly raise hoist while verifying 'HOIST LOADED' light remains 'OFF'.	P	The grapple is slowly raised while verifying the 'HOIST LOADED' light remains 'OFF'.
19	Perform Peer Check with FHD to ensure grapple is clear of core components.	P	Verify Grapple is clear of core components.
20	<p>Examinee (RPO) notifies the FHD that the Recently Irradiated Fuel Assembly (Dummy Fuel Bundle) has been re-seated.</p> <p>(CUE: Acknowledge the report.)</p>	P	Notify FHD of task completion.

STEP NO	STEP	ACT	STANDARD
Notes to Evaluator			
<p>A) The performance portion of this JPM is complete; Stop Time may be recorded here: _____</p> <p>B) The following questions are 'JPM follow-up questions' to be given to the examinee by the evaluator. JPM follow-up question Start Time may be recorded here: _____</p> <p>C) The follow-up questions do NOT have to be given immediately following the performance portion of this JPM. If the examinee is adequately sequestered, then these follow-up questions may be given AFTER leaving the Refuel Platform.</p> <p>D) IF this JPM is being used for LSRO Initial training / testing, THEN ONLY the first two (2) follow-up questions are required to be asked (The third follow-up question is N/A for Initial training / testing).</p>			
21	<p>(CUE: "In this situation [the 'A' &amp; 'B' / 'B' &amp; 'C' Standby Gas Treatment System fans not working], are there any restrictions on the Rad Protection Technicians that are currently performing a survey of the Fuel Pool using a Teletector [a complete Fuel Pool survey – will measure radiological conditions in all Fuel Pool areas]").</p> <p>(Cue: If examinee asks what the weight of the Teletector in use is, then reply – "The Teletector weight is 8 lbs.")</p> <p>(CUE: If examinee asks for a copy of FH-6C or FH-35 procedures, Then provide the examinee with a copy of the procedures.)</p>	D	<p>Engineering analysis for handling light loads over Irradiated Fuel without Secondary Containment / SBGT (Table 2 of FH-6C and/or Table 1 of FH-35) <b>permits</b> the use of Teletector survey instrument.</p>
22	<p>(CUE: "Are there any tech specs that apply to this situation [moving Recently Irradiated Fuel Assemblies with the 'A' &amp; 'B' / 'B' &amp; 'C' Standby Gas Treatment System fans not working].")?</p> <p>(CUE: If examinee asks for a copy of Tech Specs, Then provide the examinee with a copy of the appropriate Tech Specs.</p>	D	<p>Tech Specs prohibits movement of Recently Irradiated Fuel without SBGT.</p> <p>Tech Spec 3.6.4.3 Condition 'E' (Two SBGT subsystems inoperable during movement of Recently Irradiated Fuel assemblies in the Secondary Containment or during OPDRVs):</p> <p>Required Action E.1 – Suspend movement of Recently Irradiated Fuel Assemblies in secondary containment (immediately)</p>
Note to Evaluator			
<p>The following step ONLY applies if this JPM is being used for Requalification training (i.e. step 23 does NOT apply to Initial LSRO training / testing).</p>			

STEP NO	STEP	ACT	STANDARD
23	<p>(Cue: After the above actions are complete, then ask the following question → 'If the above conditions occurred at Limerick Unit 1 [two of the three SBGT fans failed], would you make the same stop-work determinations that you just made here at PBAPS (if not, how would the determinations be different)?'</p> <p>(Cue: If the examinee asks to see any [or all] of the below listed procedures, then provide the examinee with a copy of the requested procedure(s):            -Limerick Unit 1 Tech Specs            -FH-105</p>	P	<p>All of the above work that was stopped due to the loss of the SBGT system (both SBGT subsystems) would also be stopped at Limerick under these conditions (exact wording not required). However, at Limerick, the loss of two SBGT fans will cause these actions to apply to Both Limerick Unit 1 &amp; Limerick Unit 2. At PBAPS, the loss of two SBGT fans will ONLY cause these actions to apply to either Unit 2 OR Unit 3 (depending on which SBGT Fans have failed).</p> <p>Limerick Unit 1 Tech Specs Limiting Condition for Operation spec 3.6.5.3 Action 'b' 'With both standby gas treatment subsystems inoperable, if in progress, suspend handling of irradiated fuel in the secondary containment, Core Alterations or operations with the potential for draining the reactor vessel.</p> <p>Note – Not required to be stated by the examinee (but provided here as a reference to the evaluator), at Limerick the same jobs would be stopped even if ONLY 'Irradiated Fuel' was involved (i.e. not just Recently Irradiated Fuel transfers ).</p>

**Notes to Evaluator**

- A) After the examinee has answered all follow-up questions, the evaluator may terminate this JPM. The end time for the JPM follow-up questions may be recorded here. \_\_\_\_\_
- B) As an evaluator, ensure you have positive control of all exam material provided to the examinee ('Task Conditions / Prerequisites & Initiating Cue' sheet' AND procedures).

Under "ACT" P - must perform  
 S - must simulate  
 D- must discuss

**I. TERMINATING CUE**

When the examinee has determined which work must stop and addressed any applicable follow-up questions, then the evaluator may terminate the exercise.

# Task Conditions / Prerequisites and Initiating Cue

## TASK CONDITIONS/PREREQUISITES

1. Refuel Bridge is removing Recently Irradiated Fuel Assemblies out of the Reactor and arranging the Irradiated Fuel Assemblies in the Spent Fuel Pool as directed by:
  - d. FH-6C Core Component Movement
  - e. SO 18.1.A –2(3) Operation of Refueling Platform
  - f. Core Component Transfer Authorization Sheet (CCTAS)
2. For the purpose of this evolution, you will treat the Dummy Fuel Bundle as if it is a Fuel Assembly that has been recently irradiated (irradiated 8 hours ago).
3. There are NO irradiated components grappled to any Refuel Platform Hoist.
4. The auxiliary hoists are full up.
5. All of the applicable Prerequisites for procedure FH-35 AND FH6C have been completed for Dummy Bundle transfer (simulated Recently Irradiated Fuel Assembly) in the Spent Fuel Pool.
6. All applicable Prerequisites of procedure SO 18.1.A-2(3) have been completed for recently irradiated Fuel transfer in the Core and Spent Fuel Pool.
7. All applicable portions of SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' have been completed.
8. Rad Protection Technicians are currently performing a survey of the Fuel Pool using a Teletector (complete Fuel Pool survey – will measure radiological conditions in all Fuel Pool areas).

## INITIATING CUE

1. The Fuel Handling Director directs you to perform the necessary steps to move the (Unit 2 / Unit 3) Dummy Fuel Bundle (simulated Recently Irradiated Fuel Assembly) in accordance with the attached CCTAS and in accordance with SO 18.1.A-2(3). You will perform the next indicated step on the attached CCTAS. The Refuel Platform must be operated in the Manual mode.
2. For the entire evolution, you will treat the Dummy Fuel Bundle as if the Dummy Fuel Bundle is actual Recently Irradiated Fuel.
3. You are to PERFORM this activity as the Refuel Platform Operator (RPO).

