

INITIAL SUBMITTAL

ST. LUCIE EXAM
50-335, 389/2001-301

MAY 14 - 18 & 21 - 25, 2001

INITIAL SUBMITTAL

DRAFT

INITIAL OUTLINE SUBMITTALS
NRC SUBMITTED/WRITTEN OUTLINES

St. Lucie Initial Exam Outline Comments

RO OUTLINE

EXAM	TIER	GROUP	CAT	COMMENT
RO	1	1	BW/E09	CLARIFY THAT THIS IS FROM CE/A13, NATURAL CIRC
RO	1	1	000040	CLARIFY THAT THIS K/A APPEARS UNDER CE E05 EA2.2 OR CHANGE DESCRIPTION TO MATCH EA2.1
RO	1	1	CE/A11	SRO IMPORTANCE FOR AK3.3 IS 3.5, NOT 3.3
RO	1	1	000074	HIGHLIGHT THE FACT THAT THIS IS 000074, NOT W/E06&7. ALSO, EK2.2.05 DOESN'T EXIST – SHOULD BE EK2.05
RO	1	2	000003	AA2.02 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000007	CLARIFY THAT THIS IS FROM CE/E02
RO	1	2	000008	A2.03 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000011	G2.4.14 – IMPORTANCE VALUES SHOULD BE 3.0/3.9, NOT 3.3/3.9
RO	1	2	000037	AA2.13 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000054	G.2.4.45 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	2	1	001	PLACE "7" IN PLACE OF "." IN IMPORTANCE VALUES FOR K6.11
RO	2	1	071	G2.1.32 – IMPORTANCE VALUES SHOULD BE 3.4/3.8
RO	2	2	063	"K2.01" SHOULD BE "K2.01." IMPORTANCE VALUES SHOULD BE 3.4/3.8.
RO	2	3	028	G2.4.21 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.1.7	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.1.11	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.1	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.11	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.30	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.4.21	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41

SRO OUTLINE

EXAM	TIER	GROUP	CAT	COMMENT
SRO	1	1	000055	EA1.06 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	1	000068	AK2.07 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	1	000069	AK2.03 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	2	000022	SRO OUTLINE SHOWS AA1.01 AS "BOTH" RO OUTLINE SHOWS AA1.08 AS "BOTH." NEITHER APPEARS ON BOTH OUTLINES.
SRO	2	1	003	A2.01 SHOULD BE A2.02, OR K/A DESCRIPTION/IMPORTANCE SHOULD BE CHANGED.
SRO	2	1	003	RO OUTLINE SHOWS K3.04 AS "BOTH" BUT DOES NOT APPEAR ON SRO EXAM
SRO	2	1	015	A2.05 – IMPORTANCE VALUES SHOULD BE 3.3/3.8, VICE 3.3/3.5
SRO	2	1	063	"K2.01" SHOULD BE "K2.01"
SRO	2	2	002	A1.04 – CORRECT TYPOS
SRO	2	3	005	G2.4.2 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	3		G2.4.40	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43

St. Lucie Initial Exam Outline Comments

ADMINISTRATIVE TOPICS OUTLINE

EXAM	JPM	COMMENT
BOTH	GENERAL	K/A DESIGNATORS SHOULD BEGIN WITH "G," NOT "K"
RO	A.1.b	G.2.1.7 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.3	G2.3.10 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.4	2.4.41 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.4	2.4.41 – RO IMPORTANCE VALUE < 2.5. EXPLAIN WHY THIS IS ACCEPTABLE.

SIMULATOR SCENARIOS

SCENARIO	EVENT	COMMENT
ALL	GENERAL	CONSIDER SPECIFYING WHERE SRO CREDIT IS ACCRUED (E.G. C-SRO)
1	6	BOP OPERATOR SHOULD BE IDENTIFIED AS HANDLING EDG ISSUES
ALL	GENERAL	WHEN DEVELOPING EVENTS, ENSURE AREAS EVALUATING SRO COMPETENCY WITH TS SHOULD BE IDENTIFIED



March 28, 2001

Mr. Mark Miller
USNRC Region II
Atlanta Federal Center
61 Forsyth Street S.W.
Atlanta, Ga. 30303-3415

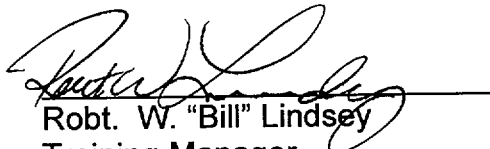
Mark,

Enclosed, please find the RO/SRO operating test and RO/SRO written exams with the following checklists:

- Operating Test Quality Checklist ES-301-3
- Simulator Scenario Quality Checklist ES-301-4
- RO/SRO Written Exam Quality Checklist ES-401-7
- Transient and Event Checklist ES-301-5
- Competencies Checklist ES-301-6

Please withhold the written and operating test from public disclosure until after the examinations are complete.

Sincerely,



Robt. W. "Bill" Lindsey
Training Manager
St. Lucie Plant

PSL-TRN-01-007

Facility: <u>ST. LUCIE</u>		Date of Exam: <u>5-14-01</u>		Exam Level: <u>RO/SRO</u>																																
Item Description				Initial																																
				a	b*	c#																														
1.	Questions and answers technically accurate and applicable to facility			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
4.	No more than 25 questions are duplicated from [practice exams, quizzes, and] the last two NRC licensing exams; enter the actual number of duplicated questions at right	NRC	Other	<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
		<u>1</u>	<u>4</u>																																	
5.	[No (Less than 5 percent) question duplication from the license screening/audit exam (if independently written)]			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
6.	Bank use meets limits (no more than 50 percent from the bank, at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New	<u>✓</u>	<u>Pyg</u>	<u>msm</u>																													
		<u>5</u>	<u>7</u>	<u>88</u>																																
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right	Memory	C/A		<u>✓</u>	<u>Pyg</u>	<u>msm</u>																													
		<u>46</u>	<u>54</u>																																	
8.	References/handouts provided do not give away answers			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
9.	Question distribution meets previously approved examination outline; deviations are justified			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
10.	Question psychometric quality and format meet ES, Appendix B, guidelines			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet			<u>✓</u>	<u>Pyg</u>	<u>msm</u>																														
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<p>Note: * The facility reviewer's signature is not applicable for NRC-developed examinations; two independent NRC reviews are required.</p> <p># See special instructions (Section E.2.c) for Items 1, 4, 5, and 6.</p> <p>[] The items in brackets do not apply to NRC-prepared examinations.</p>																																				

Facility: <u>ST. LUCIE</u>		Date of Exam: <u>5.14.01</u>		Exam Level: RO <u>SRO</u>																	
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				a	b*	c#															
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2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available			<u>✓</u>	<u>Ref</u>	<u>mean</u>															
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401			<u>✓</u>	<u>Ref</u>	<u>mean</u>															
4.	No more than 25 questions are duplicated from [practice exams, quizzes, and] the last two NRC licensing exams; enter the actual number of duplicated questions at right	NRC	Other	<u>✓</u>	<u>Ref</u>	<u>mean</u>															
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11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet			<u>✓</u>	<u>Ref</u>	<u>mean</u>															
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* UPON REVIEW & RESOLUTION OF COMMENTS, ACTUAL COUNT 44 MEMORY & 56 C/A.

Facility: <u>ST. LUCIE</u>		Date of Examination: <u>5.14.01</u>		Operating Test Number: <u>1</u>	
1. GENERAL CRITERIA			Initials		
			a	b	c
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
c.	The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
2. WALK-THROUGH (CATEGORY A & B) CRITERIA			--	--	--
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> initial conditions initiating cues references and tools, including associated procedures validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee specific performance criteria that include: <ul style="list-style-type: none"> detailed expected actions with exact criteria and nomenclature system response and other examiner cues statements describing important observations to be made by the applicant criteria for successful completion of the task identification of critical steps and their associated performance standards restrictions on the sequence of steps, if applicable 	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
b.	The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
d.	At least 20 percent of the JPMs on each test are new or significantly modified.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
3. SIMULATOR (CATEGORY C) CRITERIA			--	--	--
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	<u>LC</u>	<u>RJ</u>	<u>MSM</u>	
Printed Name / Signature		Date			
a. Author	<u>LARRY RICH</u>	<u>3-27-01</u>			
b. Facility Reviewer(*)	<u>Robert W. Lindsey</u>	<u>3/27/01</u>			
c. NRC Chief Examiner (*)	<u>MARK S. MINER</u>	<u>4/30/01</u>			
d. NRC Supervisor (*)	<u>MIKE ERNSTES</u>	<u>5/10/01</u>			
(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.					

Facility: ST. LUCIE		Date of Exam: 5.14.01		Scenario Numbers: 11213		Operating Test No.: 1	
QUALITATIVE ATTRIBUTES			Initials				
			a	b	c		
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
2.	The scenarios consist mostly of related events.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
3.	Each event description consists of <ul style="list-style-type: none"> the point in the scenario when it is to be initiated the malfunction(s) that are entered to initiate the event the symptoms/cues that will be visible to the crew the expected operator actions (by shift position) the event termination point (if applicable) 	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
5.	The events are valid with regard to physics and thermodynamics.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
8.	The simulator modeling is not altered.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	<i>LC</i>	<i>Ry</i>	<i>msm</i>			
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)		Actual Attributes	-	-	-	-	
1.	Total malfunctions (5-8)	7, 7, 8	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
2.	Malfunctions after EOP entry (1-2)	2, 2*, 2*	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
3.	Abnormal events (2-4)	4, 4, 5	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
4.	Major transients (1-2)	1, 1, 1	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
5.	EOPs entered/requiring substantive actions (1-2)	1*, 1*, 1*	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
6.	EOP contingencies requiring substantive actions (0-2)	0, 0, 0	<i>LC</i>	<i>Ry</i>	<i>msm</i>		
7.	Critical tasks (2-3)	3, 3 ^{tr} , 2	<i>LC</i>	<i>Ry</i>	<i>msm</i>		

* 3 IF STEAM BOUND AC AFW PUMP IS COUNTED *msm*

** 2 EOPS EOP-1 & 4 *msm*

† - 2 EOPS - EOP-1 & 6 *msm*

†† - 4 CRIT TASKS *msm*

Y - MALFS AFTER EOP ENTRY - 3 *msm*

X - 2 EOPS - EOP-1 & 3

OPERATING TEST NO.: 1-RO1

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	2	3	4
RO ✓	Reactivity	1 1	1			
	Normal	1 1	1			
	Instrument	2 2	2.7			
	Component	2 2	3.4			
	Major	1 2	5.6			

As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

- Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

NOTE: NORMAL FOR EVENT 1 IS CHPP START; P22 REACT - REACTIVITY IS EQUAL DOWNPOWER ASYM

OPERATING TEST NO.: 1 - ROZ

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	2	3	4
RO ✓	Reactivity	1 1	1			
	Normal	1 1	1			
	Instrument	2 2	2.7			
	Component	2 2	3.4			
	Major	1 2	5.6			
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

- Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
- (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

NOTE: NORMAL FOR SCENARIO 1 IS CHPP START. PER RECIRC - REACTIVITY IS ACTUAL DOWNPPOWER FROM

OPERATING TEST NO.: **1- R03**

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	2	3	4
RO ✓	Reactivity	1	1			
	Normal	1	1			
	Instrument	2 2	2.7			
	Component	2 2	3.4			
	Major	1 2	5.6			

As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

NOTE: NORMAL FOR SCENARIO 1 IS CHD SIBET 5 PER REGRE - REACTIVITY IS ACTUAL DOWNPPOWER M5M
 25 of 26 NUREG-1021, Revision 8

OPERATING TEST NO.: 1 - USRO1

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0 1	1*			
	Normal	1 1	1*			
	Instrument	1 2	2.7			
	Component	1 3	3.4.8			
	Major	1 2	5.6			

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: Chief Examiner: 

* NORMAL - CHARGING PUMP START / P22 REPAIR
 P - DOWNPOWER
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OPERATING TEST NO.: **1 - USRO 2**

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U ✓	Reactivity	0 1*	1			
	Normal	1 1*	1			
	Instrument	1 2	2.7			
	Component	1 3	3.4.8			
	Major	1 2	5.6			

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

* NORMAL - CHARGING PUMP START
 P - DOWNPOWER

OPERATING TEST NO.: 1 - USRO 3

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U ✓	Reactivity	0 1		6*		
	Normal	1 2		1.6*		
	Instrument	1 1		3		
	Component	1 3		2.5.8		
	Major	1 1		7		

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

* SHOULD BE EVENT 5

* APPLICANT WILL NOT BE CREDITED WITH EVENT 6 AS A NORMAL EVOLUTION, AS IT IS DOUBLE-COUNTING THE DOWNPOWER

OPERATING TEST NO.: 1 - ISRO1

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	②	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO ✓	Reactivity	1 1		6		
	Normal	0 1		1		
	Instrument	1 1		3		
	Component	1 1		2		
	Major	1 1		7		
SRO-I	Reactivity	0 1	1*			
	Normal	1 1	1			
	Instrument	1 2	2.7			
	Component	1 3	3.4.8			
	Major	1 2	5.6			
As SRO ✓	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

* NORMAL - CHFP START / PER REHL
 P - DOWNPOWER
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OPERATING TEST NO.: **1 - ISRO2**

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	②	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;"> As RO </div> <div style="margin-bottom: 10px;"> SRO-I </div> <div> As SRO </div> </div>	Reactivity	1 1	1 *			
	Normal	0 1	1			
	Instrument	1 2	2.7			
	Component	1 2	3.4			
	Major	1 2	5.6			
	Reactivity	0 1		6		
	Normal	1 2 **		1.6 **		
	Instrument	1 1		3		
	Component	1 3		2.5.8		
	Major	1 1		7		
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author:

Chief Examiner:

* NORMAL - CHPP
 P - DOWNPWR

** SHOULD BE 1 NORMAL @ EVENT #1

OPERATING TEST NO.: **1-ISR03**

Applicant Type	Evolution Type	Minimum Number	Scenario Number																																																																																																								
			①	②	3	4																																																																																																					
RO	Reactivity	1																																																																																																									
	Normal	1																																																																																																									
	Instrument	2																																																																																																									
	Component	2																																																																																																									
	Major	1																																																																																																									
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <div style="font-size: 2em;">✓</div> <div>As RO</div> </div> <table border="1"> <tbody> <tr><td>Reactivity</td><td>1</td><td>1</td><td></td><td>6</td><td></td><td></td></tr> <tr><td>Normal</td><td>0</td><td>1</td><td></td><td>1</td><td></td><td></td></tr> <tr><td>Instrument</td><td>1</td><td>1</td><td></td><td>3</td><td></td><td></td></tr> <tr><td>Component</td><td>1</td><td>1</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>Major</td><td>1</td><td>1</td><td></td><td>7</td><td></td><td></td></tr> </tbody> </table> </div>	Reactivity	1	1		6			Normal	0	1		1			Instrument	1	1		3			Component	1	1		2			Major	1	1		7			<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <div style="font-size: 2em;">✓</div> <div>As SRO</div> </div> <table border="1"> <tbody> <tr><td>Reactivity</td><td>0</td><td>1</td><td>1*</td><td></td><td></td><td></td></tr> <tr><td>Normal</td><td>1</td><td>1</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>Instrument</td><td>1</td><td>2</td><td>2.7</td><td></td><td></td><td></td></tr> <tr><td>Component</td><td>1</td><td>3</td><td>3.4.8</td><td></td><td></td><td></td></tr> <tr><td>Major</td><td>1</td><td>2</td><td>5.6</td><td></td><td></td><td></td></tr> </tbody> </table> </div>	Reactivity	0	1	1*				Normal	1	1	1				Instrument	1	2	2.7				Component	1	3	3.4.8				Major	1	2	5.6				<table border="1"> <tbody> <tr><td>Reactivity</td><td>0</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Normal</td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Instrument</td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Component</td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Major</td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Reactivity	0						Normal	1						Instrument	1						Component	1						Major	1					
	Reactivity	1	1		6																																																																																																						
	Normal	0	1		1																																																																																																						
	Instrument	1	1		3																																																																																																						
	Component	1	1		2																																																																																																						
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SRO-I	Reactivity	0	1	1*																																																																																																							
	Normal	1	1	1																																																																																																							
	Instrument	1	2	2.7																																																																																																							
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	Normal	1																																																																																																									
	Instrument	1																																																																																																									
	Component	1																																																																																																									
	Major	1																																																																																																									

Instructions: (1)

Enter the operating test number and Form ES-D-1 event numbers for each evolution type.

(2)

Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author:

Chief Examiner:

* NORMAL - CAPP
 P - DOWNPWR

OPERATING TEST NO.: **1-ISR04**[†]

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	②	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				

As RO ✓	Reactivity	1	1			
	Normal	0	1			
	Instrument	1	2	2.7		
	Component	1	2	3.4		
	Major	1	2	5.6		
SRO-I As SRO ✓	Reactivity	0	1	6		
	Normal	1	2	1.6*		
	Instrument	1	1	3		
	Component	1	3	2.5.8		
	Major	1	1	7		

SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: _____

Chief Examiner: _____

* * SHOULD BE 1 NORMAL EV 1 MIN
 25 of 26

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† DUE TO SCHEDULING ISSUES, THIS CHECKLIST ACTUALLY APPLIES TO 1-ISR05 MIN

OPERATING TEST NO.: 1-ISR05[†]

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			①	②	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				

As RO ✓	Reactivity	1 1		6		
	Normal	0 1		1		
	Instrument	1 1		3		
	Component	1 1		2		
	Major	1 1		7		
SRO-I						
As SRO ✓	Reactivity	0 1	1*			
	Normal	1 1	1*			
	Instrument	1 2	2.7			
	Component	1 3	3.9.8			
	Major	1 2	5.6			

SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C12.a of Appendix D.

Author: Chief Examiner: 

* NORMAL - CHPP START
 p - DOWNPOWER

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[†] DUE TO SCHEDULING REQUIRES, THIS CHECKLIST ACTUALLY APPLIES TO 1-BRO 4 msm

Competencies	Applicant #1 <u>RO</u> SRO-I/SRO-U				Applicant #2 <u>RO</u> SRO-I/SRO-U				Applicant #3 <u>RO</u> SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	①	2	3	4	①	2	3	4	①	2	3	4
Understand and Interpret Annunciators and Alarms	45				45				45			
Diagnose Events and Conditions	23 45				23 45				23 45			
Understand Plant and System Response	2 7				2 7				2 7			
Comply With and Use Procedures (1)	4				4				4			
Operate Control Boards (2)	12 48				12 48				12 48			
Communicate and Interact With the Crew	12 58				12 58				12 58			
Demonstrate Supervisory Ability (3)	N/A				N/A				N/A			
Comply With and Use Tech. Specs. (3)	4				4				4			
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: Chief Examiner: 

Competencies	Applicant #1 RO/SRO-I/SRO-U				Applicant #2 RO/SRO-I/SRO-U				Applicant #3 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	①	2	3	4	①	2	3	4	1	②	3	4
Understand and Interpret Annunciators and Alarms	4 5				4 5					3 5		
Diagnose Events and Conditions	23 46				23 46					35 8		
Understand Plant and System Response	27 8				27 8					35 7		
Comply With and Use Procedures (1)	12 46				12 46					13 8		
Operate Control Boards (2)	N/A				N/A					N/A		
Communicate and Interact With the Crew	12 46				12 46					23 48		
Demonstrate Supervisory Ability (3)	24 56				24 56					36 8		
Comply With and Use Tech. Specs. (3)	4				4					2		
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author:

Chief Examiner:

Competencies	Applicant #1 RO <u>SRO-I</u> SRO-U				Applicant #2 RO <u>SRO-I</u> SRO-U				Applicant #3 RO <u>SRO-I</u> SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	①	②	3	4	①	②	3	4	①	2	3	4
Understand and Interpret Annunciators and Alarms	4 5	2 3			4 5	3 5			4 5	2 3		
Diagnose Events and Conditions	23 46	3 8			23 45	35 8			23 46	3 8		
Understand Plant and System Response	27 8	3 5			2 7	35 7			27 8	3 5		
Comply With and Use Procedures (1)	12 46	13 7			4 8	13 8			12 46	13 7		
Operate Control Boards (2)	N/A	13 6			12 48	N/A			N/A	13 6		
Communicate and Interact With the Crew	12 46	13 8			12 58	23 48			12 46	13 8		
Demonstrate Supervisory Ability (3)	24 56	N/A			N/A	36 8			24 56	N/A		
Comply With and Use Tech. Specs. (3)	4	2			4	2			4	2		
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author:

Chief Examiner:

Competencies	Applicant #14 RO/SRO-I/SRO-U				Applicant #15 RO/SRO-I/SRO-U				Applicant #3 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	①	②	3	4	①	②	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	4 5	3 5			4 5	2 3						
Diagnose Events and Conditions	23 45	35 8			23 46	3 8						
Understand Plant and System Response	2 7	35 7			27 8	3 5						
Comply With and Use Procedures (1)	4	13 8			12 46	13 7						
Operate Control Boards (2)	12 48	N/A			N/A	13 6						
Communicate and Interact With the Crew	12 58	23 48			12 46	13 8						
Demonstrate Supervisory Ability (3)	N/A	36 8			24 56	N/A						
Comply With and Use Tech. Specs. (3)	4	2			4	2						
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author:

Chief Examiner:

Facility: <u>FPL St. Lucie Nuclear Plant</u>		Date of Examination: <u>5/14/01</u>		
Item	Task Description	Initials		
		a	b*	c
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	b. Assess whether the outline was systematically prepared and whether all knowledge and ability categories are appropriately sampled.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	d. Assess whether the repetition from previous examination outlines is excessive.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
2. S I M	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
3. W / T	a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	d. Check for duplication and overlap among exam sections.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	e. Check the entire exam for balance of coverage.	<u>LC</u>	<u>RJ</u>	<u>msm</u>
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	<u>LC</u>	<u>RJ</u>	<u>msm</u>
a. Author	<u>LAWRENCE M RICH</u>		Printed Name / Signature	Date
b. Facility Reviewer(*)	<u>Robert W Lindsey</u>		<u>Robert W Lindsey</u>	<u>2/21/01</u>
c. Chief Examiner	<u>MARK S. MILLER</u>		<u>Mark S. Miller</u>	<u>2/23/01</u>
d. NRC Supervisor	<u>MIKE ERNSTES / Mike S. A</u>		<u>Mike Ernestes</u>	<u>3/6/01</u> <u>4/22/01</u>

(*) Not applicable for NRC-developed examinations.

St. Lucie Initial Exam Outline Comments

RO OUTLINE

EXAM	TIER	GROUP	CAT	COMMENT
RO	1	1	BW/E09	CLARIFY THAT THIS IS FROM CE/A13, NATURAL CIRC
RO	1	1	000040	CLARIFY THAT THIS K/A APPEARS UNDER CE E05 EA2.2 OR CHANGE DESCRIPTION TO MATCH EA2.1
RO	1	1	CE/A11	SRO IMPORTANCE FOR AK3.3 IS 3.5, NOT 3.3
RO	1	1	000074	HIGHLIGHT THE FACT THAT THIS IS 000074, NOT W/E06&7. ALSO, EK2.2.05 DOESN'T EXIST – SHOULD BE EK2.05
RO	1	2	000003	AA2.02 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000007	CLARIFY THAT THIS IS FROM CE/E02
RO	1	2	000008	A2.03 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000011	G2.4.14 – IMPORTANCE VALUES SHOULD BE 3.0/3.9, NOT 3.3/3.9
RO	1	2	000037	AA2.13 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	1	2	000054	G.2.4.45 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	2	1	001	PLACE "I" IN PLACE OF "." IN IMPORTANCE VALUES FOR K6.11
RO	2	1	071	G2.1.32 – IMPORTANCE VALUES SHOULD BE 3.4/3.8
RO	2	2	063	"K2.01" SHOULD BE "K2.01." IMPORTANCE VALUES SHOULD BE 3.4/3.8.
RO	2	3	028	G2.4.21 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.1.7	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.1.11	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.1	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.11	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.2.30	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	3		G2.4.21	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41

SRO OUTLINE

EXAM	TIER	GROUP	CAT	COMMENT
SRO	1	1	000055	EA1.06 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	1	000068	AK2.07 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	1	000069	AK2.03 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	1	2	000022	SRO OUTLINE SHOWS AA1.01 AS "BOTH" RO OUTLINE SHOWS AA1.08 AS "BOTH." NEITHER APPEARS ON BOTH OUTLINES.
SRO	2	1	003	A2.01 SHOULD BE A2.02, OR K/A DESCRIPTION/IMPORTANCE SHOULD BE CHANGED.
SRO	2	1	003	RO OUTLINE SHOWS K3.04 AS "BOTH" BUT DOES NOT APPEAR ON SRO EXAM
SRO	2	1	015	A2.05 – IMPORTANCE VALUES SHOULD BE 3.3/3.8, VICE 3.3/3.5
SRO	2	1	063	"K2.01" SHOULD BE "K2.01"
SRO	2	2	002	A1.04 – CORRECT TYPOS
SRO	2	3	005	G2.4.2 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43
SRO	3		G2.4.40	THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.43 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.43

St. Lucie Initial Exam Outline Comments

ADMINISTRATIVE TOPICS OUTLINE

EXAM	JPM	COMMENT
BOTH	GENERAL	K/A DESIGNATORS SHOULD BEGIN WITH "G," NOT "K"
RO	A.1.b	G.2.1.7 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.3	G2.3.10 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.4	2.4.41 - THE K/A CATALOG DOES NOT REFERENCE 10 CFR 55.41 FOR THIS K/A – SHOW RO LEARNING OBJECTIVE OR RELATE TO 55.41
RO	A.4	2.4.41 – RO IMPORTANCE VALUE < 2.5. EXPLAIN WHY THIS IS ACCEPTABLE.

SIMULATOR SCENARIOS

SCENARIO	EVENT	COMMENT
ALL	GENERAL	CONSIDER SPECIFYING WHERE SRO CREDIT IS ACCRUED (E.G. C-SRO)
1	6	BOP OPERATOR SHOULD BE IDENTIFIED AS HANDLING EDG ISSUES
ALL	GENERAL	WHEN DEVELOPING EVENTS, ENSURE AREAS EVALUATING SRO COMPETENCY WITH TS SHOULD BE IDENTIFIED



January 3, 2001


Mr. Mark Miller
USNRC Region II
Atlanta Federal Center
61 Forsyth Street S.W.
Atlanta, GA 30303-3415

Dear Mark,

Enclosed please find the RO and SRO written exam sample plans. These sample plans were randomly developed using the guidance from NUREG-1021 ES-401 Attachment 1.

We will be developing the written exams from the above sample plans using NUREG-1021 Rev. 8. At this time, we chose not to use the supplement to Rev. 8 to develop these sample plans and written exams.

Sincerely,



R. W. Lindsey
St. Lucie Plant
Training Manager

TRN-01-001

LR:RWL/dac

Facility: St. Lucie (01-301)

Date of Exam: 5/14/01

Exam Level: RO

Date of Exam: _____														
Tier	Group	K/A Category Points											Point Total	
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *		
1. Emergency & Abnormal Plant Evolutions	1	2	2	3				3	3			3	16	
	2	2	2	4				3	3			3	17	
	3	1	1						1				3	
	Tier Totals	5	5	7				6	7			6	36	
2. Plant Systems	1	2	1	2	3	2	2	1	3	2	2	3	23	
	2	2	2	3	3	1	1	2	1	2	1	2	20	
	3	1		1	1			1	1	1	1	1	8	
	Tier Totals	5	3	6	7	3	3	4	5	5	4	6	51	
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		13	
					4		3		3		3			

- Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the Tier Totals in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
- 6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01							ST. Lucie (01-301) PWR RO examination Outline Form Emergency and Abnormal Plant Evolutions - Tier 1/Group 1		ES-401-4	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp.	Exam	
000005 Inoperable/Stuck Control Rod / I	X						AK1.06 Bases for power limit, for Rod misalignment	2.9/3.8	B	
000015/17 RCP Malfunctions / IV						X	G2.1.28 Knowledge of the purpose and function of major systems/components/controls	3.2/3.3	B	
BW/E09; CE/A13; W/E09&E10 Natural Circ. / IV	X						AK1.2 Normal, abnormal and emergency operating procedures associated with Nat. Circ.	3.2/3.5	B	
000024 Emergency Boration / I		X					AK2.03 Knowledge of Emergency Boration and controllers and positioners	2.6/2.5	B	
000026 Loss of Component Cooling Water / VIII			X				AK3.02 Automatic alignments within CCWS from actuation of ESFAS	3.6/3.9	B	
000027 Pressurizer Pressure Control System Malfunction / III						X	G2.2.3 Knowledge of design, procedural, operational Unit differences	3.1/3.3	R	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV					X		EA2.1 Adherence to procedures and operation within the facility license and amendments	3.4/4.2	B	
CE/A11; W/E08 RCS Overcooling - PTS / IV			X				AK3.3 Manipulation of controls to obtain desired operating results during abnormal and emergency situations	3.1/3.3	B	
000051 Loss of Condenser Vacuum / IV					X		AA2.02 Conditions requiring reactor and/or turbine trip	3.9/4.1	B	
000055 Station Blackout / VI					X		EA2.06 Faults and lockouts that must be cleared prior to re-energizing busses	3.7/4.1	B	
000057 Loss of Vital AC Elec. Inst. Bus / VI				X			AA1.06 Manual control of components on loss of vital AC when auto control is lost.	3.5/3.5	B	
000062 Loss of Nuclear Service Water / IV			X				AK3.03 Guidance contained in EOP for loss of Nuclear service water	4.0/4.2	B	
000067 Plant Fire On-site / IX						X	G2.4.25 Knowledge of fire protection procedures	2.9/3.4	R	
000068 (BW/A06) Control Room Evac. / VIII				X			AA1.01 Ability to operate ADV's as they apply to Control room evac.	4.3/4.5	B	
000069 (W/E14) Loss of CTMT Integrity / V										
000074 (W/E06&E07) Inad. Core Cooling / IV		X					EK2.2.05 Knowledge of inadequate core cooling and LPSI pumps	3.9/4.1	B	
000076 High Reactor Coolant Activity / IX				X			AA1.04 Ability to operate/monitor failed fuel monitoring equipment	3.2/3.4	B	
K/A Category Totals:	2	2	3	3	3	3	Group Point Total:		16	

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01									
St. Lucie (01-310) PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2									
E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000001 Continuous Rod Withdrawal / I			X				AK3.02 Tech-Spec limits on rod operability	3.2/4.3	B
000003 Dropped Control Rod / I					X		AA2.02 Ability to determine/interpret signal inputs to the rod control system resulting from a dropped rod.	2.7/2.8	B
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / I				X			EA1.1 Ability to operate/monitor components and functions of control and safety systems including signals, interlocks, failure modes, automatic and manual features	3.7/3.7	B
000008 Pressurizer Vapor Space Accident / III					X		AA2.03 PORV position indicators and acoustic monitors	3.9/3.9	B
000009 Small Break LOCA / III		X					EK2.03 Interrelations between SBLOCA and S/G's	3.0/3.3	B
000011 Large Break LOCA / III						X	G2.4.14 Knowledge of general guidelines for EOP flowchart use	3.3/3.9	B
000022 Loss of Reactor Coolant Makeup / II				X			AA1.08 Ability to operate/monitor VCT level as applicable to loss of Reactor Coolant makeup	3.4/3.3	B
000025 Loss of RHR System / IV	X						AK1.01 Loss of RHRS during all modes of operation	3.9/4.3	B
000029 Anticipated Transient w/o Scram / I	X						EK1.05 Operational implications/definition of negative temperature coefficient as applied to PWR during ATWAS	2.8/3.2	B
000032 Loss of Source Range NI / VII									
000037 Steam Generator Tube Leak / III					X		AA2.13 Ability to interpret which SG is leaking	4.1/4.3	B
000038 Steam Generator Tube Rupture / III				X			EA1.11 Ability to operate and monitor S/G level indicators as they apply to a SGTR	3.8/3.9	B
000054 (CE/E06) Loss of Main Feedwater / IV						X	G2.4.45 Ability to prioritize and interpret the significance of each annunciator of alarm.	3.3/3.6	B
000058 Loss of DC Power / VI			X				AK3.02 Knowledge of the reasons for actions contained in EOP for loss of DC power	4.0/4.2	B
000059 Accidental Liquid RadWaste Rel. / IX			X				AK3.01 Termination of release of radioactive liquid	3.5/3.9	R
000060 Accidental Gaseous Radwaste Rel. / IX		X					AK2.02 Knowledge of interrelations between accidental release and Aux. Building ventilation systems	2.7/3.1	B
000061 ARM System Alarms / VII			X				AK3.02 Knowledge of reasons for guidance contained in alarm response for ARM alarm	3.4/3.6	B
CE/E09 Functional Recovery						X	G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0/4.0	B
K/A Category Point Totals:	2	2	4	3	3	3	Group Point Total:		17