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE										
<b>PROGRAM:</b>	Limited Senior Reactor Operator	<b>CODE #:</b>	NLSRO-3064										
<b>COURSE:</b>	LSRO Initial & LSRO Requalification	<b>REV #:</b>	000										
<b>AUTHOR:</b>	G. W. Zellmer	<b>TYPIST:</b>	gwz										
<b>TITLE:</b>	Dummy Fuel Movement in the Spent Fuel Pool (PBAPS – Fire)												
<b>APPROVALS:</b>	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;"><i>Donald W. Zellmer</i> Signature / Title</td> <td style="width:30%; text-align: right;">6/19/2010 Date</td> </tr> <tr> <td><i>William F. Brainerd</i> / LSRO Signature / Title</td> <td style="text-align: right;">6/23/2010 Date</td> </tr> <tr> <td><i>John J. Miller</i> / LSRO Signature / Title</td> <td style="text-align: right;">6/28/10 Date</td> </tr> <tr> <td><i>J. P. [Signature]</i> / S&amp;S Signature / Title</td> <td style="text-align: right;">7/1/10 Date</td> </tr> <tr> <td><i>Jim [Signature]</i> OTM Signature / Title</td> <td style="text-align: right;">7/1/10 Date</td> </tr> </table>			<i>Donald W. Zellmer</i> Signature / Title	6/19/2010 Date	<i>William F. Brainerd</i> / LSRO Signature / Title	6/23/2010 Date	<i>John J. Miller</i> / LSRO Signature / Title	6/28/10 Date	<i>J. P. [Signature]</i> / S&S Signature / Title	7/1/10 Date	<i>Jim [Signature]</i> OTM Signature / Title	7/1/10 Date
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<i>Jim [Signature]</i> OTM Signature / Title	7/1/10 Date												
<b>EFFECTIVE DATE:</b> <u>7</u> / <u>1</u> / <u>10</u>													

<b>NAME:</b> _____ Last                      First                      M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>   					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><b>LMS CODE:</b></td> <td style="width:50%;"></td> </tr> <tr> <td><b>LMS ENTRY:</b></td> <td></td> </tr> </table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					



6. Verify the prerequisites of FH-35 and SO 18.1.A-2(3) are satisfied AND permission is obtained from Shift Supervision to perform dummy fuel bundle moves BEFORE the JPM begins (evaluator). The evaluator must indicate on the 'Task Conditions/Prerequisites & Initiating Cue' sheet which unit is to be used for the JPM (and have the appropriate CCTAS, procedures, and Prerequisites met if applicable).
7. This JPM may be used for PBAPS Unit 2 or Unit 3. However, the evaluator must make certain that all prerequisites and approvals are obtained on the unit that is going to be used prior to starting this JPM.
8. This JPM is designed to have the examinee move the dummy fuel bundle using the Refuel Platform in 'manual' mode. However, if this JPM is performed in conjunction with loading the appropriate move sequence [section 4.5 of SO 18.1.A-2(3)], then this JPM may be performed with Refuel Platform set up for 'Semi-Automatic Operation' (section 4.6 of SO 18.1.A-2(3)). Regardless of how the Refuel Platform is moved, this JPM is evaluating the trainee to the standards of SO 18.1.A-2(3) sections 4.8 and 4.13. The evaluator MUST clearly identify to the examinee the expectation to move the Refuel Platform either manually or with the Refuel Platform set up for 'Semi-Automatic Operation'.
9. The design activity level for this JPM is 'PERFORMED' (P). It is an expectation that the LSROs will use the Refuel Platform to move a dummy fuel bundle for evaluation. However, setting up the Refuel Platform for operation requires coordination between Reactor Services, Radiation Protection, Reactor Engineers, and Shift Operations, as well as requiring multiple Refuel Platform subsystems to be working correctly. Therefore, the activity level for this JPM is designated as Perform/Simulate (P/S) to provide a POSSIBLE contingency for the infrequent condition that despite proper planning, actual Refuel Bridge operation is precluded. Use of simulate for this JPM requires the approval of the PBAPS Operations Training Manager. If dummy fuel bundle is moved, then all required stations MUST be filled by qualified individuals.
10. Most JPMs that involve the use of Concurrent Verification or Peer Checks are performed with the Concurrent Verification / Peer Checks being simulated (not leading the examinee). This JPM is different because an actual component is being moved in the Fuel Storage Pool. Therefore, all required verifications and checks will be performed per procedure. Any errors by the examinee discovered during a Concurrent Verification / Peer Check will be documented by the JPM evaluator.
11. JPM paperwork that is used on the Refueling Bridge may be contaminated and not be available for record retention. Unless the JPM Pre-job brief determines otherwise, if JPM material used on the Refueling Bridge becomes contaminated, then, it is acceptable for the JPM evaluator to transfer JPM notes/scores to a JPM summary sheet and destroy original JPM paperwork (AFTER accounting for ALL exam material).
12. The DA is in charge of all evolutions on that occur on the Refuel Platform. It is required that the DA perform a Pre-Job Brief / 2 Minute Drill with the RPO (LSRO examinee) for this evolution. The Pre-Job Brief / 2 Minute Drill are human performance tools that do NOT constitute inappropriate coaching or exam compromise.

13. Evaluator(s) must be particularly cognizant of the potential for a foreign material event (FME) to occur. Beside the need for exam security (maintaining control of the JPM and associated exam paperwork), there is a risk for the evaluator to lose control of paper and/or pens (refer to issue 01001205).

## B. TOOLS AND EQUIPMENT

1. Unit 2 or Unit 3 Refueling Bridge accessible.
2. HP coverage provided for the Dummy Fuel Bundle move (including RWP).
3. Reactor Services support to provide:
  - a. FHD and a Spotter
  - b. Applicable portions of FH-35 completed (and documented)
  - c. Refuel Bridge checked out in accordance with SO 18.1.C-2(3)
  - d. Work Order C0222751 may be used as a reference for coordinating the support needed to move the Dummy Fuel Bundle in the Fuel Pool.
4. Reactor Engineers to develop the CCTAS as required (three hard copies of the CCTAS are required).

## C. REFERENCES

1. FH-35 Revision #36 'Control of Material Movement in the Fuel Pool'
2. SO 18.1.A-2(3) Rev. 22 'Operation of Refuel Platform'
3. SO 18.2.A-2(3) Rev. 3 'Shutdown of Refueling Platform'
4. ON-114 Rev. 17 'Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower Structures'
5. Limerick Procedure S97.0.M Rev. 25 'Refueling Platform Operation'
6. OU-AB-4001 Rev. #4 'BWR Fuel Handling Practices'

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the Dummy Fuel Bundle is moved from one location in the Fuel Pool to another in accordance with the CCTAS and SO 18.1.A-2(3). (NOTE – Evaluator must specify which PBAPS unit to perform/simulate the JPM.)
2. Estimated time to complete: 40 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to move the (Unit 2 / Unit 3) Dummy Fuel Bundle in accordance with the attached CCTAS and in accordance with SO 18.1.A-2(3). The Refuel Platform must be operated in the Manual mode. For the entire evolution, you will treat the Dummy Fuel Bundle as if the Dummy Fuel Bundle is actual irradiated fuel. You are to perform the NEXT two (2) CCTAS moves. You are to **PERFORM** this activity as the Refuel Platform Operator.

F. TASK CONDITIONS/PREREQUISITES

1. There are NO irradiated components grappled to any Refuel Platform Hoist.
2. The auxiliary hoists are full up.
3. All of the applicable Prerequisites for procedure FH-35 have been completed for Dummy Bundle transfer in the Spent Fuel Pool.
4. All applicable Prerequisites of procedure SO 18.1.A-2(3) have been completed for Dummy Bundle transfer in the Spent Fuel Pool.
5. All applicable portions of SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' have been completed.

G. INITIATING CUE

1. The Fuel Handling Director directs you to perform the necessary steps to move the (Unit 2 / Unit 3) Dummy Fuel Bundle in accordance with the attached CCTAS and in accordance with SO 18.1.A-2(3). You will perform the NEXT two (2) CCTAS moves. The Refuel Platform must be operated in the Manual mode.
2. For the entire evolution, you will treat the Dummy Fuel Bundle as if the Dummy Fuel Bundle is actual irradiated fuel.
3. You are to PERFORM this activity as the Refuel Platform Operator.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p>Notes to Evaluator</p> <p>A) Provide a copy of SO 18.1.A-2(3) and a copy of the CCTAS for dummy bundle movement prior to starting JPM.</p> <p>B) The following steps are contained in procedure SO 18.1.A-2(3), section 4.8 (Pickup Location - Fuel Pool Storage Rack)</p> <p>C) The examinee may validate any and all prerequisites associated with FH-35 / SO 18.1.A / RWPs / FME plans including verifying that Shift Operations has given permission for the move and verifying Refuel Platform Computer log in (step 4.1 of SO 18.1.A).</p> <p>D) Examinee is permitted to communicate with the FHD and/or Spotter in order to 'setup' for task, concurrent verifications, and documentation on the CCTAS. FHD and Spotter are NOT to lead the examinee in performing the task.</p> <p>E) JPM may be started from the associated Refueling Platform.</p> <p>F) The examinee may request permission to pick up the dummy fuel bundle as a 'Hard Pick'. The FHD evaluating the move as a 'Hard Pick' and giving permission to grapple the dummy fuel bundle as a 'Hard Pick' is acceptable and expected (i.e. This is NOT coaching and it is NOT an exam compromise).</p> <p>G) The FHD must give a Pre-Job Brief / 2 Minute Drill to the RPO (LSRO examinee) before the start of the JPM. After the FHD's Pre-Job Brief / 2 Minute Drill, the start time for the JPM may be recorded here _____.</p>			
*1	Position Refuel Platform Mast over desired core component in accordance with Core Component Transfer Authorization Sheet (CCTAS).	P/S	The Refuel platform is positioned over the dummy fuel bundle.
*2	Lower hoist until grapple is near bail.	P/S	The hoist is lowered using the variable speed control, located on the right hand console until the hoist position indication is between 176 – 182 (approximately).
3	Verify grapple is open.	P/S	The backlight on the GRAPPLE ENGAGED switch is verified to be extinguished.

STEP NO	STEP	ACT	STANDARD
4	Rotate grapple as necessary to achieve grapple to bail alignment	P/S	The mast is rotated so that the grapple is aligned with the dummy fuel bundle bail handle.
*5	Slowly lower hoist until SLACK CABLE light is lit.	P/S	The hoist is slowly lowered down over the bail of the dummy bundle. The SLACK CABLE light, located on the left hand console is verified ON.
6	<u>CONCURRENT VERIFICATION</u> FHD and Spotter perform concurrent verification of proper core component location and orientation.	P/S	Proper core component location and orientation concurrently verified.  (This standard is N/A for the RPO unless the RPO is also acting as the Spotter)
<b>NOTE</b>			
The verifications in the following two steps may be performed in parallel.			
7	FHD verify the following:	N/A	N/A
7a	<ul style="list-style-type: none"> <li>• SLACK CABLE light is lit</li> </ul>	N/A	N/A
7b	<ul style="list-style-type: none"> <li>• Grapple is centered over bail handle</li> </ul>	N/A	N/A
7c	<ul style="list-style-type: none"> <li>• Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	N/A	N/A
7d	<ul style="list-style-type: none"> <li>• THEN direct RPO to engage grapple</li> </ul> <p>(Cue: evaluator will have the FHD direct the examinee to engage the grapple.)</p>	N/A	N/A
8	RPO verify the following:	N/A	See below

STEP NO	STEP	ACT	STANDARD
8a	<ul style="list-style-type: none"> <li>• SLACK CABLE light is lit</li> </ul>	P/S	SLACK CABLE light is verified to be ON
8b	<ul style="list-style-type: none"> <li>• Grapple is centered over bail handle</li> </ul>	P/S	Grapple is verified to be centered over the bail handle
8c	<ul style="list-style-type: none"> <li>• Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	P/S	Hoist position indication is verified to be in agreement with Attachment 9
*8d	<ul style="list-style-type: none"> <li>• WHEN directed by FHD, engage grapple</li> </ul>	P/S	Grapple is engaged by using the Hoist Control Station
9	FHD and RPO perform Peer Check that "GRAPPLE ENGAGED" light is lit	P/S	GRAPPLE ENGAGED light is verified (peer checked with FHD) to be 'ON'.
*10	Slowly raise load while verifying HOIST LOADED light is lit (fuel only).	P/S	The dummy fuel bundle is slowly raised (using the Hoist Control Station) while ensuring the HOIST LOADED light is 'ON'.
*11	Continue raising until grapple is fully raised, <u>THEN</u> verify Grapple NORMAL UP light is lit.	P/S	Continue raising the grapple to the full up position and verify that the Grapple NORMAL UP light is 'ON'.

Notes to Evaluator

A) The following steps are contained in procedure SO 18.1.A-2(3), section 4.13 "Set down Location – Fuel Pool"

B) JPM steps 12 & 13 shall be concurrently verified by the Fuel handling Director (FHD) and Refuel Platform Operator (RPO) or Spotter.

STEP NO	STEP	ACT	STANDARD
*12	<p>Position core component over desired location in accordance with Core Component Transfer Authorization Sheet (CCTAS).</p> <p>(Cue: <u>AFTER the Refuel Platform Trolley is over the 'MOVED TO' location on the CCTAS</u>, Then provide The following – “An Announcement is heard over the plant page – ‘Attention all personnel, attention all personnel a fire hazard exists in the Unit 2/3 Reactor Building AND Refuel Floor. All personnel evacuate the Unit [ 2 / 3 ] Reactor Building AND Refuel Floor by the nearest exit and assemble outside of the Unit 3 Turbine Building’.”)</p> <p>(Cue: Evaluator will repeat the above cue.)</p>	P/S	The platform is positioned so that the dummy fuel bundle is hanging over the correct spent fuel pool storage location (per CCTAS)
<p>Notes to Evaluator / FHD</p> <p>A) The Refuel Platform FHD must be briefed BEFORE the start of the JPM to expect the ‘announcement’ of the fire AND to expect the possibility that the examinee will ask the FHD for clarifying instructions. The below cues are for both the Evaluator AND/OR the Fuel Handling Director (FHD).</p> <p>B) If the examinee asks the FHD for direction (i.e. should we evacuate now?), then the FHD will provide the following CUE to the examinee (Cue: When the equipment is in a safe condition, then evacuate the Refuel Floor [FHD may ask the examinee ‘what they think the crew should do’]).</p> <p>C) If the examinee asks the Evaluator for direction (i.e. simulating contacting the control room / SSV and asking if the Refuel Floor should be evacuated now?), then the evaluator will provide the following CUE to the examinee (Cue: When the equipment is in a safe condition, then evacuate the Refuel Floor).</p> <p>D) If the examinee asks whether or not the Refuel Platform is in a ‘safe’ condition, then the ONLY acceptable cue is (even if cue was previously given) ‘When the equipment is in a safe condition, then evacuate the Refuel Floor’. In other words, the examinee MUST determine that the Fuel Bundle must be seated BEFORE the Refuel Platform may be considered in a ‘safe’ condition.</p>			
*13	Rotate core component as necessary to achieve proper orientation.	P/S	The mast is rotated so that the dummy fuel bundle is properly oriented (per CCTAS as appropriate).