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

**St. Lucie (01-301) PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3**

E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000028 Pressurizer Level Malfunction / II	X						AK1.01 Knowledge of operational implications of PZR reference leak	2.8/3.1	B
000036 (BW/A08) Fuel Handling Accident / VIII									
000056 Loss of Off-site Power / VI									
000065 Loss of Instrument Air / VIII					X		AA2.06 Ability to determine when to trip reactor if instrument air pressure is decreasing	3.6/4.2	B
CE/A16 Excess RCS Leakage / II		X					AK2.1 Components and functions of control and safety systems including Inst. Signals, interlocks, failure modes and auto features	3.2/3.5	B
K/A Category Point Totals:	1	1			1		Group Point Total:		3

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 1

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
001 Control Rod Drive						X					X	K6.11 Location and operation of CRDS fault detection and reset system including rod control annunciator G2.2.12 Knowledge of surveillance procedures	2.9/3.2 3.0/3.4	R B
003 Reactor Coolant Pump			X								X	K3.04 Knowledge of the effect that a loss or malfunction of RCP's will have on the RPS G2.4.18 Knowledge of the specific bases for EOP's	3.9/4.2 2.7/3.6	B B
004 Chemical and Volume Control							X		X			A1.07 Ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with CVCS and maximum specified letdown flow. A3.03 Ability to monitor automatic operation of CVCS and ion exchanger bypass	2.7/3.1 2.9/2.9	B R
013 Engineered Safety Features Actuation		X				X						K2.01 Knowledge of bus power supplies to ESFAS/safeguards equipment control K6.01 Knowledge of the effect of a loss or malfunction of sensors and detectors will have on the ESFAS	3.6/3.8 2.7/3.1	R B
015 Nuclear Instrumentation				X	X							K4.02 Knowledge of NIS design features on rod motion inhibits K5.15 Knowledge of operational implications on effects of xenon on local flux and factors affecting xenon concentrations	3.7/3.9 3.3/3.7	R B
017 In-core Temperature Monitor										X		A4.01 Ability to monitor in control room in-core temperatures	3.8/4.1	B
022 Containment Cooling	X							X				K1.01 Knowledge of relationship between CCS and SWS/cooling system A2.03 Ability to predict impact of fan motor thermal overload/high speed operation	3.5/3.7 2.6/3.0	B R
056 Condensate	X											K1.03 Knowledge of physical connections and/or cause effect between Condensate and MFW	2.6/2.6	R
059 Main Feedwater			X					X				K3.02 Knowledge of effect that a loss of MFW will have on AFW system A2.12 Ability to predict impact of failure of feedwater reg. Valves on MFW	3.6/3.7 3.1/3.4	B R
061 Auxiliary/Emergency Feedwater				X				X				K4.02 Knowledge of AFW design features/interlocks which provide AFW auto start upon loss of MFW pp, S/G level, blackout or SI A2.03 Ability to predict impact on AFW for loss of DC power	4.5/4.6 3.1/3.4	B B
068 Liquid Radwaste									X			A3.02 Ability to monitor auto isolation	3.6/3.6	B
071 Waste Gas Disposal				X							X	K4.04 Knowledge of design feature and/or interlocks for isolation of waste gas release tanks G2.1.32 Ability to explain and apply system limits and precautions	2.9/3.4 3.9/3.4	B R
072 Area Radiation Monitoring					X					X		K5.01 Knowledge of radiation theory, sources types, units, and effects A4.02 Ability to manually operate or monitor major components	2.7/3.0 2.5/2.5	R B
K/A Category Point Totals:	2	1	2	3	2	2	1	3	2	2	3	Group Point Total:		23

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 2

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
002 Reactor Coolant							X					A1.04 Predict and monitor changes in Subcooled Margin.	3.9/4.1	B
006 Emergency Core Cooling									X		X	A3.08 Automatic transfer of ECCS flowpaths (RAS). G2.1.20 Ability to execute ECCS procedure steps.	4.2/4.3 4.3/4.2	B B
010 Pressurizer Pressure Control					X							K5.01 Determine condition of fluid in Pzr, using Steam Tables.	3.5/4.0	B
011 Pressurizer Level Control								X				A2.11 Predict impact of Pzr level instrument failing low.	3.4/3.6	B
012 Reactor Protection				X								K4.01 Design feature or interlock that provides trip logic with one channel in trip or bypass.	3.7/4.0	R
014 Rod Position Indication				X								K4.06 Rod position indications for individual or group misalignment.	3.4/3.7	R
026 Containment Spray							X					A1.03 Predict and monitor changes in Containment sump level with Containment Spray.	3.5/3.5	B
029 Containment Purge									X			A3.01 Ability to monitor automatic operation of the Containment Purge System including isolation.	3.8/4.0	B
033 Spent Fuel Pool Cooling			X									K3.03 Effect of a loss of Spent Fuel Pool Cooling on Spent Fuel temperature.	3.0/3.3	B
035 Steam Generator						X						K6.03 Effect of a malfunction or a loss of a S/G level instrument on S/G level.	2.6/3.0	B
039 Main and Reheat Steam			X									K3.05 Effect that a malfunction or a loss of Main or Reheat Steam will have on the RCS.	3.6/3.7	R
055 Condenser Air Removal			X									K3.01 Effect a loss of Condenser Air Removal will have on the Main Condenser.	2.5/2.7	B
062 AC Electrical Distribution		X										K2.01 Bus power supplies to major system Loads.	3.3/3.4	B
063 DC Electrical Distribution		X										K2.01 Bus power supplies to major DC loads.	2.9/3.0	B
064 Emergency Diesel Generator				X								K4.02 System design features that provide trips for the EDG during normal and emergency conditions.	3.9/4.2	B
073 Process Radiation Monitoring											X	G2.1.32 Explain and apply system limit and precautions.	3.4/3.8	R
075 Circulating Water	X											K1.02 Physical connections or relationship between the Circulating Water System and Liquid radwaste discharge.	2.9/3.1	B
079 Station Air	X											K1.01 Physical connections or relationship between Station Air and Instrument Air System.	3.0/3.1	R
086 Fire Protection										X		A4.02 Manually operate or monitor Fire Protection Panels from the Control Room.	3.5/3.5	B
K/A Category Point Totals:	2	2	3	3	1	1	2	1	2	1	2	Group Point Total:		20

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 3

System # / Name	K1	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
005 Residual Heat Removal				X								K4.03 Knowledge of RHRS design features or interlocks which provide for RHR heat exchanger bypass flow control.	2.9/3.2	R
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water								X				A2.02 Predict impact of CCW High/Low surge tank level on plant operations.	3.2/3.5	R
027 Containment Iodine Removal	X											K1.01 Physical connections or relationship between Containment Iodine Removal Sys. And the Containment Spray Sys.	3.4/3.7	B
028 Hydrogen Recombiner and Purge Control											X	G2.4.21 Knowledge of parameter and logic used to assess safety functions.	3.7/4.3	R
034 Fuel Handling Equipment														
041 Steam Dump/Turbine Bypass Control											X	A4.08 Manually operate or monitor operation of the Steam Dump Valves	3.0/3.1	R
045 Main Turbine Generator									X			A3.07 Monitor auto operation including stop/gov. valve position on trip	3.5/3.6	B
076 Service Water														
078 Instrument Air			X									K3.02 Affect that a loss or malfunction of the Instrument Air Sys. Will have on systems with pneumatic valves and controls.	3.4/3.6	B
103 Containment							X					A1.01 Predict and monitor changes in Containment pressure, temperature, and humidity to prevent exceeding design limits.	3.7/4.1	R
K/A Category Point Totals:	1		1	1			1	1	1	1	1	Group Point Total:		8

ES-401-4 Facility: St. Lucie (01-301)					Generic Knowledge and Abilities Outline (Tier 3) Date of Exam: 5/14/01		Exam Level: RO	
Category	K/A #	Topic	Imp.	Exam				
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements	3.7/3.8	B				
	2.1.7	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation	3.7/4.4	B				
	2.1.11	Knowledge of less than one hour TS action statements	3.0/3.8	B				
	2.1.20	Ability to execute procedure steps	4.3/4.2	B				
	Total			4				
Equipment Control	2.2.1	Ability to perform pre-startup procedures including operating those controls associated with equipment that could affect reactivity.	3.7/3.6	B				
	2.2.11	Knowledge of the process for controlling temporary changes.	2.5/3.0	B				
	2.2.30	Knowledge of RO duties in the control room during fuel handling activities such as alarms from fuel handling area, communications with fuel storage facility, systems operated in the control room to support fueling operations, and supporting instrumentation.	3.5/3.3	R				
	Total			3				
Radiation Control	2.3.1	Knowledge of 10 CFR:20 and related facility radiation control requirements.	2.6/3.0	B				
	2.3.2	Knowledge of facility ALARA program	2.5/2.9	R				
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5/3.1	B				
	Total			3				
Emergency Procedures and Plan	2.4.6	Knowledge of symptom based EOP mitigation strategies.	3.1/4.0	B				
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions.	3.7/4.3	B				
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0/4.0	R				
	Total			3				
Tier 3 Target Point Total				13				

Facility: St. Lucie (01-301)			Date of Exam: 5/14/01			Exam Level: SRO							
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	3	4	4				4	5			4	24
	2	1	2	2				3	4			4	16
	3	1	1						1				3
	Tier Totals	5	7	6				7	10			8	43
2. Plant Systems	1	2	1	1	2	1	1	2	3	1	2	3	19
	2	2	2	2		1	1	1	2	2	1	3	17
	3			1					1	1		1	4
	Tier Totals	4	3	4	2	2	2	3	6	4	3	7	40
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		17	
				5		5		3		4			
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>													

E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000001 Continuous Rod Withdrawal / I			X				AK3.02 Tech-Spec limits on rod operability	3.2/4.3	B
000003 Dropped Control Rod / I					X		AA2.02 Ability to determine/interpret signal inputs to the rod control system resulting from a dropped rod.	2.7/2.8	B
000005 Inoperable/Stuck Control Rod / I	X						AK1.06 Bases for power limit, for Rod misalignment	2.9/3.8	B
000011 Large Break LOCA / III						X	G2.4.14 Knowledge of general guidelines for EOP flowchart use	3.3/3.9	B
000015/17 RCP Malfunctions / IV						X	G2.1.28 Knowledge of the purpose and function of major systems/components/controls	3.2/3.3	B
BW/E09; CE/A13; W/E09&E10 Natural Circ. / IV	X					X	AK1.2 Normal, abnormal and emergency operating procedures associated with Nat. Circ. G2.4.11 Knowledge of abnormal condition procedures	3.2/3.5 3.4/3.6	B S
000024 Emergency Boration / I		X					AK2.03 Knowledge of Emergency Boration and controllers and positioners	2.6/2.5	B
000026 Loss of Component Cooling Water / VIII			X				AK3.02 Automatic alignments within CCWS from actuation of ESFAS	3.6/3.9	B
000029 Anticipated Transient w/o Scram / I	X						EK1.05 Operational implications/definition of negative temperature coefficient as applied to PWR during ATWAS	2.8/3.2	B
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV					X		EA2.1 Adherence to procedures and operation within the facility license and amendments	3.4/4.2	B
CE/A11; W/E08 RCS Overcooling - PTS / IV			X			X	G2.4.22 Knowledge of bases for prioritizing safety functions AK3.3 Manipulation of controls to obtain desired operating results during abnormal and emergency situations	3.0/4.0 3.1/3.5	S B
000051 Loss of Condenser Vacuum / IV					X		AA2.02 Conditions requiring reactor and/or turbine trip	3.9/4.1	B
000055 Station Blackout / VI				X	X		EA1.06 Restoration of power with one EDG EA2.06 Faults and lockouts that must be cleared prior to re-energizing busses	4.1/4.5 3.7/4.1	S B
000057 Loss of Vital AC Elec. Inst. Bus / VI				X			AA1.06 Manual control of components on loss of vital AC when auto control is lost.	3.5/3.5	B
000062 Loss of Nuclear Service Water / IV			X				AK3.03 Guidance contained in EOP for loss of Nuclear service water	4.0/4.2	B
000067 Plant Fire On-site / IX					X		AA2.13 Ability to determine and interpret need for emergency plant shutdown	3.3/4.4	S
000068 (BW/A06) Control Room Evac. / VIII		X		X			AK2.07 Knowledge of Control room evacuation and EDG AA1.01 Ability to operate ADV's as they apply to Control room evac.	3.3/3.4 4.3/4.5	S B
000069 (W/E14) Loss of CTMT Integrity / V		X					AK2.03 Loss of containment integrity, personnel/emergency hatch	2.8/2.9	S
000074 (W/E06&E07) Inad. Core Cooling / IV		X					EK2.2.05 Knowledge of inadequate core cooling and LPSI pumps	3.9/4.1	B
000076 High Reactor Coolant Activity / IX				X			AA1.04 Ability to operate/monitor failed fuel monitoring equipment	3.2/3.4	B
K/A Category Totals:	3	4	4	4	5	4	Group Point Total:		24

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Exam
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery /				X			EA1.1 Ability to operate/monitor components and functions of control and safety systems including signals, interlocks, failure modes, automatic and manual features	3.7/3.7	B
000008 Pressurizer Vapor Space Accident / III					X		AA2.03 PORV position indicators and acoustic monitors	3.9/3.9	B
000009 Small Break LOCA / III		X					EK2.03 Interrelations between SBLOCA and S/G's	3.0/3.3	B
000022 Loss of Reactor Coolant Makeup / II				X			AA1.01 Ability to operate/monitor CVCS letdown and charging as they apply to loss of RC pump makeup	3.4/3.3	B
000025 Loss of RHR System / IV	X						AK1.01 Loss of RHRs during all modes of operation	3.9/4.3	B
000027 Pressurizer Pressure Control System Malfunction / III						X	G2.4.48 Ability to interpret control room indications to verify status/operation of system, and understand how operator action affect plant conditions.	3.5/3.8	S
000032 Loss of Source Range NI / VII						X	G2.2.3 Knowledge of design, procedural and operational differences between units	3.1/3.3	S
000033 Loss of Intermediate Range NI / VII							Not chosen due to St. Lucie plant has no intermediate range NI's		
000037 Steam Generator Tube Leak / III					X		AA2.13 Ability to interpret which SG is leaking	4.1/4.3	B
000038 Steam Generator Tube Rupture / III				X			EA1.11 Ability to operate and monitor S/G level indicators as they apply to a SGTR	3.8/3.9	B
000054 (CE/E06) Loss of Main Feedwater / IV						X	G2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3/3.6	B
000058 Loss of DC Power / VI			X		X		AK3.02 Knowledge of the reasons for actions contained in EOP for loss of DC power AA2.03 Ability to determine DC loads lost; impact on ability to operate and monitor plant systems	4.0/4.2 3.5/3.9	B S
000060 Accidental Gaseous Radwaste Rel. / IX		X					AK2.02 Knowledge of interrelations between accidental release and Aux. Building ventilation systems	2.7/3.1	B
000061 ARM System Alarms / VII			X				AK3.02 Knowledge of reasons for guidance contained in alarm response for ARM alarm	3.4/3.6	B
000065 Loss of Instrument Air / VIII					X		AA2.06 Ability to determine when to trip reactor if instrument air pressure is decreasing	3.6/4.2	B
CE/E09 Functional Recovery						X	G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0/4.0	B
K/A Category Point Totals:	1	2	2	3	4	4	Group Point Total:		16

ES-401 St. Lucie (01-301) Date of Exam: 5/14/01

PWR SRO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

Form ES-401-3

E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000028 Pressurizer Level Malfunction / II	X						AK1.01 Knowledge of operational implications of PZR reference leak	2.8/3.1	B
000036 (BW/A08) Fuel Handling Accident / VIII									
000056 Loss of Off-site Power / VI					X		AA2.20 AFW flow indicator	3.9/4.1	S
CE/A16 Excess RCS Leakage / II		X					AK2.1 Components and functions of control and safety systems including Inst. Signals, interlocks, failure modes and auto features	3.2/3.5	B
K/A Category Point Totals:	1	1			1		Group Point Total:		3