STEP NO	STEP	ACT	STANDARD
<p>Notes to Evaluator</p> <p>A) At any time during this JPM, IF the examinee asks if there are any indications of smoke or fire, then provide the following cue:</p> <p>(Cue: There is an acrid odor in the air, however, there is no visible smoke and no visible sign of flames.)</p> <p>B) Component may be inserted into the fuel rack up to hoist position 25", in parallel with verification of core component location and orientation.</p>			
14	FHD and Spotter perform Concurrent Verification of proper core component location and orientation	P/S	<p>Proper core component location and orientation concurrently verified.</p> <p>(This standard is N/A for the RPO unless the RPO is also acting as the Spotter)</p>
15	Spotter and RPO discuss the 'Push' or 'Pull' (twist left / twist right) motion required for seating the Fuel Assembly	P/S	Fuel Assembly may need to be either pushed or pulled while being seated to prevent the channel fasteners from contacting the fuel rack.
*16	Lower hoist until component is seated and the 'SLACK CABLE' light is lit.	P/S	The dummy fuel bundle is lowered (using the Hoist Control Station) until the component is seated and the SLACK CABLE light is energized.
<p>NOTE</p> <ul style="list-style-type: none"> <li>The verifications in the following two steps may be performed in parallel (steps 17 &amp; 18).</li> </ul>			
17	FHD verify the following:	N/A	N/A
17a	<ul style="list-style-type: none"> <li>SLACK CABLE light is lit</li> </ul>	N/A	N/A
17b	<ul style="list-style-type: none"> <li>Component elevation appears equivalent to other stored components in the rack</li> </ul>	N/A	N/A

STEP NO	STEP	ACT	STANDARD
17c	<ul style="list-style-type: none"> <li>Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	N/A	N/A
17d	<ul style="list-style-type: none"> <li>THEN direct RPO to release grapple</li> </ul>	N/A	N/A
18	RPO verify the following:	P/S	N/A
18a	<ul style="list-style-type: none"> <li>SLACK CABLE light is lit</li> </ul>	P/S	SLACK CABLE light is verified to be ON
18b	<ul style="list-style-type: none"> <li>Component elevation appears equivalent to other stored components in the rack</li> </ul>	P/S	Bundle is verified to be at the same elevation as other fuel bundles in the racks.
18c	<ul style="list-style-type: none"> <li>Hoist position indication agrees with Attachment 9 for item seated in Fuel Pool Storage Rack</li> </ul>	P/S	Hoist position indication is verified to be in agreement with Attachment 9 (~188 inches)
18d	<ul style="list-style-type: none"> <li>THEN WHEN directed by FHD, release grapple</li> </ul>	P/S	<p>Grapple is released by using the Hoist Control Station</p> <p>If necessary, the Evaluator will ask the FHD to direct the examinee to release the grapple. (This is a possible cue for the FHD – NOT a cue for the examinee.)</p>
19	Verify grapple is open.	P/S	GRAPPLE ENGAGED light is verified to be 'OFF'.
20	Slowly raise hoist while verifying 'HOIST LOADED' light remains 'OFF'.	P/S	The grapple is slowly raised while verifying the 'HOIST LOADED' light remains 'OFF'.
21	Perform Peer Check with FHD to ensure grapple is clear of core components.	P/S	Verify Grapple is clear of core components.

STEP NO	STEP	ACT	STANDARD
22	Verify completion of component transfer on CCTAS (as required).	N/A	N/A
Notes to Evaluator			
<p>A) Ideally, the below two steps will NOT be performed. The Evaluator should terminate the JPM when the examinee has made it clear that their intention is to evacuate the Refuel Floor.</p> <p>B) If the "STOP" push button is depressed (step 23 below), then the Evaluator should be aware that the only consequence to step #23 being performed is that the Refuel Platform will need to be re-started before this JPM is re-performed.</p> <p>C) The next step is directed out of procedure SO 18.1.A step 3.24 and SO 18.2.A (Short Term S/D).</p>			
23	Depress the "STOP" push button at the Start/Stop Station.	S	The large red 'STOP' push button located on the Start/Stop Station is momentarily depressed.
*24	Evacuate the Refuel Floor.	S	The examinee evacuates the Refuel Platform and Refuel Floor.
Notes to Evaluator			
<p>A) If at any time, the examinee attempts to perform the second CCTAS move (as directed by the initiating cue), then that action constitutes a failure of this JPM (Not evacuating as soon as the Refuel Platform is in a safe condition).</p> <p>B) If at any time, the examinee attempts to evacuate the Refuel Floor with the Dummy Fuel Bundle hanging from the Refuel Platform (Dummy Fuel Bundle NOT seated), then that action constitutes a failure of this JPM (Not identifying the necessary conditions for placing the Refuel Platform in a safe condition).</p> <p>C) The following step ONLY applies for Requal Examinations (Step 25 is NOT applicable to Initial Exams).</p> <p>D) When the examinee expresses their intention to evacuate the Refuel Floor, then the evaluator may terminate the performance portion of the JPM and continue with the next step (if applicable):  (CUE: "You may stop here, you have met the termination criteria for the performance portion of this JPM")</p>			

STEP NO	STEP	ACT	STANDARD
25	<p>Follow-up Question (Evaluator to ask the examinee):</p> <p>(CUE: If you were moving a Limerick Fuel Bundle [from one location in the Limerick Fuel Storage Pool to another location in the Limerick Fuel Storage Pool] and an announcement was made to evacuate the Refuel Floor due to a fire, how would the actions you just performed / simulated here be different if you were at Limerick [on a Limerick Refuel Platform])?</p> <p>Note to Evaluator – If the examinee asks for a copy of the Limerick Procedure 'S97.0.M 'Refueling Platform Operation', then:</p> <p>(CUE: Provide examinee with a copy of S97.0.M)</p>	D	<p>The answer to the question is: The actions performed here for an evacuation due to a fire are the same that would be done at Limerick. While there are minor differences in the bridge controls between PBAPS and Limerick, in both places, the Refuel Platform must be in a 'safe' condition prior to evacuating (no irradiated fuel hanging from the Refuel Platform).</p> <p>Note to Evaluator – The answer to the follow up question does not have to be answered by the trainee using the exact words that are shown above.</p>
<p>Notes to Evaluator</p> <p>A) After the examinee has answered all required follow-up questions, the evaluator may terminate this JPM. The end time for the JPM may be recorded here. _____.</p> <p>B) As an evaluator, ensure you have positive control of all exam material provided to the examinee ('Task Conditions / Prerequisites &amp; Initiating Cue' sheet' AND procedures).</p>			

Under "ACT" P - must perform  
S - must simulate  
D- must discuss

I. TERMINATING CUE

When the examinee has answered all follow-up questions, then the evaluator may terminate the JPM.

# TASK CONDITIONS / PREREQUISITES AND INITIATING CUE

## TASK CONDITIONS/PREREQUISITES

1. There are NO irradiated components grappled to any Refuel Platform Hoist.
2. The auxiliary hoists are full up.
3. All of the applicable Prerequisites for procedure FH-35 have been completed for Dummy Bundle transfer in the Spent Fuel Pool.
4. All applicable Prerequisites of procedure SO 18.1.A-2(3) have been completed for Dummy Bundle transfer in the Spent Fuel Pool.
5. All applicable portions of SO 18.1.C-2(3) 'Electrical, Mechanical, and Pneumatic Alignment / Checkout of Refueling Platform' have been completed.