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
001 Control Rod Drive											X	G2.2.12 Knowledge of surveillance procedures	3.0/3.4	B
003 Reactor Coolant Pump								X			X	A2.01 Conditions for an abnormal shutdown of RCP compared to normal shutdown of RCP G2.4.18 Knowledge of the specific bases for EOP's	3.7/3.9 2.7/3.6	S B
004 Chemical and Volume Control							X					A1.07 Ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with CVCS and maximum specified letdown flow.	2.7/3.1	B
013 Engineered Safety Features Actuation						X						K6.01 Knowledge of the effect of a loss or malfunction of sensors and detectors will have on the ESFAS	2.7/3.1	B
014 Rod Position Indication														
015 Nuclear Instrumentation					X			X				K5.15 Knowledge of operational implications on effects of xenon on local flux and factors affecting xenon concentrations A2.05 Impact of core void formation on NIS	3.3/3.7 3.3/3.5	B S
017 In-core Temperature Monitor										X		A4.01 Ability to monitor in control room in-core temperatures	3.8/4.1	B
022 Containment Cooling	X											K1.01 Knowledge of relationship between CCS and SWS/cooling system	3.5/3.7	B
026 Containment Spray							X				X	A1.03 Predict and monitor changes in Containment sump level with Containment spray G2.4.21 Knowledge of parameters and logic used to assess status of safety functions	3.5/3.5 3.7/4.3	B S
056 Condensate	X											K1.03 Knowledge of physical connections and/or cause effect between Condensate and MFW	2.6/2.6	B
059 Main Feedwater			X									K3.02 Knowledge of effect that a loss of MFW will have on AFW system	3.6/3.7	B
061 Auxiliary/Emergency Feedwater				X				X				K4.02 Knowledge of AFW design features/interlocks which provide AFW auto start upon loss of MFW pp, S/G level, blackout or SI A2.03 Ability to predict impact on AFW for loss of DC power	4.5/4.6 3.1/3.4	B B
063 DC Electrical Distribution		X										K2.01 Bus power supplies to major DC loads.	2.9/3.0	B
068 Liquid Radwaste									X			A3.02 Ability to monitor auto isolation	3.6/3.6	B
071 Waste Gas Disposal				X								K4.04 Knowledge of design feature and/or interlocks for isolation of waste gas release tanks	2.9/3.4	B
072 Area Radiation Monitoring										X		A4.02 Ability to manually operate or monitor major components	2.5/2.5	B
K/A Category Point Totals:	2	1	1	2	1	1	2	3	1	2	3	Group Point Total:		19

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
002 Reactor Coolant							X					A1.04 Predict and monitor changes in subcooled margin	3.9/4.1	B
006 Emergency Core Cooling									X		X	A3.08 Automatic transfer of ECCS flowpaths (RAS). G2.1.20 Ability to execute ECCS procedure steps.	4.2/4.3 4.3/4.2	B B
010 Pressurizer Pressure Control					X							K5.01 Determine condition of fluid in Pzr, using Steam Tables.	3.5/4.0	B
011 Pressurizer Level Control								X				A2.11 Predict impact of Pzr level instrument failing low.	3.4/3.6	B
012 Reactor Protection											X	G2.1.33 Ability to recognize indications for entry-level conditions for technical specifications	3.4/4.0	S
027 Containment Iodine Removal	X											K1.01 Physical connections or relationship between Containment Iodine Removal Sys. And the Containment Spray Sys.	3.4/3.7	B
028 Hydrogen Recombiner and Purge Control								X				A2.02 LOCA condition and related concern over hydrogen	3.5/3.9	S
029 Containment Purge									X			A3.01 Ability to monitor automatic operation of the Containment Purge System including isolation.	3.8/4.0	B
033 Spent Fuel Pool Cooling			X									K3.03 Effect of a loss of Spent Fuel Pool Cooling on Spent Fuel temperature.	3.0/3.3	B
035 Steam Generator						X						K6.03 Effect of a malfunction or a loss of a S/G level instrument on S/G level.	2.6/3.0	B
039 Main and Reheat Steam														
055 Condenser Air Removal		X										K3.01 Effect a loss of Condenser Air Removal will have on the Main Condenser.	2.5/2.7	B
062 AC Electrical Distribution		X										K2.01 Bus power supplies to major system Loads.	3.3/3.4	B
064 Emergency Diesel Generator			X								X	K4.02 System design features that provide trips for the EDG during normal and emergency conditions. G2.2.23 Ability to track limiting conditions for operations	3.9/4.2 2.6/3.8	B S
073 Process Radiation Monitoring														
075 Circulating Water	X											K1.02 Physical connections or relationship between the Circulating Water System and Liquid radwaste discharge.	2.9/3.1	B
079 Station Air														
086 Fire Protection										X		A4.02 Manually operate or monitor Fire Protection Panels from the Control Room.	3.5/3.5	B
103 Containment														
K/A Category Point Totals:	2	2	2		1	1	1	2	2	1	3	Group Point Total:		17

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
005 Residual Heat Removal											X	G2.4.2 Knowledge of system setpoints, interlocks and automatic actions associated with EOP entry conditions.	3.9/4.1	S
007 Pressurizer Relief/Quench Tank								X				A2.03 Ability to predict the impact of overpressurization of the PZR and correct or mitigate the consequences	3.6/3.9	S
008 Component Cooling Water														
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator									X			A3.07 Monitor auto operation including stop/gov. valve position on trip	3.5/3.6	B
076 Service Water														
078 Instrument Air			X									K3.02 Affect that a loss or malfunction of the Instrument Air Sys. Will have on systems with pneumatic valves and controls.	3.4/3.6	B
K/A Category Point Totals:			1					1	1		1	Group Point Total:		4

ES-401 Facility: St. Lucie (01-301)		Generic Knowledge and Abilities Outline (Tier 3) Date of Exam: 5/14/01		Form ES-401-5 Exam Level: SRO	
Category	K/A #	Topic	Imp.	Exam	
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements	3.7/3.8	B	
	2.1.7	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation	3.7/4.4	B	
	2.1.11	Knowledge of less than one hour TS action statements	3.0/3.8	B	
	2.1.12	Ability to apply technical specifications for a system	2.9/4/0	S	
	2.1.20	Ability to execute procedure steps	4.3/4.2	B	
	Total			5	
Equipment Control	2.2.1	Ability to perform pre-startup procedures including operating those controls associated with equipment that could affect reactivity.	3.7/3.6	B	
	2.2.11	Knowledge of the process for controlling temporary changes.	2.5/3.0	B	
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown activities	2.3/3.6	S	
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	2.6/3.8	S	
	2.2.29	Knowledge of SRO fuel handling duties	1.6/3.8	S	
	Total			5	
Radiation Control	2.3.1	Knowledge of 10 CFR:20 and related facility radiation control requirements.	2.6/3.0	B	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5/3.1	B	
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9/3.3	S	
	Total			3	
Emergency Procedures and Plan	2.4.6	Knowledge of symptom based EOP mitigation strategies.	3.1/4.0	B	
	2.4.9	Knowledge of low power/shutdown implications (LOCA/loss of RHR) in accident mitigation strategies	3.3/3.9	S	
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions.	3.7/4.3	B	
	2.4.40	Knowledge of SRO's responsibilities in emergency plan implementation	2.3/4/0	S	
	Total			4	
				17	
Tier 3 Target Point Total SRO				17	

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INITIAL SUBMITTAL

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INITIAL SUBMITTAL

**OPERATING TEST
SIMULATOR SCENARIOS**

**ST. LUCIE EXAM
50-335, 389/2001-301**

MAY 14 - 18 & 21 - 25, 2001

Miller, NRC

Facility: St. Lucie

Scenario No.: 1

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONOPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for a Steam Generator Tube Leak and Rupture combined with a Partial Loss of Power and failed equipment.

Initial Conditions: Unit 2 is at 100% power MOC

Turnover: The plant is operating at 100% power, MOC. The 2A Main Feedwater Pump has developed a Oil System flange leak and management has made the decision to promptly reduce power to 40% within one hour in order to facilitate repairs. 2A Emergency Diesel Generator is out of service for relay replacement, expected back in four hours. 2A Auxiliary Feedwater Pump is out of service for bearing replacement, not expected back this shift. Instructions to the shift are to reduce power to 40% and remove the 2A Main Feedwater Pump from service.

Preexisting Malfunctions: ESFAS relays for SIAS, and Start-Up power supply breaker failures.

Event No.	Malf. No.	Event Type*	Event Description
1	0	N-RO R-RO N-BOP N-SRO	Start second Charging Pump for downpower and balance flows. Power decrease from 100% toward 40% Place Pressurizer on Recirc.
2	1	I-RO I-SRO	Level setpoint malfunctions in LIC-1100X (selected pressurizer level controller) to rise. Letdown decreases and the pressurizer begins to fill above normal. RCS Tavg is reduced with the downpower, but the actual pressurizer level remains at full power value or above. Requires swap to LIC-1100Y.
3	2	C-RO C-SRO	Shaft Shears on the Running Boric Acid Pump during boration, requires the start of the Standby pump to maintain Reactor Control.
4	3	C-RO C-SRO	CEA #20 slips into the core approx. 10 inches, operability determination and recovery.
5	4	M-ALL	15 GPM Steam Generator Tube Leak Appears in the 2B SG requiring accelerated downpower.
6	5	M-ALL C-BOP	Steam Generator Tube Rupture Occurs on 2B SG requiring manual reactor trip. Start-Up transformer 4Kv breaker fails to close on the plant trip causing a sustained loss of power to the 2A3 4Kv buss. Requires use of 2C AFW pump to feed the 2A SG.
7	6	I-RO I-SRO	Partial Loss of power causes SBCS to close requiring manual operation to preclude release from the ADVs.
8	7	C-BOP C-SRO	Failure of ESFAS relay prevents auto actuation of B train SI components. 2B HPSI pump must be started manually.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: 1

Scenario No.: 1

Event No.: 1

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Event Description: Plant Shutdown (Turnover Cue)

Time	Position	Applicant's Actions or Behavior
	BOP	Monitors secondary parameters during power change
		Operates DEH to decrease turbine load
	RO	Operates Pressurizer Heaters and Spray systems to place the Pressurizer on recirc. <i>APPENDIX A OF 2-ONP-22.01</i> <i>NOT 0030123</i>
		Starts second Charging Pump and balances Letdown Flow.
		Operates Boron Control System to borate the RCS and decrease RCS temperature
		Operates control rods to maintain ASI at 100% value
		Remains cognizant of RCS parameters during power increase
	SRO	Performs shift brief prior to power decrease
		Directs actions to prepare for and conduct normal plant shutdown. Refers to Rapid Downpower ONP procedure 2-ONP-22.01
		Directs RO to place pressurizer on recirc and start additional charging pump
		Directs RO to maintain ASI at 100% value
		Directs RO to decrease RCS temperature by CVCS addition
		Directs BOP to decrease turbine power by DEH
		Notifies System of impending power decrease
		Note: crew may additionally address miscellaneous alarms related to the downpower; SG level, Hydrogen pressure, QRP DDPS alarm, and Nuke-Delta-T RPS alarms.

NOTE: Annou min 5% Power Reduction to ~~100%~~ PRIOR TO PROCEEDING TO EVENT 2

NOTE: BOOTH WILL PROMPT MIN 10 mb/min

*NOT
ENTIRELY
CORRECT -
CHANGED TO
AFTER
WANNERS*

Op-Test No.: 1

Scenario No.: 1

Event No.: 2

Page 3 of 11

Event Description: Pressurizer Level Controller Failure.

(Requires examiner cue. Need to activate failure as soon as downpower has begun.)

Time	Position	Applicant's Actions or Behavior
	BOP	Communicates with RO as to when turbine power must be decreased or the turbine must be placed on hold.
	RO	Recognizes subtle change in letdown with letdown flow lower than it should be for the power change rates in progress.
		Recognizes pressurizer level holding constant or increasing instead of the expected eventual decrease.
		Verifies Level Controllers operating normally, and diagnoses Level Controller mis-match between X and Y channel.
		Swaps from LIC-1100X to LIC-1100Y operating channel.
		Monitors and controls resultant perturbations in letdown flow from swapping the faulted channel out of service.
		(May take manual control of Letdown flow temporarily or suspend charging and letdown until failure is diagnosed)
	SRO	Directs the gathering of diagnosis information when pressurizer level or letdown flow anomalies are detected.
		Directs analysis and recovery from condition using pressurizer level and pressure ONP 1-0120035.
		Directs RO to Swap control channels to LIC-1100X.
		Note: Crew may address temporary lifting of letdown pressure relief valve when channels are swapped.

Op-Test No.: 1

Scenario No.: 1

Event No.: 3

Page 4 of 11

Event Description: Shaft Shear of the running Boric Acid pump.
 (Requires examiner cue. Need to activate failure while borating for the downpower early in the scenario before xenon build-in rate starts significantly.)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes RCS temperatures not responding to negative reactivity insertions of boric acid.
		Recognizes loss of boric acid flow on controller and/or counter.
		Checks board line-ups, controllers and flows.
		Dispatches SNPO to check line-up, leaks and local pump condition.
		Secures running boric acid pump.
		Starts standby Boric Acid pump.
	BOP	May refer to ONP 0110030 Boration Control Off-Normal procedure for guidance.
		Communicates with RO as to when turbine power must be decreased or the turbine must be placed on hold.
		Secures turbine <u>increase</u> (optional) <i>ANOTHER</i> ✓
		Assists RO in monitoring RCS parameters
	SRO	Recognizes Loss of Boration flow or that RCS temperatures Tavg-Tref are divergent.
		Dispatches SNPO to locally investigate for leaks, line-up problems, valves and boric acid pumps.
		Directs RO to start Standby Boric Acid pump, and secure Failed Boric Acid Pump.
		Notifies I&C or RMS to report pressure channel failures
		Notifies Plant Management of Failures and procedures entered.

NOTE: Prompt IMMEDIATELY AFTER PER LUL STABILIZED

NOTE: BOP will ENSURE ADEQUATE DOWNPOWER RATE TO GET ΔTAVE.

Op-Test No.: 1

Scenario No.: 1

Event No.: 4

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Event Description: CEA #20 slips into the core approx 10 inches.
(initiate this failure on examiner cue after BA pump has been resolved.)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes CEA Alarms and CMI interlock active.
		Recognizes Slipped CEA #20 inserted into the core.
		Place CEDS panel switch to Off.
		Verifies no mismatch exists between turbine-reactor power.
	BOP	Communicates with RO as to when turbine power must be decreased or the turbine must be placed on hold.
		Secures turbine increase (optional) DECREASE ?
		Refers to ONP 011003 B oration Control Off-Normal procedure for guidance
		Notifies RE of CEA misalignment and times as directed.
	SRO	Diagnoses CEA #20 is slipped >7 but less than 15 inches.
		Directs RCO to carry out IOAs to secure Downpower and match temperatures and power level with turbine.
		Directs BOP to contact RE with CEA data, and notifies plant management.
		Contacts I&C for CEA operability checks and assistance.
		Directs stabilization of plant using ONP 1-0110030 CEA Off-Normal and alignment procedure.
		Ensures RE and Management notifications are completed.
		T/S CALL ON RED OUT OF ALIGNMENT

Op-Test No.: 1

Scenario No.: 1

Event No.: 4 continued

Page 6 of 11

Event Description: CEA #20 operability and recovery

Time	Position	Applicant's Actions or Behavior
	RO	Inserts and withdraws CEA to check operability.
		Withdraws CEA and realigns CEA to remainder of the group.
		Verifies no mismatch exists between turbine-reactor power.
		Returns to borating for the downpower when directed.
		Conducts CEA operability test and realigns CEA to group height.
	BOP	Communicates with SRO/RO as to when turbine power must be decreased.
		Resets DDPS CEA height variables at the DDPS console.
	SRO	Directs RO to determine CEA operability using App A from CEA off-normal procedure.
		Contacts I&C for CEA operability checks and assistance.
		Determines CEA operability and Tech Spec recovery times using procedure and Tech Specs 3.1.3.1
		Directs RO in withdrawing the CEA back to group height in accordance with Appendix H of CEA procedure.
		Directs BOP to reset DDPS CEA height variables in accordance with NOP 65.01 DDPS operating procedure.
		Directs the resumption of downpower.
		Directs CEA operability determination and realignment of CEA to its respective group height.