## INITIATING CUE

1. The Fuel Handling Director directs you to perform the necessary steps to move the (Unit 2 / Unit 3) Dummy Fuel Bundle in accordance with the attached CCTAS and in accordance with SO 18.1.A-2(3). You are to perform the NEXT two (2) CCTAS moves. The Refuel Platform must be operated in the Manual mode.
2. For the entire evolution, you will treat the Dummy Fuel Bundle as if the Dummy Fuel Bundle is actual irradiated fuel.
3. You are to PERFORM this activity as the Refuel Platform Operator.

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE										
PROGRAM:	Limited Senior Reactor Operator	CODE #:	NLSRO-3065										
COURSE:	LSRO Initial & LSRO Requalification	REV #:	000										
AUTHOR:	G. W. Zellmer	TYPIST:	gwz										
TITLE:	Fuel Support Piece Removal using FSP Grapple (Alternate Path due to Fault Lockout)												
APPROVALS:	<table border="0"> <tr> <td><i>Donald W. Zellmer</i> Signature / Title</td> <td><i>1/15/2010</i> Date</td> </tr> <tr> <td><i>John J. Mc...</i> Signature / Title</td> <td><i>5/24/10</i> Date</td> </tr> <tr> <td><i>John</i> Signature / Title</td> <td><i>5/26/10</i> Date</td> </tr> <tr> <td><i>J. P...</i> Signature / Title</td> <td><i>5-26-10</i> Date</td> </tr> <tr> <td><i>Jim McC...</i> Signature / Title</td> <td><i>6/10/10</i> Date</td> </tr> </table>			<i>Donald W. Zellmer</i> Signature / Title	<i>1/15/2010</i> Date	<i>John J. Mc...</i> Signature / Title	<i>5/24/10</i> Date	<i>John</i> Signature / Title	<i>5/26/10</i> Date	<i>J. P...</i> Signature / Title	<i>5-26-10</i> Date	<i>Jim McC...</i> Signature / Title	<i>6/10/10</i> Date
<i>Donald W. Zellmer</i> Signature / Title	<i>1/15/2010</i> Date												
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<i>John</i> Signature / Title	<i>5/26/10</i> Date												
<i>J. P...</i> Signature / Title	<i>5-26-10</i> Date												
<i>Jim McC...</i> Signature / Title	<i>6/10/10</i> Date												
APPROVED FOR USE:	<table border="0"> <tr> <td><i>Jim McC...</i> Signature / Title</td> <td><i>6/10/10</i> Date</td> </tr> </table>			<i>Jim McC...</i> Signature / Title	<i>6/10/10</i> Date								
<i>Jim McC...</i> Signature / Title	<i>6/10/10</i> Date												
EFFECTIVE DATE:	<u>6 / 10 / 10</u>												

NAME: _____ Last First M.I.	ISSUE DATE: _____
EMPLOYEE ID NO. _____	COMPLETION DATE: _____
COMMENTS:	
Training Review for Completeness:	LMS CODE: _____
_____ Signature/Date	LMS ENTRY: _____



6. Though not required, this JPM is designed to be given on the Refuel Floor and associated areas.

B. TOOLS AND EQUIPMENT

1. Copy of 'Conditions / Prerequisites And Initiating Cue' sheet
2. Access to M-C-741-301 'Control Rod Blade, FSP And Control Rod Guide Tube Removal And Installation'
3. Access to SO 18.1.A-2(3) 'Operation of Refueling Platform'
4. Access to S97.0.M 'Refueling Platform Operation'

C. REFERENCES

1. M-C-741-301 Rev. 26 'Control Rod Blade, FSP And Control Rod Guide Tube Removal And Installation'
2. SO 18.1.A-2(3) Rev 22 'Operation of Refueling Platform'
3. S97.0.M Rev. 27 'Refueling Platform Operation'

D. TASK STANDARD

1. Satisfactory task completion is indicated when the FSP is raised through the Top Guide.
2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to continue Fuel Support Piece (FSP) removal at core location 30-31 per M-C-741-301 step 5.3.5 using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Fuel shuffle part 1 has been completed on PBAPS Unit \_\_\_\_ (Unit 2 / Unit 3).
2. Control Cell 30-31 is having the Fuel Support Piece (FSP) removed using the PBAPS FSP Grapple & Grid Guide connected to the Monorail Hoist.
3. Core Configuration is shown on the attached core view.
4. The Reactor Cavity Work Platform (RCWP) is NOT installed.
5. M-C-741-301 Attachment 11 is provided and was filled in when the first FSP replacements occurred (previous shift).

6. The CCTAS is approved (current step is provided – see below).

STEP NO.	COMPONENT SERIAL NO.	MOVED FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	CRO	WRNM	DATE	TIME
									COUNTRATE		
									A B C D E F G H		
86	SUP PC	30-31	SW	P SPENT	NONE				N/A		

7. All prerequisites for FSP replacement are met, and M-C-741-301 steps 5.3.1 through 5.3.4 have been completed for core location 30-31.
8. All procedure FH-6C, GP-26, and SO 18.1.A-2(3) prerequisites and associated steps are complete for the FSP replacement at core location 30-31.
9. The FSP Grapple is currently empty (released) and is positioned at the 'Full up position' (the Monorail Hoist Pendant Control indicates a load of 100 lbs).
10. The Monorail Hoist is positioned over the Core at location 30-31.
11. You (the FHD) have a complete Refuel Platform crew available to you, including the RPO which is stationed at the Monorail Hoist Pendant Control.

**G. INITIATING CUE**

The Control Room Supervisor directs you (as the Fuel Handling Director [FHD]) to continue the FSP removal at core location 30-31 in accordance with M-C-741-301 steps 5.3.5 through and including step 5.3.16.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
Notes to Evaluator			
<p>A) The 'Task Conditions / Prerequisites &amp; Initiating Cue' sheets that are given to the examinee prior to the start of the JPM include JPM pages 12, 13, 14, 15, and 16.</p> <p>B) A Copy of M-C-741-301 and SO 18.1.A-2(3) procedures is to be given to the examinee with the 'Task Conditions / Prerequisites &amp; Initiating Cue' sheets (evaluator to select the appropriate Unit 2 or Unit 3 procedure).</p> <p>C) If the examinee asks to review the FH-6C and/or GP-26 procedures, it is within the scope of this JPM for the evaluator to provide a copy of these procedures to the examinee.</p> <p>D) The examinee (as the FHD) will either perform (<u>simulate</u>) or <u>direct</u> that the following steps be taken.</p> <p>E) The JPM start time may be recorded here</p>			
*1	<p>Direct the RPO to 'ENGAGE' the FSP Grapple.</p> <p>(Cue: The component that you identified is in the condition that you described.)</p> <p>(Cue: If asked for camera view, then provide "No camera view is available.")</p>	S	<p>RPO is directed to "ENGAGE" the Monorail FSP Grapple.</p>
*2	<p>Direct the RPO to 'Lower hoist until grapple enters top guide, then ensure grapple is oriented properly to align with anti-rotation pin at corner of control cell (Southwest)'. (CUE: The grapple starts to lower but after the grapple travels two (2) feet in the down direction, the grapple motion abruptly stops followed by a report from the RPO that an 'Interlock Status Display Annunciator' is currently up and indicates a 'Fault Lockout' condition. The Refuel Platform will NOT respond to controls.) (CUE: Provide the examinee with a copy of the 'Interlock Status Display' [page 11].)</p>	S	<p>RPO is directed to lower the grapple while maintaining the proper Grapple orientation (Southwest).</p> <p>Note -- If any system or equipment required to perform work becomes inoperable or malfunctions, stop operations until the required system or equipment is returned to service (step 3.2.7 of M-C-741-301).</p> <p>*****            Note -- Start Of Alternate Path            *****</p>