Op-Test No.: 1

Scenario No.: 1

Event No.: 5

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Event Description: Steam Generator Tube Leak
 (initiate this failure on examiner cue following CEA 20 recovery to respective group height)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes Changing Letdown mismatch, lost RCS inventory.
		Operates CVCS and control rods to decrease reactor power and temperature as directed by SRO
		Starts a third charging pump ^{DUE TO} as RCS leakage increases
		Isolates letdown ^{DUE TO} as RCS leakage increases
		Operates CVCS and control rods to decrease reactor power and temperature as directed by SRO
	BOP	Recognizes Condenser air Ejector Alarm in detects increasing trends on radiation monitoring.
		Refers to 2-ONP-26.01 for process rad monitoring system verification guidance and initial actions to verify valid alarm.
		Refers to ONP 2-0830030 SG Tube Leak Off-Normal for Plant reponse guidance for indications of RCS-SG leakage.
	SRO	Diagnoses SGTL from changing conditions. <i>T/S REF 720 GPD</i>
		Directs BOP and Chemistry to verify CAE alarm validity.
		Directs RO and BOP to continue plant shutdown.
		Directs RO to start a third charging pump as leakage increases
		Directs RO to isolate letdown as leakage increases
		Directs plant organization response and orderly plant shutdown using ONP 2-0830020 Steam Generator Tube leak.
		Orders HP to conduct secondary surveys and possibly evacuate personnel from secondary areas or set up exclusion areas.
		Orders NPO to ensure vent alignment and isolate priming steam.

Op-Test No.: 1

Scenario No.: 1

Event No.: 6

Page 8 of 11

Event Description: SG Tube Rupture, Partial Loss of AC Power.
 (initiate this failure on examiner cue when enough power change has been observed)

Time	Position	Applicant's Actions or Behavior
	RO	Manually trips the reactor when pressurizer level can no longer be maintained
		Perform systematic board walkdown
		Perform Standard Post Trip actions (2-EOP-1)
		Report all safety function status to SRO
		Reports breaker failure on A-side offsite AC feed.
	BOP	Manually trips the reactor and turbine when pressurizer level can no longer be maintained
		Perform systematic board walkdown
		Perform Standard Post Trip actions (2-EOP-1)
		Inventories all safety functions with the SRO
	SRO	Directs RO and BOP to manually trip reactor and turbine when pressurizer level can no longer be maintained
		Directs RO and BOP in the performance of 2-EOP-1
		Performs shift brief and directs entry into 2-EOP-04, Steam Generator Tube Rupture procedure and outlines goals.

Op-Test No.: 1

Scenario No.: 1

Event No.: 7

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Event Description: Steam Generator Tube Rupture Recovery

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes SBCS no operating in Automatic due to loss of permissive system power, reports to ANPS.
		Takes Manual control of SBCS and opens valves to commence RCS cooldown as directed by ANPS.
	<u>Critical Task</u>	Manually operate SBCS to control RCS subcooling and RCS temperature to bring plant to SG isolation temperatures.
		Operate Pressurizer sprays and heaters to reduce RCS subcooling between 20 and 50 degrees subcooled as directed by the ANPS.
		UNISOLATE CCW ON TRAIL A TO RCPs OR TRIP RCPs
	BOP	Performs safety function status checks for 2-EOP-4
	<u>Critical Task</u>	Recognize and report the failure of both SI pumps to automatically start on SIAS signal, and manually start them when directed.
		Verifies SI flow per 2-EOP-99, Figure 2
	SRO	Directs steps in SGTR EOP-04 to commence RCS cooldown and depressurization for ruptured generator isolation.
	<u>Critical Task</u>	Directs SBCS be operated in manual to commence RCS cooldown for SG isolation.
	<u>Critical Task</u>	Recognize No SI available when SIAS signal is received, and directs the manual starting of both the HPSI and LPSI pumps.
		Operate Pressurizer sprays and heaters to reduce RCS subcooling between 20 and 50 degrees subcooled as directed by the ANPS.
		Orders verification of SI flow per 2-EOP-99, Figure 2

Op-Test No.: 1

Scenario No.: 1

Event No.: 8

Page 10 of 11

Event Description: SG Tube Rupture Isolation

Time	Position	Applicant's Actions or Behavior
	RO	Continue Cooldown of RCS using SBCS in manual.
		Continue RCS depressurization using Sprays.
	BOP	Performs SFSCs from EOP-04 as directed by ANPS.
	<u>Critical Task</u>	Isolates ruptured Steam Generator IAW Appendix R guidance of EOP-99 to secure ruptured 2B SG.
		Assists RO as directed by SRO
	SRO	Directs plant recovery steps from EOP-04 to cool down the plant and prepare for SG isolation.
	<u>Critical Task</u>	Directs isolation of the 2B SG when isolation criteria is met.
		This scenario can be terminated when the 2B SG isolation steps have been completed, and the order has been given to the NPO to complete the local isolation steps of Appendix R.

Shift Turnover

- The plant is operating at 100% power MOC.
- 2A Main Feedwater Pump has developed a oil system flange leak and management has made the decision to reduce power to 40% within one hour to facilitate repairs.
- 2A Emergency Diesel Generator is out of service for relay replacement, expected back in 4 hours.
- 2A Auxiliary Feedwater pump is out of service for bearing replacement, not expected back this shift.
- Instructions to the shift is to reduce power within one hour to 40% and remove the 2A Main Feedwater pump from service.
- RE recommends holding ASI to 100% power values.

Facility: St. Lucie

Scenario No.: 2

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONOPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for Total Loss of Feedwater combined with a Partial Loss of Power.

Initial Conditions: Unit 2 is at 40% power MOC

Turnover: The plant is operating at 40% power, MOC with Xenon Increasing due to a prompt reduction to facilitate repairs to 2A Main Feedwater Pump. 2A Emergency Diesel Generator is out of service for relay replacement, expected to be ready for surveillance run in two hours. 2A Auxiliary Feedwater Pump is out of service for bearing replacement, not expected back this shift. Instructions to the shift are to hold power constant at 40% and stable, and swap lead charging pump from C to A. The C charging pump has developed a minor secondary leak.

Preexisting Malfunctions: Failures for Feedwater Pumps.

Event No.	Malf. No.	Event Type*	Event Description
1	0	N-RO N-SRO	Start 2A Charging Pump, Secure 2C and balance letdown. Initiate/Monitor RCS Dilution to hold power constant and compensate for changing xenon.
2	1	C-RO C-SRO	Running Charging pump 2A leaks oil, then trips requiring balancing of letdown and start of second pump.
3	2	I-RO I-SRO	RCP CCW heat exchanger outlet valve closes on failed differential temperature instrument. CCW recovered in override mode.
4	3	I-BOP I-SRO	(*Optional* - BOP) 2B SG Level Transmitter drifts low causing SG to steadily rise. Requires Manual control of 2B SG Level. Can be repaired by I&C.
5	4	C-BOP C-SRO	Malfunctions in Turbine Gland Steam System cause loss of sealing steam supply. Supply pressure recoverable using bypass control.
6	5	R-RO N-BOP N-SRO	LP turbine seal regulator malfunction from prior event causes air leak and lowering condenser vacuum. Initiation of downpower is required. RO initiates Boration, BOP controls turbine for downpower.
7	6	M-ALL	Degraded loss of vacuum requires initiation of Manual Plant Trip. The running 2B Main Feedwater Pump trips and its Aux Oil pump does not auto-start. Standard Post Trip Actions started.
8	7	C-BOP C-SRO	When the 2B Aux Feedwater Pump is started (Auto or Manual) the breaker faults causing a lock-out of the 2B3 4Kv buss. When the 2C AFW pump is started it is steam bound requiring recovery.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: 1

Scenario No.: 2

Event No.: 1

Page 2 of 12

Event Description: Swap running charging pumps, Hold Power constant

Time	Position	Applicant's Actions or Behavior
	RO	Reviews RCS dilution, monitors RCS temperatures to continue to hold RCS power and temperature constant.
		Starts 2A charging pump IAW 2-NOP-02.02
		Stops 2C charging pump and places CS in Auto.
		Balances Letdown flow bias to maintain pressurizer level.
	BOP	Observes secondary parameters to hold power constant.
		Assist RO with procedures and peer checks as requested.
	SRO	Performs shift brief
		Directs RO to start 2A charging pump and remove 2C charging pump from service.

SWAP
SWITCH TO "A-B"

MAY OCCUR IN
REVERSE
ORDER

SOP THEN
AUTO

MAY BE IN REVERSE ORDER

Op-Test No.: 1

Scenario No.: 2

Event No.: 2

Page 3 of 12

Event Description: Running Charging pump oil leak, Charging Pump Trips.
(initiate this failure as soon as letdown flows have been balanced following the stop of 2C charging pump)

Time	Position	Applicant's Actions or Behavior
	RO	Recognize 2A charging pump trouble alarm, notify ANPS.
		Check 2A pump status and charging flows normal.
		REF ARP/01-M30 Dispatch SNPO to investigate pump locally.
		Recognize the trip of 2A charging pump.
		Start 2C charging pump, adjust letdown flows back to normal.
		Adjust the selection of the back-up pump IAW procedure.
	BOP	Observes secondary parameters to hold power constant.
		Assist RO with procedures and peer checks as requested.
	SRO	Diagnose the loss of the 2A charging pump.
		Direct the start of the 2C charging pump.
		Recognize the loss of Tech Spec ECCS train pump, but 2C available to fill needs for A train.
		Request management and maintenance assistance.

MAY NOT
MAY JUST
MATCH FLOWS

NO T/S IMPURITIES

Op-Test No.: 1

Scenario No.: 2

Event No.: 3

Page 4 of 12

Event Description: RCP CCW differential temperature transmitter fails High.
(initiate this event at examiner cue when charging flows have been stabilized)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes alarms on RCP Seal Heat Exchanger Valve and investigates using 2-ARP-01-J33. <i>TRANSITION TO 2-0120034 RCP ONOP</i>
		Recognizes HCV-14-11A1 valve closed, and lights lit. ✓
		Observes and verifies RCP cavity temperatures to be normal.
		Reopens HCV-14-11A1 as directed. (valve may reclose until placed in the "open" position of the switch) (auto timer will reclose if CS remains in Auto)
		<i>May leave it in open/hold or RESET to AUTO.</i>
	BOP	Assists with RCP and CCW procedures as required. ✓
		Checks CCW rad monitors for adverse radiation alarms or trends.
	SRO	Recognizes CCW lost to 2A1 RCP seal heat exchanger.
		Refers to Reactor Coolant pump ONP 2-0120034, for guidance on valve reopening and diagnosis routines.
		Diagnose to be failed instrumentation, due to absence of temperature or radiation alarms.
		Directs RO to take re-open HCV-14-11A1 and eventually place the valve in the "open" position to hold it open until checked by I&C personnel.
		Requests assistance from Management and I&C.

Op-Test No.: 1

Scenario No.: 2

Event No.: 4

Page 5 of 12

Event Description: SG Level Transmitter 2B Drifts Low causing level to rise.
(initiate this failure on examiner cue following resolution of CCW Flow Transmitter)

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report LIC-9021 controller is increasing output and conflicting SG level indicators are present.
		Recognize actual SG level is rising, control level is falling.
		Place FIC-9021 in manual and control 2B steam generator level manually.
		Restore 2B steam generator level to normal value (60-70% NR)
	RO	Recognize and report LIC-9021 controller is increasing output and conflicting SG level indicators are present.
		Refers to ONP 2-0700030, Main Feedwater, and/or 2-ARP-01-G9.
		Monitors plant parameters during transient
	SRO	Recognize LT-9021 is drifting low but actual SG level is rising.
		Directs BOP to take manual control of 2B steam generator level.
		Refers to ONP 2-0700030, Main Feedwater to review actions and trip criteria.
		Directs BOP to restore 2B steam generator level to normal value (60-70% NR)
		Notifies I&C of level channel failure and requests assistance.
		Notifies Plant Management

Page 6 of 12

(Trigger this event after control of SG level has been obtained and concentrated manipulation is no longer required – stable)

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes and report Turbine Gland Steam pressure alarms and problems with supply pressure.
		Review guidance of 2-ARP-01-D24 for pressure alarm.
		Diagnose a failure of the main gland steam pressure regulator.
		Open and adjust the Bypass valve MV-08-878 as directed to stabilize pressure between 125 and 145 psi.
		Recognize and report slow loss in condenser vacuum.
		Recognize and report gland steam alarm does not extinguish.
		Dispatch NWE/NPO to investigate locally.
	RO	Monitors plant parameters and Steam Generator level controls in manual during transient with gland steam.
	SRO	Diagnose Loss of Main Seal Pressure Regulator, directs BOP to control supply pressure on bypass valve.
		Coordinates local investigations of Gland Steam and Low Condenser Vacuum by outside operators and NWE.

Op-Test No.: 1

Scenario No.: 2

Event No.: 6

Page 8 of 12

Event Description: Loss of Condenser Vacuum continues, Downpower.

(NWE reports an LP seal steam line break which will jeopardize maintenance of vacuum)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes and reports continuous loss of condenser vacuum.
		Sets up for Boration and CEA insertion for Rapid Downpower.
		Secures RCS Dilution, and commences RCS Boration to reduce plant power level. <i>2 NCR 02.24-6.6</i>
		<i>NO FORMAL GUIDANCE ON BORATION RATE</i>
	BOP	Continue to adjust turbine Gland Steam and maintain SG level controls in manual.
		Set up Turbine Controls for Downpower and control turbine load reduction as directed.
	SRO	Recognizes continuing loss of condenser vacuum and orders preparations for conducting a Rapid Downpower.
		Directs activities from Loss of Condenser Vacuum Off-Normal 2-0610031 which include an eventual plant shutdown.
		Directs RO and BOP to perform a plant shutdown IAW 2-ONP-22.01, "Rapid Downpower"
		Directs NWE checks of air ejector and orders Hog ejector inservice.
		Briefs crew on backpressure trip limits.

NOTE - PROMPT LARGER VACUUM LEAK AT
EXAMINER DISCRETION

Op-Test No.: 1

Scenario No.: 2

Event No.: 7

Page 8 of 12

Event Description: Low condenser vacuum, Manual Plant Trip.

~~TRIGGER ON EXHAUSTER DUE~~

Time	Position	Applicant's Actions or Behavior
	RO	Recognize condenser vacuum cannot be maintained.
		Manually trips the reactor when condenser pressure exceeds criteria for condenser backpressure.
		Perform systematic board walkdown and perform SPTAs.
		Report all safety function status to SRO
	BOP	Recognize condenser vacuum cannot be maintained.
		Manually trips the reactor and turbine when condenser pressure exceeds criteria for condenser backpressure.
		Perform SPTAs with SRO.
		Recognize 2B Main Feedwater Pump not running.
	SRO	Recognize condenser vacuum cannot be maintained.
		Directs RO and BOP to manually trip reactor and turbine when condenser backpressure exceeds criteria for backpressure.
		Directs BOP in the performance of 2-EOP-1 SPTAs.
		Recognize no feedwater flow available while waiting on AFAS to time out for actuation.
		May
		No manual AFAS initiation allowed till 1900 IF NO AFAS
		May open DDV's once ^{SBCS} lost

NOTE - STEP 5.6 A CAN'T BE SATISFIED
 AND A.1 CAN'T EITHER UNTIL AFAS
 - CAN HE MOVE BEYOND THIS?
 CIRC STEP 1 D3 OF APPENDIX E 2

IF THEY GO TO EOP-2 THEY WON'T MEET RCS HEAT REMOVAL SF.

Op-Test No.: 1

Scenario No.: 2

Event No.: 8

Page 9 of 12

Event Description: 2B AFW Pump Breaker faults 2B3 4Kv buss, 2C AFW steam bound.