STEP NO	STEP	ACT	STANDARD
3	<p>Notify Control Room of the 'Fault Lockout' condition.</p> <p>(CUE: Acknowledge the report of the 'Fault Lockout' condition AND provide the following report → "One of the OEM technicians (<i>Original Equipment Manufacturer's technicians</i>) opened a trolley deck cabinet door. The trolley deck cabinet doors are now closed AND the 'Fault Lockout' annunciator is clear. If there are NO other abnormal conditions present, then Shift Management is directing you to reset the P.L.C. AND to continue with the FSP Removal.)</p>	S	<p>When operating equipment, If it does not perform as expected, then place the equipment in a safe condition and inform Shift Management.</p>
*4	<p>Direct the RPO to 'depress the Refuel Platform 'START' pushbutton'.</p> <p>(CUE: "Refuel Platform 'START' pushbutton is depressed; all <u>Refuel Bridge</u> indications are as expected [as they were before the Fault Lockout condition – Monorail Hoist is two [2] feet lower than the normal full up position].")</p> <p>(CUE: If examinee request maintenance to perform a checkout / diagnostic of the Bridge functions, then provide the examinee with the following – "Maintenance determines that all Bridge functions are operating normally.")</p>	S	<p>RPO is direct to depress the Refuel Platform "START" pushbutton (to resume Platform operation).</p> <p>Note to Evaluator – Start pushbutton must be pressed to resume platform operation after 'Fault Condition is cleared (SO 18.1.A-2[3] Att. 1).</p> <p>*****</p> <p>Note -- End Of Alternate Path</p> <p>*****</p>

STEP NO	STEP	ACT	STANDARD
*5	<p>Direct RPO to 'lower hoist until grapple enters top guide, then ensure grapple is oriented properly to align with anti-rotation pin at corner of control cell (Southwest orientation)'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p> <p>(CUE: If examinee directs hoist movement WITHOUT directing the 'START' pushbutton to be depressed (step 5), then provide the examinee with the following – "Hoist and Bridge will NOT move")</p>	S	<p>RPO is directed to lower the grapple while maintaining the proper Grapple orientation (Southwest).</p> <p>Note to Evaluator – This step is completing what the examinee started in step 2 (but was NOT able to complete due to the Fault Lockout).</p>
*6	<p>Direct the RPO to 'continue to lower grapple through top guide to just above the FSP'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p>	S	<p>RPO is directed to lower the Monorail Grapple UNTIL the grapple is just above the FSP.</p>
*7	<p>Direct the RPO to ensure the 'RELEASE' push-button on the Monorail Hoist pendant control is actuated..</p> <p>(CUE: The component that you identified is in the condition that you just described.)</p>	S	<p>RPO is directed to verify the "RELEASE" push-button is depressed on the Hoist pendant control (to release the FSP Grapple).</p>
*8	<p>Direct the RPO to 'lower the FSP Grapple fully onto the FSP'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p>	S	<p>RPO is directed to lower the FSP Grapple fully onto the FSP.</p>

STEP NO	STEP	ACT	STANDARD
9	<p>Direct the RPO to 'Pull down on and hold air hoses to verify there is no tension in hoses'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p>	S	RPO is directed to pull down on and hold air hoses to verify there is no tension in the hoses.
*10	<p>Direct the RPO to 'actuate the "ENGAGE" push-button on the Monorail hoist pendant control and pause a minimum of 10 seconds to allow air cylinders to stroke'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p>	S	<p>RPO is directed to depress the Monorail Hoist Pendant Control "ENGAGE" push-button and pause for 10 seconds.</p> <p>Note to Evaluator – For the examinee to obtain credit for this critical task, the examinee must <u>EITHER</u> pause at least 10 seconds before going on to the next step <u>OR</u> the examinee must verbally state that at least 10 seconds must pass before manually lifting the FSP grapple.</p>
11	<p>Direct the RPO to manually lift the FSP grapple enough to take weight of the FSP.</p> <p>(Cue: "The component that you identified is in the condition that you just described. <u>The RPO reports that the load indicator on the Monorail Hoist Pendant Control indicates 160.</u>")</p>	S	RPO is directed to manually lift the FSP Grapple and verify the load indicator on the Monorail Hoist Pendant Control is greater than 100 lbs and less than or equal to 165 lbs.
*12	<p>Direct the RPO to 'bump the Hoist up approximately 6 inches'.</p> <p>(Cue: The component that you identified is in the condition that you just described.)</p> <p>(Cue: If examinee asks the indication on the load indicator, then- "The load indicator on the Monorail Hoist Pendant Control reads 160.")</p>	S	RPO is directed to raise the FSP Grapple approximately 6 inches.

STEP NO	STEP	ACT	STANDARD
*13	<p>Direct the RPO to 'raise the FSP through top guide and above the core'.</p> <p>(CUE: FSP is through the top guide and above the core.) this completes the simulated portion of the JPM. There may be follow up question(s) that need to be addressed.)</p>	S	<p>RPO is directed to raise the FSP through the top guide and above the core.</p> <p>Note to Evaluator – It is permissible for this action to be done in a series of steps.</p>
14	<p>Notify Control Room Supervisor that the FSP at Core location 30-31 has been removed in accordance with M-C-741-301 up to and including step 5.3.16.</p> <p>(CUE: Acknowledge the report and end the performance portion of this JPM.)</p>	S	<p>Notify Supervisor of task completion.</p>
<p><b>Note to Evaluator</b></p> <p>The following step ONLY applies for Requal Examinations (i.e. Step 15 is NOT applicable to Initial Exams).</p>			
15	<p>(Cue: "If you were removing a Fuel Support Piece (FSP) at Limerick using M-C-741-301, how would your actions at Limerick be different than the actions that you just simulated here?")</p> <p>(CUE: If the examinee asks to see a copy of the Limerick procedure S97.0.M, then provide the examinee with a copy of the S97.0.M procedure AND re-read the follow up question to the examinee [if necessary].)</p>	S	<p>Answer: The actions would be similar. At Limerick, there is a different style FSP grapple that is used and therefore, no need to "ENGAGE" the empty grapple while the grapple is going through the top guide. Also, at Limerick, the opening of the trolley deck cabinet doors do NOT cause a Fault Lockout condition of the Refuel Platform.</p> <p>Note to Evaluator – The answer to the follow up question does not have to be answered by the trainee using the exact words that are shown above.</p>

STEP NO	STEP	ACT	STANDARD
<p>Notes to Evaluator</p> <p>A) After the examinee has answered all follow-up questions, the evaluator may terminate this JPM. The end time for the JPM may be recorded here. _____.</p> <p>B) As an evaluator, ensure you have positive control of all exam material provided to the examinee ('Task Conditions / Prerequisites &amp; Initiating Cue' sheet' AND procedures).</p>			

Under "ACT" P - must perform  
S - must simulate  
D- must discuss

I. TERMINATING CUE

When the FSP has been raised and the examinee has answered applicable follow up question(s), then the JPM may be terminated.

# Interlock Status Display

## INTERLOCK STATUS DISPLAY

BRIDGE POS

TROLLEY POS

30.00

31.00

FUEL  
HOIST  
INTERLK

ROD BLK  
INTERLK  
#1

ROD BLK  
INTERLK  
#2

BRIDGE  
REVERSE  
STOP #1

BRIDGE  
REVERSE  
STOP #2

BACKUP  
HOIST  
LMIT

SAFETY  
TRAVEL  
INTERLK

**FAULT  
LOCKOUT**

TEST  
IN  
PROG

MONO  
HOIST  
INTERLK

FRAME  
HOIST  
INTERLK

# TASK CONDITIONS / PREREQUISITES AND INITIATING CUE

## TASK CONDITIONS/PREREQUISITES

1. Fuel shuffle part 1 has been completed on PBAPS Unit \_\_\_ (Unit 2 / Unit 3).
2. Control Cell 30-31 is having the Fuel Support Piece (FSP) removed using the PBAPS FSP Grapple & Grid Guide connected to the Monorail Hoist.
3. Core Configuration is shown on the attached core view.
4. The Reactor Cavity Work Platform (RCWP) is NOT installed.
5. M-C-741-301 Attachment 11 is provided and was filled in when the first FSP replacements occurred (previous shift).
6. The CCTAS is approved (current step is provided – see below).

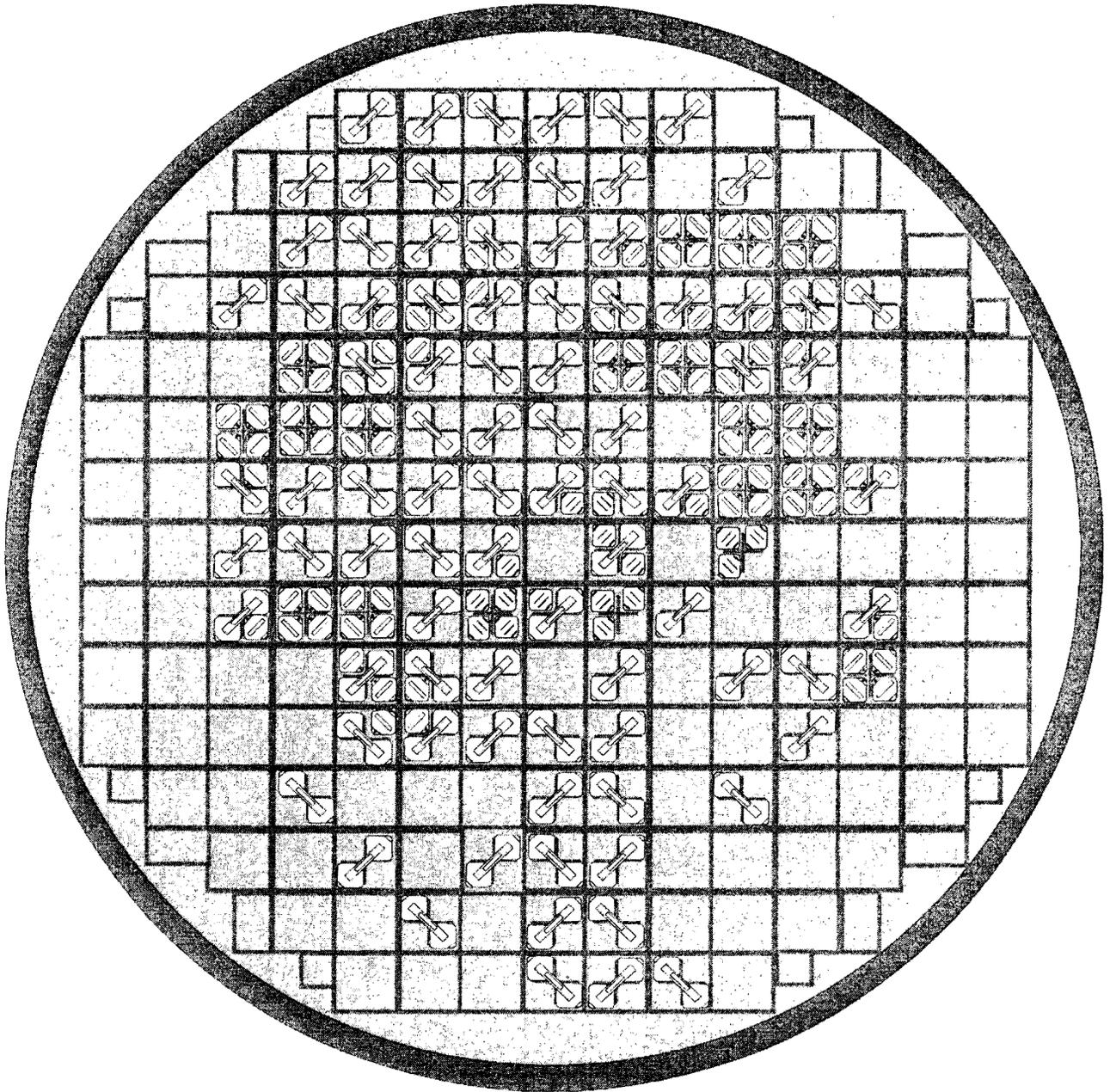
STEP NO.	COMPONENT SERIAL NO.	MOVED FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	CRO	WRNM	DATE	TIME
									COUNTRATE		
									ABCDEFGHIH		
86	SUP PC	30-31	SW	P_SPENT	NONE				N/A		

7. All prerequisites for FSP replacement are met, and M-C-741-301 steps 5.3.1 through 5.3.4 have been completed for core location 30-31.
8. All procedure FH-6C, GP-26, and SO 18.1.A-2(3) prerequisites and associated steps are complete for the FSP replacement at core location 30-31.
9. The FSP Grapple is currently empty (released) and is positioned at the 'Full up position' (the Monorail Hoist Pendant Control indicates a load of 100 lbs)
10. The Monorail Hoist is positioned over the Core at location 30-31.
11. You (the FHD) have a complete Refuel Platform crew available to you, including the RPO which is stationed at the Monorail Hoist Pendant Control.