Time	Position	Applicant's Actions or Behavior
	RO	Recognize loss of 2B3 4Kv buss and no 2B AFW available.
		Recognize no flow from the apparently running 2C AFW pump.
		Notifies SRO that there is currently no AFW Flow to SGs.
	<u>Critical Task</u>	Trips all 4 RCPS when directed for total loss of feedwater.
		Opens ADVs to control SG pressure following closure of MSIVs ^{closure of SGs} .
	BOP	Recognize loss of 2B3 4Kv buss and no 2B AFW available.
		Recognize no flow from the apparently running 2C AFW pump.
		Contacts SNPO to investigate 2B3 4Kv buss.
		Contacts NPO to investigate 2C AFW Pump.
		Stop (or direct local trip) of 2C AFW pump when steam bound conditions are recognized or reported.
		Performs safety function status checks for 2-EOP-6
	<u>Critical Task</u>	Close both MSIVs and take actions to isolate both SGs to conserve SG inventory as directed.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 continued Page 11 of 12

Event Description: Feedwater Flow Recovery

Time	Position	Applicant's Actions or Behavior
	RO	Opens ADVs to control SG pressure following closure of MSIVs.
		Assist BOP as available in recovery of 2C AFW pump.
	<u>Critical Task</u> (3)	Assist crew in recovery of either 2C AFW pump or restart of the 2B Main Feedwater pump.
		Open ADVs to control SG pressure following closure of MSIVs <i>ISOLATION OF SGs</i>
		<i>OR SDC LOSS.</i>
	BOP	Recognize 2B Main Feedwater pump not available for start.
	<u>Critical Task</u> (3a)	Complete steps of Aux feedwater ONP 2-ONP-09.02 to purge and cool 2C AFW from Steam Binding and regain flow to SGs.
	<u>Critical Task</u> (3b)	(OR) Communicate to NPO to start the 2B MFW pump Aux Oil Pump Start, or make ready by local inspection the 2B Main Feedwater pump, AND
	<u>Critical Task</u> (3b)	Override MFIVs Open, and restore feed flow to SGs through opening feed reg 15% bypass valves.
	SRO <u>Critical Task</u> (3a)	Direct the recovery of 2C AFW pump using Aux feedwater ONP 2-ONP-09.02 for Steam Binding. Direct restart and recovery of flow to the Steam Generators.
	<u>Critical Task</u> (3b)	(OR) Direct the local checks and restart the 2B Main Feedwater pump, - AND -
	<u>Critical Task</u> (3b)	Override MFIVs Open, and restore feed flow to SGs through opening feed reg valves. <i>OPEN MFIV - CLOSE/OVERRIDE THEN OPEN</i>
		This task can be secured soon after Feedwater flow is restored to the SGs at the discretion of the examiner.

Shift Turnover

- The plant is operating at ~~40%~~⁴⁵ power MOC following a rapid downpower to remove 2A MFW pump from service for an oil leak. Xenon is increasing and there is a constant dilution in progress to compensate.
- 2A Main Feedwater pump is Out of Service and the Oil system and Aux Oil pump are tagged out.
- 2A Emergency Diesel Generator is out of service for relay replacement, expected to be back in two hours.
- 2A Auxiliary Feedwater pump is out of service for bearing replacement, not expected back this shift.
- 2C charging pump is running but it has developed a minor secondary leak.
- Instructions for the shift are to: ~~40%~~⁹⁵
 - > Maintain power constant at ~~40%~~ turnover.
 - > Swap lead charging pump from 2C to 2A right after shift turnover.
 - > Prepare for 2A EDG surveillance later today.

Facility: St. Lucie

Scenario No.: 3

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for a Large Break LOCA combined with a Loss of Offsite Power and subsequent total loss of High Pressure Safety Injection. (LOCA or Functional Recovery)

Initial Conditions: Unit 2 is at 100% power MOC

Turnover: The plant is operating at 100% power, MOC. The 2A Auxiliary Feedwater Pump is out of service for bearing replacement, and is expected back for a surveillance run later this shift. Waves of Jellyfish have been a problem at the intakes over the last 40 hours. Extra personnel are on duty at the intake. Screen wash is running and the screens have been manually shifted to fast speed. Condenser cleaning system balls have been collected per management directive. Instructions to the shift are to maintain 100% power and restore the 2A Aux Feedwater pump to service this shift.

Preexisting Malfunctions: 2A EDG auto-start is disabled.

Event No.	Malf. No.	Event Type*	Event Description
1	0	I-RO I-SRO	Letdown Flow controller master input signal faults requiring placing letdown flow in manual control to control high letdown flow.
2	1	I-RO I-SRO	(*Optional RO/SRO Item*) <i>T/S ITEM FOR SRO</i> Analog Reed Switch transmitter develops intermittent short rendering analog ADS CEA height indication on CEA #19 inoperable.
3	2	C-RO C-SRO	(*Optional RO Item*) V2524 isolation valve for RCP Bleed-off fails Closed.
4	3	C-BOP C-SRO	Jellyfish wave hits intake causing high screen levels. Shear pin on 2A1 intake fails and 2A1 circulating water pump must be secured.
5	4	N-SRO R-RO N-BOP	Rising Condenser pressure requires Rapid Downpower. Second Charging Pump Started, Pressurizer on Recirc Boration / CEA insertion / Turbine controls for Downpower.
6	5	I-BOP	(*Optional BOP Item*) Main Generator Voltage Regulator fails to control in automatic during downpower. Switch and control Regulator in manual.
7	6	M-RO M-BOP	RCS leak rapidly degrades into a major Hot Leg RCS break causing automatic scram. Loss of Offsite Power commences four minutes after the trip due to grid disturbances.
8	7	C-BOP	2B EDG fails to auto start and must be manually started from the control room.
9	8	C-RO	RAS component relay fails causing RWT suction valve to close. This causes loss of suction and loss of flow from both the 2A HPSI and 2A LPSI pumps. Core Flow is recovered by realignment of ECCS Pump Suction Flowpath.

* (N)ormal, (R)eactivity, (I)nsrument, (C)omponent, (M)ajor

★
No
No!

Op-Test No.: 1

Scenario No.: 3

Event No.: 1

Page 2 of 12

Event Description: Letdown Flow Controller has a faulted input signal
(insert this failure at the end of crew briefing)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes mis-match between charging and letdown flows
		Recognizes decreasing pressurizer level and high letdown flow.
		Checks RRS channels to be operating normal.
		Checks pressurizer LIC controllers to be matched and operating normally.
		Take manual control of HIC-1100 Letdown level controller and control high flow in manual control.
	BOP	Review Screen wash conditions and auto start of SW pump.
		Assist RO in letdown problem diagnosis.
		Assist with ONP procedure 2-ONP-02.03 pressurizer level and pressure.
	SRO	Performs shift brief emphasizing intake monitoring.
		Directs investigation of letdown perturbation.
		Directs actions to diagnose problem from 2-ONP-02.03 by directing the check of RRS, Tavg, LIC controllers and letdown controller.
		Directs RO to take manual control of Letdown Flow.
		Request I&C assistance.
		Note: RRS and LIC control channels may be swapped in an effort to diagnose the source of the problem...does not affect outcome. (Candidates may manually secure charging and letdown if diagnosis takes lengthy time.)

Op-Test No.: 1

Scenario No.: 3

Event No.: 2 (Optional)

Page 3 of 12

Event Description: Analog Reed Switch Position Indicator Failure

(Insert this failure at examiners discretion, following letdown flow resolution)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes an apparent Dropped CEA.
		Checks RCS temperature, Reactor Power and other indications to determine an actual CEA has not inserted.
		Recognizes CEA UEL reed switch lit for CEA #19.
		Diagnoses Failed Analog Reed Switch and reports to SRO.
		Consults Annunciator procedure 2-ARP-K11 and K30 for CMI and Group Deviation Interlocks.
		Recognizes need to Block CMI for Apparent CEA problem in order to insert CEAs for plant shutdown.
		Enable and Block CMI when required during later plant shutdown in order to control ASI.
	BOP	Assist RO/SRO in CEA problem diagnosis.
		Assist with ONP procedure 2-0110030 for CEA position indication problems, appendix G.
	SRO	Directs actions to diagnose CEA #19 problem as a failed analog position instrument and not an actual dropped CEA.
		Request I&C assistance.
		Determines from Tech Spec 3.1.3.2 that no further LCO action will be required while CEA remains at UEL.
		(Candidates may begin to take Immediate Actions until CEA position is determined to be malfunction of display.)

NOTE: CUE JELLYFISH

Op-Test No.: 1

Scenario No.: 3

Event No.: 3 (Optional)

Page 4 of 12

Event Description: RCP Bleed-off Isolation V2524 Failed Closed.

(Insert this failure at examiners discretion, following CEA position resolution)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes and reports rapidly changing RCP cavity seal pressures on all four reactor coolant pumps.
		Consults Annunciator procedure 2-ARP-M8 and M16 to review causes and instructions for high RCP Bleed-off pressure.
		Recognizes High Pressure from Zero Flow and diagnoses RCP Bleed-off Isolation valve V2524 is in the closed position.
		Attempt to reopen V2524 when directed by SRO.
		Open V2504 to relieve Bleed-Off pressure and provide alternate flowpath when directed by SRO.
	BOP	Assist RO in problem diagnosis or procedures.
	SRO	Directs actions to diagnose Failure of V2524 to the Closed position causing the High Pressure, Low Flow condition.
		Request Maintenance assistance.
		Directs actions using ONP procedure 2-0120034 RCP Off-Normal to open V2504 and realign RCP Bleed-Off flows.

Op-Test No.: 1

Scenario No.: 3

Event No.: 4

Page 5 of 12

Event Description: Jelly Fish wave hits the Intake, 2A1 intake screen breaks pin

(insert this failure at examiner cue after letdown has been stabilized in manual flow control, or after RCP bleed-off flow has been reestablished for the RCPs)

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize increasing trends on screen DP levels.
		Alert intake personnel of increasing DP levels.
		Recognizes Screen DP high levels, alert ANPS.
		Secures the 2A1 circulating water pump when directed.
		Recognizes decreasing condenser vacuum and reports to ANPS.
	RO	Assist ANPS in monitoring intake and vacuum conditions.
		Continue to control letdown flows with manual flow control.
	SRO	Direct crew actions in accordance with Circ water system ONP 2-0620030 to throttle and secure Circ Pumps as necessary.
		Recognize shear pin break report and increasing levels will require trip of 2A1 circulating water pump.
		Direct tripping of 2A1 circulating water pump when levels rapidly increase to 40 inches.
		Recognize loss of 2A1 Circ Water Pump will require conduct of rapid downpower.

Op-Test No.: 1

Scenario No.: 3

Event No.: 5

Page 6 of 12

Event Description: Conduct Rapid Downpower following loss of Circ Water pump.

Time	Position	Applicant's Actions or Behavior
	BOP	Monitor trends on screen DP levels.
		Monitors decreasing condenser vacuum and reports to ANPS
		Prepare turbine for downpower.
		Controls turbine load on DEH as directed, communicates with RO.
	RO	Prepare for Rapid Downpower by Starting additional charging pump.
		Places pressurizer on recirc.
		Check CEA Operability and begin boration of the RCS for Plant Power reduction.
		Begins boration to charging suction for prompt power reduction.
		Communicates with BOP as to when turbine power must be decreased to remain constant with RCS Tavg
	SRO	Implement Loss of Vacuum Off-Normal 2-0610031 as needed.
		Recognize loss of Circ Water Pump will require immediate downpower to less than 90% power.
		Directs RO and BOP to immediately begin downpower in accordance with Rapid Downpower ONP 22.01 toward 90% power or until condenser backpressure stabilizes.

Op-Test No.: 1

Scenario No.: 3

Event No.: 6

Page 7 of 12

Event Description: Main Generator Voltage Regulator Trips

(trigger this failure on examiner cue after sufficient downpower has observed)

Time	Position	Applicant's Actions or Behavior
	RO	 Begins constant dilution to stabilize power.
		Operates Letdown flow controls in manual.
	BOP	Recognizes Voltage regulator alarm and consults 2-ARP-01-C14 to address tripped voltage regulator.
		Prompts SRO to use Main Generator ONP 2-ONP-53.01
		Verify Voltage Regulator tripped to green.
		Selects Control of Regulator to Manual.
		Adjust MVAR loading of generator to at least 50 MVA in LAG.
	SRO	Refers to 2-ONP-53.01 Main Generator Off-Normal, and directs BOP to place Voltage Regulator Controls into Manual.
		Directs BOP to control MVA loading to at least 50 MVA Lag.
		Request system protection and management assistance.

Op-Test No.: 1

Scenario No.: 3

Events No.: 7 & 8

Page 8 of 12

Event Description: RCS leak in containment leads to rapid automatic plant trip. LOOP occurs on trip, and the 2B EDG faults the 2B3 4Kv buss when closed in.

(insert this leak on examiner cue after sufficient downpower has been observed)

Time	Position	Applicant's Actions or Behavior
	RO	Recognizes reactor cavity leakage increases.
		Recognize Automatic Plant Trip and loss of RCS inventory.
		Perform Standard Post Trip actions (2-EOP-1)
		Recognize Loss of Offsite Power has occurred.
		Report all safety function status to SRO
		Recognizes 2A EDG did not start, notifies SRO.
		Recognizes 2B EDG started, but 2B3 buss is faulted.
	<u>Critical Task</u>	Manually Start 2A EDG from the Control Room.
		Verify A-train HPSI and LPSI pumps start and load onto the buss and provide flow.
	BOP	Recognize Automatic Plant Trip.
		Perform Standard Post Trip actions (2-EOP-1) with SRO
		Recognize Loss of Offsite Power has occurred
		Recognizes 2A EDG did not start, notifies SRO.
		Recognizes 2B EDG started, but 2B3 buss is faulted.
	<u>Critical Task</u>	Manually Start 2A EDG from the Control Room as directed.
		Verify A-train HPSI and LPSI pumps start and load onto the buss and provide flow.
		Close MSR TCVs as contingent for loss of block valve power.

Page 9 of 12

(trigger at examiner discretion after sufficient downpower has been observed)

[illegible]

Op-Test No.: 1

Scenario No.: 3

Event No.: 9

Page 10 of 12

Event Description: RAS component Relay fails in the actuated condition isolating suction flow to entire SI train on A side.

(trigger this failure as soon as EOP-3 LOCA procedure is entered)

Time	Position	Applicant's Actions or Behavior
	RO	Operates ADVs to ensure plant cooldown is in progress to recover subcooled margin.
		Recognize loss of SI combined indicated flow.
	BOP	Performs safety function status checks for 2-EOP-3 (If STA is unavailable)
		Recognize and report HPSI, LPSI pumps cavitating, no SI flow.
		Conducts audit of SI systems actuation as per Table 1 of EOP-99.
	<u>Critical Task</u>	Diagnose RAS suction valve misaligned closed.
	<u>Critical Task</u>	Reopen RWT suction valve as directed to provide suction pathway for SI train.
		Restore SI pump flow to the core.
		Verifies SI flow per 2-EOP-99, Figure 2
		Notifies NPO to restore instrument air per 2-EOP-99, Appendix H

Op-Test No.: 1

Scenario No.: 3

Event No.: 9

Page 11 of 12

Event Description: RAS component Relay fails in the actuated condition isolating suction flow to entire SI train on A side.

(trigger this failure as soon as EOP-3 LOCA procedure is entered)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs RO to perform a plant cooldown and depressurization
		Recognize cavitation of both SI pumps and loss of all SI flow.
		Direct investigation of loss of SI flow to the core.
		Directs BOP to ensure SI systems actuation as per SI Tables of EOP-99 and leads diagnosis of RAS valve misaligned.
	<u>Critical Task</u>	Directs BOP to reopen RWT suction valve to provide suction pathway for SI train restoring flow to the core.
		Contacts Chemistry to perform steam generator samples
		Directs BOP to contact NPO and restore instrument air
		Directs verification of 2-EOP-99, Figure 2 (SI flow)
		(crew may secure SI pumps while conducting investigation of loss of flow and cavitation)
		This scenario can be terminated when RWT suction valve is realigned and SI pumps are running providing flow to the core.

Shift Turnover

- The plant is operating at 100% power MOC.
- Waves of Jellyfish have been a problem at the intakes over the last 40 hours. Extra personnel are on duty at the intake. Screen wash is running and the screens have been manually shifted to fast speed. Condenser cleaning system balls have been collected per management directive.
- 2A Auxiliary Feedwater pump is out of service for bearing replacement, and it is expected to return to service later on in this shift.
- Instructions to the shift is to maintain 100% power and prepare for 2A Aux Feedwater pump surveillance late in the shift today.



PSL-TRN-01-005

February 23, 2001

Mr. Mark Miller
USNRC Region II
Atlanta Federal Center
61 Forsyth Street S. W.
Atlanta, GA 30303-3415

Enclosed, please find the following RO/SRO operating test outlines and RO/SRO written exam sample plans:

- Administrative Topics, Form ES-301-1
- Control Room Systems and Walk-Through, Form ES-301-2
- Scenario Outline, Form ES-D-1
- Examination Outline Quality Checklist, Form ES-201-2
- RO Examination Outline, Form ES-401-4
- SRO Examination Outline, Form ES-401-3

Please withhold the outlines from public disclosure until after the examinations are complete.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert W. Lindsey', is written over a horizontal line.
Robert W. Lindsey
Training Manager

Facility: St. Lucie (01-301)

Date of Exam: 5/14/01

Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	2	2	3				3	3			3	16
	2	2	2	4				3	3			3	17
	3	1	1						1				3
	Tier Totals	5	5	7				6	7			6	36
2. Plant Systems	1	2	1	2	3	2	2	1	3	2	2	3	23
	2	2	2	3	3	1	1	2	1	2	1	2	20
	3	1		1	1			1	1	1	1	1	8
	Tier Totals	5	3	6	7	3	3	4	5	5	4	6	51
3. Generic Knowledge and Abilities						Cat 1	Cat 2	Cat 3	Cat 4	13			
						4	3	3	3				

- Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the Tier Totals in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
- 6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01							ST. Lucie (01-301) PWR RO examination Outline Form Emergency and Abnormal Plant Evolutions - Tier 1/Group 1			ES-401-4	
E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam		
000005 Inoperable/Stuck Control Rod / I	X						AK1.06 Bases for power limit, for Rod misalignment	2.9/3.8	B		
000015/17 RCP Malfunctions / IV						X	G2.1.28 Knowledge of the purpose and function of major systems/components/controls	3.2/3.3	B		
BW/E09; CE/A13; W/E09&E10 Natural Circ. / IV	X						AK1.2 Normal, abnormal and emergency operating procedures associated with Nat. Circ.	3.2/3.5	B		
000024 Emergency Boration / I		X					AK2.03 Knowledge of Emergency Boration and controllers and positioners	2.6/2.5	B		
000026 Loss of Component Cooling Water / VIII			X				AK3.02 Automatic alignments within CCWS from actuation of ESFAS	3.6/3.9	B		
000027 Pressurizer Pressure Control System Malfunction / III						X	G2.2.3 Knowledge of design, procedural, operational Unit differences	3.1/3.3	R		
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV					X		EA2.1 Adherence to procedures and operation within the facility license and amendments	3.4/4.2	B		
CE/A11; W/E08 RCS Overcooling - PTS / IV			X				AK3.3 Manipulation of controls to obtain desired operating results during abnormal and emergency situations	3.1/3.3	B		
000051 Loss of Condenser Vacuum / IV					X		AA2.02 Conditions requiring reactor and/or turbine trip	3.9/4.1	B		
000055 Station Blackout / VI					X		EA2.06 Faults and lockouts that must be cleared prior to re-energizing busses	3.7/4.1	B		
000057 Loss of Vital AC Elec. Inst. Bus / VI				X			AA1.06 Manual control of components on loss of vital AC when auto control is lost.	3.5/3.5	B		
000062 Loss of Nuclear Service Water / IV			X				AK3.03 Guidance contained in EOP for loss of Nuclear service water	4.0/4.2	B		
000067 Plant Fire On-site / IX						X	G2.4.25 Knowledge of fire protection procedures	2.9/3.4	R		
000068 (BW/A06) Control Room Evac. / VIII				X			AA1.01 Ability to operate ADV's as they apply to Control room evac.	4.3/4.5	B		
000069 (W/E14) Loss of CTMT Integrity / V											
000074 (W/E06&E07) Inad. Core Cooling / IV		X					EK2.2.05 Knowledge of inadequate core cooling and LPSI pumps	3.9/4.1	B		
000076 High Reactor Coolant Activity / IX				X			AA1.04 Ability to operate/monitor failed fuel monitoring equipment	3.2/3.4	B		
K/A Category Totals:	2	2	3	3	3	3	Group Point Total:		16		

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01									
St. Lucie (01-310) PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2									
E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000001 Continuous Rod Withdrawal / I			X				AK3.02 Tech-Spec limits on rod operability	3.2/4.3	B
000003 Dropped Control Rod / I					X		AA2.02 Ability to determine/interpret signal inputs to the rod control system resulting from a dropped rod.	2.7/2.8	B
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / I				X			EA1.1 Ability to operate/monitor components and functions of control and safety systems including signals, interlocks, failure modes, automatic and manual features	3.7/3.7	B
000008 Pressurizer Vapor Space Accident / III					X		AA2.03 PORV position indicators and accoustic monitors	3.9/3.9	B
000009 Small Break LOCA / III		X					EK2.03 Interrelations between SBLOCA and S/G's	3.0/3.3	B
000011 Large Break LOCA / III						X	G2.4.14 Knowledge of general guidelines for EOP flowchart use	3.3/3.9	B
000022 Loss of Reactor Coolant Makeup / II				X			AA1.08 Ability to operate/monitor VCT level as applicable to loss of Reactor Coolant makeup	3.4/3.3	B
000025 Loss of RHR System / IV	X						AK1.01 Loss of RHRS during all modes of operation	3.9/4.3	B
000029 Anticipated Transient w/o Scram / I	X						EK1.05 Operational implications/definition of negative temperature coefficient as applied to PWR during ATWAS	2.8/3.2	B
000032 Loss of Source Range NI / VII									
000037 Steam Generator Tube Leak / III					X		AA2.13 Ability to interpret which SG is leaking	4.1/4.3	B
000038 Steam Generator Tube Rupture / III				X			EA1.11 Ability to operate and monitor S/G level indicators as they apply to a SGTR	3.8/3.9	B
000054 (CE/E06) Loss of Main Feedwater / IV						X	G2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3/3.6	B
000058 Loss of DC Power / VI			X				AK3.02 Knowledge of the reasons for actions contained in EOP for loss of DC power	4.0/4.2	B
000059 Accidental Liquid RadWaste Rel. / IX			X				AK3.01 Termination of release of radioactive liquid	3.5/3.9	R
000060 Accidental Gaseous Radwaste Rel. / IX		X					AK2.02 Knowledge of interrelations between accidental release and Aux. Building ventilation systems	2.7/3.1	B
000061 ARM System Alarms / VII			X				AK3.02 Knowledge of reasons for guidance contained in alarm response for ARM alarm	3.4/3.6	B
CE/E09 Functional Recovery						X	G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0/4.0	B
K/A Category Point Totals:	2	2	4	3	3	3	Group Point Total:		17

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000028 Pressurizer Level Malfunction / II	X						AK1.01 Knowledge of operational implications of PZR reference leak	2.8/3.1	B
000036 (BW/A08) Fuel Handling Accident / VIII									
000056 Loss of Off-site Power / VI									
000065 Loss of Instrument Air / VIII					X		AA2.06 Ability to determine when to trip reactor if instrument air pressure is decreasing	3.6/4.2	B
CE/A16 Excess RCS Leakage / II		X					AK2.1 Components and functions of control and safety systems including Inst. Signals, interlocks, failure modes and auto features	3.2/3.5	B
K/A Category Point Totals:	1	1			1		Group Point Total:		3

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 1

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
001 Control Rod Drive						X					X	K6.11 Location and operation of CRDS fault detection and reset system including rod control annunciator G2.2.12 Knowledge of surveillance procedures	2.9/3.2 3.0/3.4	R B
003 Reactor Coolant Pump			X								X	K3.04 Knowledge of the effect that a loss or malfunction of RCP's will have on the RPS G2.4.18 Knowledge of the specific bases for EOP's	3.9/4.2 2.7/3.6	B B
004 Chemical and Volume Control							X		X			A1.07 Ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with CVCS and maximum specified letdown flow. A3.03 Ability to monitor automatic operation of CVCS and ion exchanger bypass	2.7/3.1 2.9/2.9	B R
013 Engineered Safety Features Actuation		X				X						K2.01 Knowledge of bus power supplies to ESFAS/safeguards equipment control K6.01 Knowledge of the effect of a loss or malfunction of sensors and detectors will have on the ESFAS	3.6/3.8 2.7/3.1	R B
015 Nuclear Instrumentation				X	X							K4.02 Knowledge of NIS design features on rod motion inhibits K5.15 Knowledge of operational implications on effects of xenon on local flux and factors affecting xenon concentrations	3.7/3.9 3.3/3.7	R B
017 In-core Temperature Monitor										X		A4.01 Ability to monitor in control room in-core temperatures	3.8/4.1	B
022 Containment Cooling	X							X				K1.01 Knowledge of relationship between CCS and SWS/cooling system A2.03 Ability to predict impact of fan motor thermal overload/high speed operation	3.5/3.7 2.6/3.0	B R
056 Condensate	X											K1.03 Knowledge of physical connections and/or cause effect between Condensate and MFW	2.6/2.6	R
059 Main Feedwater			X					X				K3.02 Knowledge of effect that a loss of MFW will have on AFW system A2.12 Ability to predict impact of failure of feedwater reg. Valves on MFW	3.6/3.7 3.1/3.4	B R
061 Auxiliary/Emergency Feedwater				X				X				K4.02 Knowledge of AFW design features/interlocks which provide AFW auto start upon loss of MFW pp, S/G level, blackout or SI A2.03 Ability to predict impact on AFW for loss of DC power	4.5/4.6 3.1/3.4	B B
068 Liquid Radwaste									X			A3.02 Ability to monitor auto isolation	3.6/3.6	B
071 Waste Gas Disposal				X							X	K4.04 Knowledge of design feature and/or interlocks for isolation of waste gas release tanks G2.1.32 Ability to explain and apply system limits and precautions	2.9/3.4 3.9/3.4	B R
072 Area Radiation Monitoring					X					X		K5.01 Knowledge of radiation theory, sources types, units, and effects A4.02 Ability to manually operate or monitor major components	2.7/3.0 2.5/2.5	R B
K/A Category Point Totals:	2	1	2	3	2	2	1	3	2	2	3	Group Point Total:		23

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 2

System # / Name	K ₁	K ₂	K ₃	K ₄	K ₅	K ₆	A ₁	A ₂	A ₃	A ₄	G	K/A Topic(s)	Imp.	Exam
002 Reactor Coolant							X					A1.04 Predict and monitor changes in Subcooled Margin.	3.9/4.1	B
006 Emergency Core Cooling									X		X	A3.08 Automatic transfer of ECCS flowpaths (RAS). G2.1.20 Ability to execute ECCS procedure steps.	4.2/4.3 4.3/4.2	B B
010 Pressurizer Pressure Control					X							K5.01 Determine condition of fluid in Pzr, using Steam Tables.	3.5/4.0	B
011 Pressurizer Level Control								X				A2.11 Predict impact of Pzr level instrument failing low.	3.4/3.6	B
012 Reactor Protection				X								K4.01 Design feature or interlock that provides trip logic with one channel in trip or bypass.	3.7/4.0	R
014 Rod Position Indication				X								K4.06 Rod position indications for individual or group misalignment.	3.4/3.7	R
026 Containment Spray							X					A1.03 Predict and monitor changes in Containment sump level with Containment Spray.	3.5/3.5	B
029 Containment Purge									X			A3.01 Ability to monitor automatic operation of the Containment Purge System including isolation.	3.8/4.0	B
033 Spent Fuel Pool Cooling			X									K3.03 Effect of a loss of Spent Fuel Pool Cooling on Spent Fuel temperature.	3.0/3.3	B
035 Steam Generator						X						K6.03 Effect of a malfunction or a loss of a S/G level instrument on S/G level.	2.6/3.0	B
039 Main and Reheat Steam			X									K3.05 Effect that a malfunction or a loss of Main or Reheat Steam will have on the RCS.	3.6/3.7	R
055 Condenser Air Removal			X									K3.01 Effect a loss of Condenser Air Removal will have on the Main Condenser.	2.5/2.7	B
062 AC Electrical Distribution		X										K2.01 Bus power supplies to major system Loads.	3.3/3.4	B
063 DC Electrical Distribution		X										K2.01 Bus power supplies to major DC loads.	2.9/3.0	B
064 Emergency Diesel Generator				X								K4.02 System design features that provide trips for the EDG during normal and emergency conditions.	3.9/4.2	B
073 Process Radiation Monitoring											X	G2.1.32 Explain and apply system limit and precautions.	3.4/3.8	R
075 Circulating Water	X											K1.02 Physical connections or relationship between the Circulating Water System and Liquid radwaste discharge.	2.9/3.1	B
079 Station Air	X											K1.01 Physical connections or relationship between Station Air and Instrument Air System.	3.0/3.1	R
086 Fire Protection										X		A4.02 Manually operate or monitor Fire Protection Panels from the Control Room.	3.5/3.5	B
K/A Category Point Totals:	2	2	3	3	1	1	2	1	2	1	2	Group Point Total:		20

ES-401-4 St. Lucie (01-301) Date of Exam: 5/14/01

St. Lucie (01-301) PWR RO Examination Outline
Plant Systems - Tier 2/Group 3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Exam
005 Residual Heat Removal				X								K4.03 Knowledge of RHRS design features or interlocks which provide for RHR heat exchanger bypass flow control.	2.9/3.2	R
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water								X				A2.02 Predict impact of CCW High/Low surge tank level on plant operations.	3.2/3.5	R
027 Containment Iodine Removal	X											K1.01 Physical connections or relationship between Containment Iodine Removal Sys. And the Containment Spray Sys.	3.4/3.7	B
028 Hydrogen Recombiner and Purge Control											X	G2.4.21 Knowledge of parameter and logic used to assess safety functions.	3.7/4.3	R
034 Fuel Handling Equipment														
041 Steam Dump/Turbine Bypass Control										X		A4.08 Manually operate or monitor operation of the Steam Dump Valves	3.0/3.1	R
045 Main Turbine Generator									X			A3.07 Monitor auto operation including stop/gov. valve position on trip	3.5/3.6	B
076 Service Water														
078 Instrument Air			X									K3.02 Affect that a loss or malfunction of the Instrument Air Sys. Will have on systems with pneumatic valves and controls.	3.4/3.6	B
103 Containment							X					A1.01 Predict and monitor changes in Containment pressure, temperature, and humidity to prevent exceeding design limits.	3.7/4.1	R
K/A Category Point Totals:	1		1	1			1	1	1	1	1	Group Point Total:		8

ES-401-4 Facility: St. Lucie (01-301)		Generic Knowledge and Abilities Outline (Tier 3) Date of Exam: 5/14/01		Exam Level: RO
Category	K/A #	Topic	Imp.	Exam
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements	3.7/3.8	B
	2.1.7	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation	3.7/4.4	B
	2.1.11	Knowledge of less than one hour TS action statements	3.0/3.8	B
	2.1.20	Ability to execute procedure steps	4.3/4.2	B
Total				4
Equipment Control	2.2.1	Ability to perform pre-startup procedures including operating those controls associated with equipment that could affect reactivity.	3.7/3.6	B
	2.2.11	Knowledge of the process for controlling temporary changes.	2.5/3.0	B
	2.2.30	Knowledge of RO duties in the control room during fuel handling activities such as alarms from fuel handling area, communications with fuel storage facility, systems operated in the control room to support fueling operations, and supporting instrumentation.	3.5/3.3	R
Total				3
Radiation Control	2.3.1	Knowledge of 10 CFR:20 and related facility radiation control requirements.	2.6/3.0	B
	2.3.2	Knowledge of facility ALARA program	2.5/2.9	R
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5/3.1	B
Total				3
Emergency Procedures and Plan	2.4.6	Knowledge of symptom based EOP mitigation strategies.	3.1/4.0	B
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions.	3.7/4.3	B
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0/4.0	R
Total				3
Tier 3 Target Point Total				13

Facility: St. Lucie (01-301)													Date of Exam: 5/14/01		Exam Level: SRO	
Tier	Group	K/A Category Points											Point Total			
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *				
1. Emergency & Abnormal Plant Evolutions	1	3	4	4				4	5			4	24			
	2	1	2	2				3	4			4	16			
	3	1	1						1				3			
	Tier Totals	5	7	6				7	10			8	43			
2. Plant Systems	1	2	1	1	2	1	1	2	3	1	2	3	19			
	2	2	2	2		1	1	1	2	2	1	3	17			
	3			1					1	1		1	4			
	Tier Totals	4	3	4	2	2	2	3	6	4	3	7	40			
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		17				
				5		5		3		4						
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>																