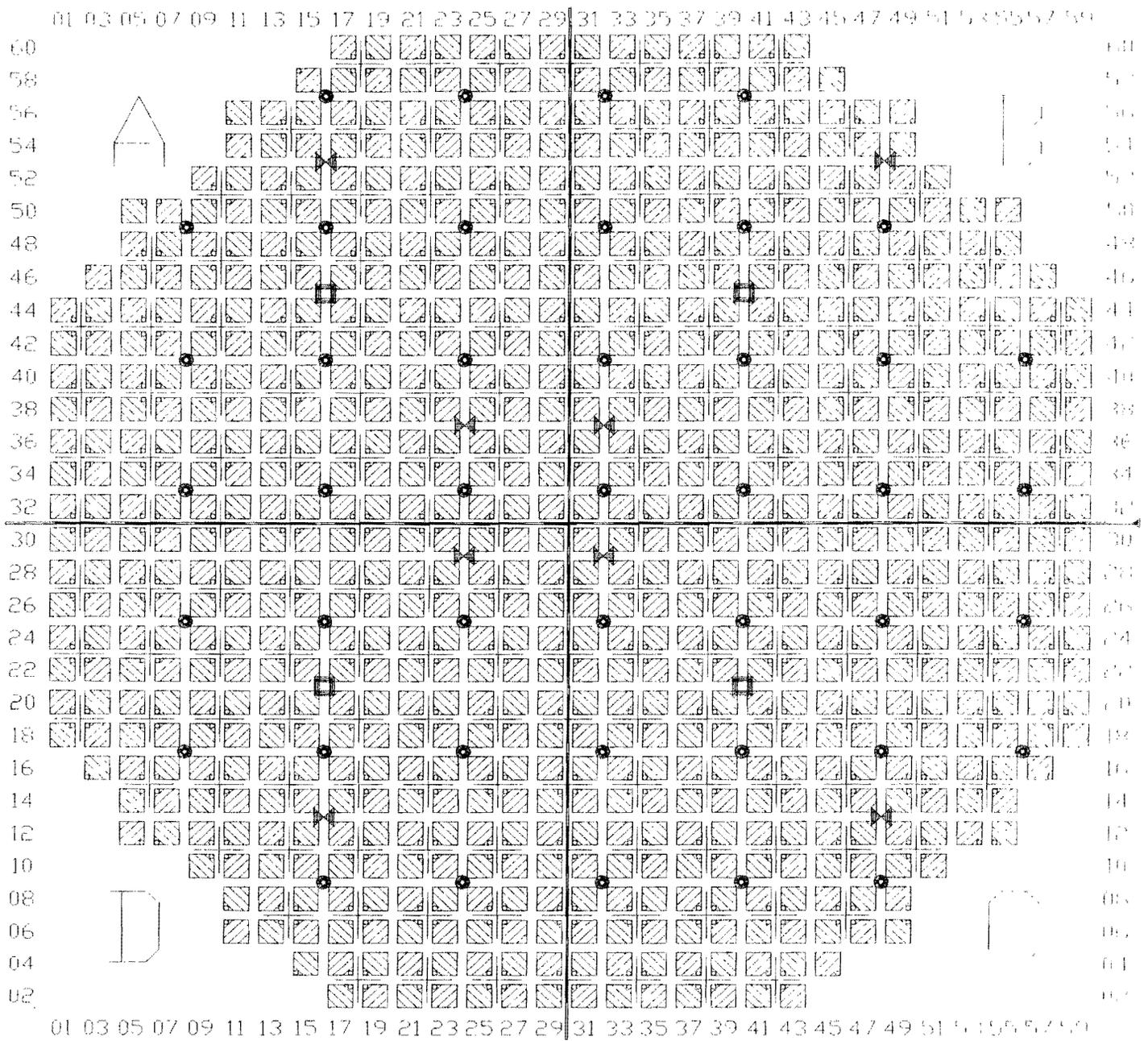
## INITIATING CUE

The Control Room Supervisor directs you (as the Fuel Handling Director [FHD]) to continue the FSP removal at core location 30-31 in accordance with M-C-741-301 steps 5.3.5 through and including step 5.3.16.

W ↑



CORE VIEW (FROM TOP)



## PBAPS CORE MAP

# WEIGHT INDICATIONS DURING CRB EXCHANGE (Hoist Raising Direction)

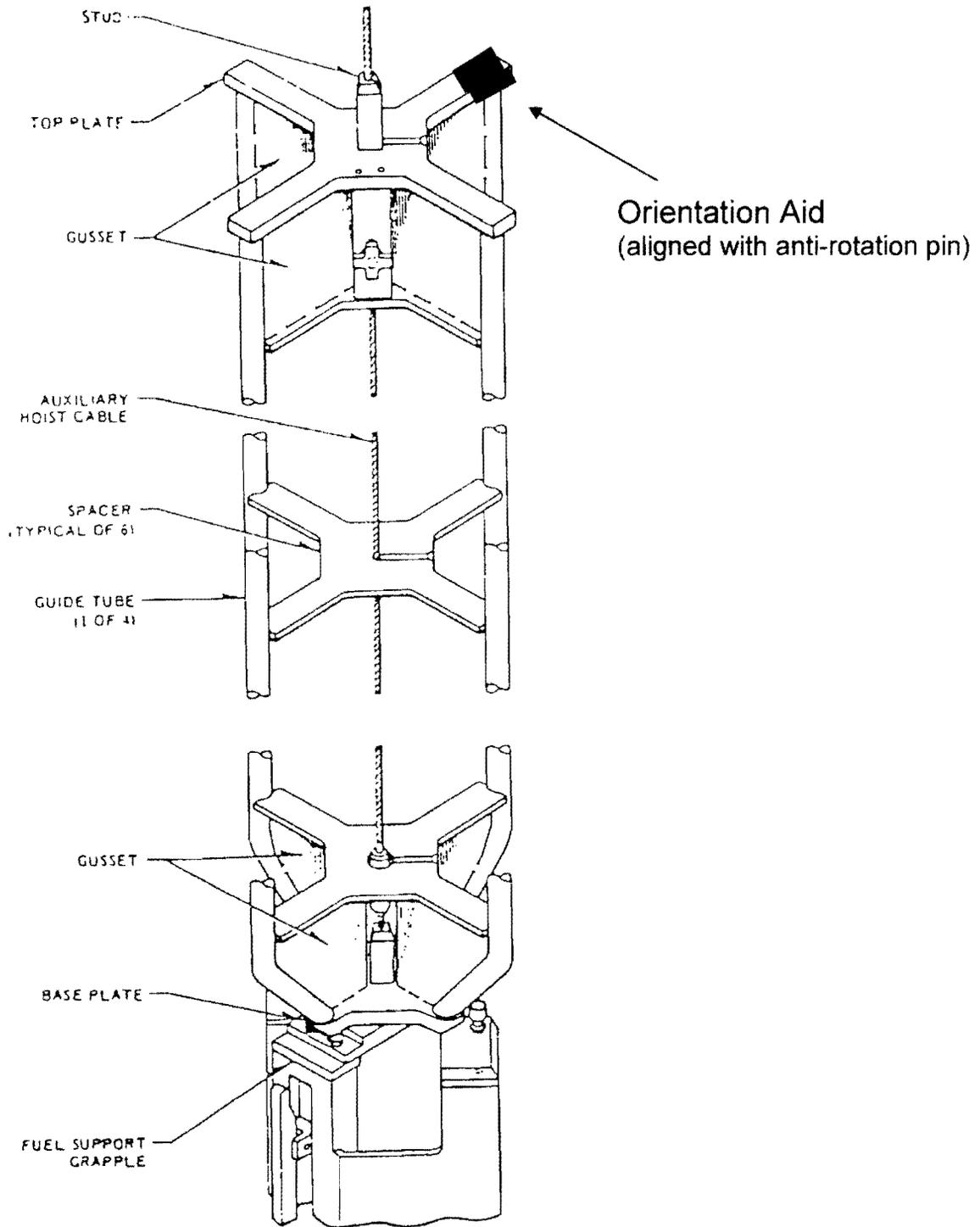
● FSP Lift\*: 160

● CRB Lift: 300  
(Mark N/A if using NES Combined Grapple)

● FSP + CRB Lift: N/A  
(Combined Grapple only)

● Grapple Empty: 100

\* When using NES Combined Grapple, FSP only weight can only be detected within approx. the first 3 inches of grapple motion.



GRID GUIDE and Orientation Aid