E/APE # / Name / Safety Function	K ₁	K ₂	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000001 Continuous Rod Withdrawal / I			X				AK3.02 Tech-Spec limits on rod operability	3.2/4.3	B
000003 Dropped Control Rod / I					X		AA2.02 Ability to determine/interpret signal inputs to the rod control system resulting from a dropped rod.	2.7/2.8	B
000005 Inoperable/Stuck Control Rod / I	X						AK1.06 Bases for power limit, for Rod misalignment	2.9/3.8	B
000011 Large Break LOCA / III						X	G2.4.14 Knowledge of general guidelines for EOP flowchart use	3.3/3.9	B
000015/17 RCP Malfunctions / IV						X	G2.1.28 Knowledge of the purpose and function of major systems/components/controls	3.2/3.3	B
BW/E09; CE/A13; W/E09&E10 Natural Circ. / IV	X					X	AK1.2 Normal, abnormal and emergency operating procedures associated with Nat. Circ. G2.4.11 Knowledge of abnormal condition procedures	3.2/3.5 3.4/3.6	B S
000024 Emergency Boration / I		X					AK2.03 Knowledge of Emergency Boration and controllers and positioners	2.6/2.5	B
000026 Loss of Component Cooling Water / VIII			X				AK3.02 Automatic alignments within CCWS from actuation of ESFAS	3.6/3.9	B
000029 Anticipated Transient w/o Scram / I	X						EK1.05 Operational implications/definition of negative temperature coefficient as applied to PWR during ATWAS	2.8/3.2	B
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV					X		EA2.1 Adherence to procedures and operation within the facility license and amendments	3.4/4.2	B
CE/A11; W/E08 RCS Overcooling - PTS / IV			X			X	G2.4.22 Knowledge of bases for prioritizing safety functions AK3.3 Manipulation of controls to obtain desired operating results during abnormal and emergency situations	3.0/4.0 3.1/3.5	S B
000051 Loss of Condenser Vacuum / IV					X		AA2.02 Conditions requiring reactor and/or turbine trip	3.9/4.1	B
000055 Station Blackout / VI				X	X		EA1.06 Restoration of power with one EDG EA2.06 Faults and lockouts that must be cleared prior to re-energizing busses	4.1/4.5 3.7/4.1	S B
000057 Loss of Vital AC Elec. Inst. Bus / VI				X			AA1.06 Manual control of components on loss of vital AC when auto control is lost.	3.5/3.5	B
000062 Loss of Nuclear Service Water / IV			X				AK3.03 Guidance contained in EOP for loss of Nuclear service water	4.0/4.2	B
000067 Plant Fire On-site / IX					X		AA2.13 Ability to determine and interpret need for emergency plant shutdown	3.3/4.4	S
000068 (BW/A06) Control Room Evac. / VIII		X		X			AK2.07 Knowledge of Control room evacuation and EDG AA1.01 Ability to operate ADV's as they apply to Control room evac.	3.3/3.4 4.3/4.5	S B
000069 (W/E14) Loss of CTMT Integrity / V		X					AK2.03 Loss of containment integrity, personnel/emergency hatch	2.8/2.9	S
000074 (W/E06&E07) Inad. Core Cooling / IV		X					EK2.2.05 Knowledge of inadequate core cooling and LPSI pumps	3.9/4.1	B
000076 High Reactor Coolant Activity / IX				X			AA1.04 Ability to operate/monitor failed fuel monitoring equipment	3.2/3.4	B
K/A Category Totals:	3	4	4	4	5	4	Group Point Total:		24

E/APE # / Name / Safety Function	K1	K2	K ₃	A ₁	A ₂	G	K/A Topic(s)	Imp.	Exam
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery /				X			EA1.1 Ability to operate/monitor components and functions of control and safety systems including signals, interlocks, failure modes, automatic and manual features	3.7/3.7	B
000008 Pressurizer Vapor Space Accident / III					X		AA2.03 PORV position indicators and acoustic monitors	3.9/3.9	B
000009 Small Break LOCA / III		X					EK2.03 Interrelations between SBLOCA and S/G's	3.0/3.3	B
000022 Loss of Reactor Coolant Makeup / II				X			AA1.01 Ability to operate/monitor CVCS letdown and charging as they apply to loss of RC pump makeup	3.4/3.3	B
000025 Loss of RHR System / IV	X						AK1.01 Loss of RHRS during all modes of operation	3.9/4.3	B
000027 Pressurizer Pressure Control System Malfunction / III						X	G2.4.48 Ability to interpret control room indications to verify status/operation of system, and understand how operator action affect plant conditions.	3.5/3.8	S
000032 Loss of Source Range NI / VII						X	G2.2.3 Knowledge of design, procedural and operational differences between units	3.1/3.3	S
000033 Loss of Intermediate Range NI / VII							Not chosen due to St. Lucie plant has no intermediate range NI's		
000037 Steam Generator Tube Leak / III					X		AA2.13 Ability to interpret which SG is leaking	4.1/4.3	B
000038 Steam Generator Tube Rupture / III				X			EA1.11 Ability to operate and monitor S/G level indicators as they apply to a SGTR	3.8/3.9	B
000054 (CE/E06) Loss of Main Feedwater / IV						X	G2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3/3.6	B
000058 Loss of DC Power / VI			X		X		AK3.02 Knowledge of the reasons for actions contained in EOP for loss of DC power AA2.03 Ability to determine DC loads lost; impact on ability to operate and monitor plant systems	4.0/4.2 3.5/3.9	B S
000060 Accidental Gaseous Radwaste Rel. / IX		X					AK2.02 Knowledge of interrelations between accidental release and Aux. Building ventilation systems	2.7/3.1	B
000061 ARM System Alarms / VII			X				AK3.02 Knowledge of reasons for guidance contained in alarm response for ARM alarm	3.4/3.6	B
000065 Loss of Instrument Air / VIII					X		AA2.06 Ability to determine when to trip reactor if instrument air pressure is decreasing	3.6/4.2	B
CE/E09 Functional Recovery						X	G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0/4.0	B
K/A Category Point Totals:	1	2	2	3	4	4	Group Point Total:		16

ES-401 St. Lucie (01-301) Date of Exam: 5/14/01

PWR SRO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

Form ES-401-3

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp.	Exam
000028 Pressurizer Level Malfunction / II	X						AK1.01 Knowledge of operational implications of PZR reference leak	2.8/3.1	B
000036 (BW/A08) Fuel Handling Accident / VIII									
000056 Loss of Off-site Power / VI					X		AA2.20 AFW flow indicator	3.9/4.1	S
CE/A16 Excess RCS Leakage / II		X					AK2.1 Components and functions of control and safety systems including Inst. Signals, interlocks, failure modes and auto features	3.2/3.5	B
K/A Category Point Totals:	1	1			1		Group Point Total:		3

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Exam
001 Control Rod Drive											X	G2.2.12 Knowledge of surveillance procedures	3.0/3.4	B
003 Reactor Coolant Pump								X			X	A2.01 Conditions for an abnormal shutdown of RCP compared to normal shutdown of RCP G2.4.18 Knowledge of the specific bases for EOP's	3.7/3.9 2.7/3.6	S B
004 Chemical and Volume Control							X					A1.07 Ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with CVCS and maximum specified letdown flow.	2.7/3.1	B
013 Engineered Safety Features Actuation						X						K6.01 Knowledge of the effect of a loss or malfunction of sensors and detectors will have on the ESFAS	2.7/3.1	B
014 Rod Position Indication														
015 Nuclear Instrumentation					X			X				K5.15 Knowledge of operational implications on effects of xenon on local flux and factors affecting xenon concentrations A2.05 Impact of core void formation on NIS	3.3/3.7 3.3/3.5	B S
017 In-core Temperature Monitor										X		A4.01 Ability to monitor in control room in-core temperatures	3.8/4.1	B
022 Containment Cooling	X											K1.01 Knowledge of relationship between CCS and SWS/cooling system	3.5/3.7	B
026 Containment Spray							X				X	A1.03 Predict and monitor changes in Containment sump level with Containment spray G2.4.21 Knowledge of parameters and logic used to assess status of safety functions	3.5/3.5 3.7/4.3	B S
056 Condensate	X											K1.03 Knowledge of physical connections and/or cause effect between Condensate and MFW	2.6/2.6	B
059 Main Feedwater			X									K3.02 Knowledge of effect that a loss of MFW will have on AFW system	3.6/3.7	B
061 Auxiliary/Emergency Feedwater				X				X				K4.02 Knowledge of AFW design features/interlocks which provide AFW auto start upon loss of MFW pp, S/G level, blackout or SI A2.03 Ability to predict impact on AFW for loss of DC power	4.5/4.6 3.1/3.4	B B
063 DC Electrical Distribution		X										K2.01 Bus power supplies to major DC loads.	2.9/3.0	B
068 Liquid Radwaste									X			A3.02 Ability to monitor auto isolation	3.6/3.6	B
071 Waste Gas Disposal				X								K4.04 Knowledge of design feature and/or interlocks for isolation of waste gas release tanks	2.9/3.4	B
072 Area Radiation Monitoring										X		A4.02 Ability to manually operate or monitor major components	2.5/2.5	B
K/A Category Point Totals:	2	1	1	2	1	1	2	3	1	2	3	Group Point Total:		19

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Exam
002 Reactor Coolant							X					A1.04 Predict and monitor changes in subcooled margin	3.9/4.1	B
006 Emergency Core Cooling									X		X	A3.08 Automatic transfer of ECCS flowpaths (RAS). G2.1.20 Ability to execute ECCS procedure steps.	4.2/4.3 4.3/4.2	B B
010 Pressurizer Pressure Control					X							K5.01 Determine condition of fluid in Pzr, using Steam Tables.	3.5/4.0	B
011 Pressurizer Level Control								X				A2.11 Predict impact of Pzr level instrument failing low.	3.4/3.6	B
012 Reactor Protection											X	G2.1.33 Ability to recognize indications for entry-level conditions for technical specifications	3.4/4.0	S
027 Containment Iodine Removal	X											K1.01 Physical connections or relationship between Containment Iodine Removal Sys. And the Containment Spray Sys.	3.4/3.7	B
028 Hydrogen Recombiner and Purge Control								X				A2.02 LOCA condition and related concern over hydrogen	3.5/3.9	S
029 Containment Purge									X			A3.01 Ability to monitor automatic operation of the Containment Purge System including isolation.	3.8/4.0	B
033 Spent Fuel Pool Cooling			X									K3.03 Effect of a loss of Spent Fuel Pool Cooling on Spent Fuel temperature.	3.0/3.3	B
035 Steam Generator						X						K6.03 Effect of a malfunction or a loss of a S/G level instrument on S/G level.	2.6/3.0	B
039 Main and Reheat Steam														
055 Condenser Air Removal		X										K3.01 Effect a loss of Condenser Air Removal will have on the Main Condenser.	2.5/2.7	B
062 AC Electrical Distribution		X										K2.01 Bus power supplies to major system Loads.	3.3/3.4	B
064 Emergency Diesel Generator			X								X	K4.02 System design features that provide trips for the EDG during normal and emergency conditions. G2.2.23 Ability to track limiting conditions for operations	3.9/4.2 2.6/3.8	B S
073 Process Radiation Monitoring														
075 Circulating Water	X											K1.02 Physical connections or relationship between the Circulating Water System and Liquid radwaste discharge.	2.9/3.1	B
079 Station Air														
086 Fire Protection										X		A4.02 Manually operate or monitor Fire Protection Panels from the Control Room.	3.5/3.5	B
103 Containment														
K/A Category Point Totals:	2	2	2		1	1	1	2	2	1	3	Group Point Total:		17

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Exam
005 Residual Heat Removal											X	G2.4.2 Knowledge of system setpoints, interlocks and automatic actions associated with EOP entry conditions.	3.9/4.1	S
007 Pressurizer Relief/Quench Tank								X				A2.03 Ability to predict the impact of overpressurization of the PZR and correct or mitigate the consequences	3.6/3.9	S
008 Component Cooling Water														
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator									X			A3.07 Monitor auto operation including stop/gov. valve position on trip	3.5/3.6	B
076 Service Water														
078 Instrument Air			X									K3.02 Affect that a loss or malfunction of the Instrument Air Sys. Will have on systems with pneumatic valves and controls.	3.4/3.6	B
K/A Category Point Totals:			1					1	1		1	Group Point Total:		4

ES-401 Facility: St. Lucie (01-301)		Generic Knowledge and Abilities Outline (Tier 3) Date of Exam: 5/14/01		Form ES-401-5 Exam Level: SRO	
Category	K/A #	Topic	Imp.	Exam	
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements	3.7/3.8	B	
	2.1.7	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation	3.7/4.4	B	
	2.1.11	Knowledge of less than one hour TS action statements	3.0/3.8	B	
	2.1.12	Ability to apply technical specifications for a system	2.9/4/0	S	
	2.1.20	Ability to execute procedure steps	4.3/4.2	B	
	Total			5	
Equipment Control	2.2.1	Ability to perform pre-startup procedures including operating those controls associated with equipment that could affect reactivity.	3.7/3.6	B	
	2.2.11	Knowledge of the process for controlling temporary changes.	2.5/3.0	B	
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown activities	2.3/3.6	S	
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	2.6/3.8	S	
	2.2.29	Knowledge of SRO fuel handling duties	1.6/3.8	S	
	Total			5	
Radiation Control	2.3.1	Knowledge of 10 CFR:20 and related facility radiation control requirements.	2.6/3.0	B	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5/3.1	B	
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9/3.3	S	
	Total			3	
Emergency Procedures and Plan	2.4.6	Knowledge of symptom based EOP mitigation strategies.	3.1/4.0	B	
	2.4.9	Knowledge of low power/shutdown implications (LOCA/loss of RHR) in accident mitigation strategies	3.3/3.9	S	
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions.	3.7/4.3	B	
	2.4.40	Knowledge of SRO's responsibilities in emergency plan implementation	2.3/4/0	S	
	Total			4	
				17	
Tier 3 Target Point Total SRO				17	

Facility: St. Lucie

Scenario No.: 1

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONOPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for a Steam Generator Tube Leak and Rupture combined with a Partial Loss of Power and failed equipment.

Initial Conditions: Unit 2 is at 100% power MOC

Turnover: The plant is operating at 100% power, MOC. The 2A Main Feedwater Pump has developed a Oil System flange leak and management has made the decision to promptly reduce power to 40% at a rate 10-20 MW/min in order to remove the 2A Main Feedwater Pump from service. 2A Emergency Diesel Generator is out of service for relay replacement, expected back in four hours. 2A Auxiliary Feedwater Pump is out of service for bearing replacement, not expected back this shift. Instructions to the shift are to reduce power to 40% and remove the 2A Main Feedwater Pump from service.

Preexisting Malfunctions: ESFAS relays for SIAS are failed in as-is condition, along with Pressurizer RRS level setpoint input to level controller X.

Event No.	Malf. No.	Event Type*	Event Description
1	0	N-RO R-RO N-BOP	Start second Charging Pump for downpower and balance flows. Power decrease from 100% toward 40% Place Pressurizer on Recirc.
2	1	I-RO	RRS Level setpoint to LT-1100X (selected pressurizer level controller) Fails. Requires transfer to LT-1100Y controls.
3	2	C-RO C-BOP	15 GPM Steam Generator Tube Leak Appears in the 2B SG requiring accelerated downpower.
4	3	C-RO	Shaft Shears on the Running Boric Acid Pump during boration, requires the start of the Standby pump to maintain Reactor Control.
5	4	M-RO M-BOP	Steam Generator Tube Rupture Occurs on 2B SG requiring manual reactor trip. Start-Up transformer 4Kv breaker fails to close on the plant trip causing a sustained loss of power to the 2A3 4Kv buss. Requires use of 2C AFW pump to feed the 2A SG.
6	5	I-RO	Partial Loss of power causes SBCS to close requiring manual operation to preclude release from the ADVs. Manually operates SBCS to conduct RCS Cooldown.
7	6	C-BOP	Failure of ESFAS relay prevents auto actuation of B train SI components. 2B HPSI pump must be started manually.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: St. Lucie

Scenario No.: 2

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONOPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for Total Loss of Feedwater combined with a Partial Loss of Power.

Initial Conditions: Unit 2 is at 40% power MOC

Turnover: The plant is operating at 40% power, MOC with Xenon Increasing due to a prompt reduction to facilitate repairs to 2A Main Feedwater Pump. 2A Emergency Diesel Generator is out of service for relay replacement, expected to be ready for surveillance run in two hours. 2A Auxiliary Feedwater Pump is out of service for bearing replacement, not expected back this shift. Instructions to the shift are to hold power constant at 40% and stable, and swap lead charging pump from C to A. The C Charging pump has developed a minor secondary leak.

Preexisting Malfunctions: Automatic failures for Feedwater Pumps and ADV controller are discovered as they auto-insert.

Event No.	Malf. No.	Event Type*	Event Description
1	0	N-RO	Start 2A Charging Pump, Stop 2C Charging Pump. Initiate/Monitor RCS Dilution to hold power constant and compensate for changing xenon.
2	1	C-RO	Running Charging pump 2A leaks oil, then trips requiring balancing of letdown and start of second pump.
3	2	I-RO	RCP CCW heat exchanger outlet valve closes on failed differential temperature instrument. CCW recovered in override mode.
4	3	C-BOP	Malfunctions in Turbine Gland Steam System cause loss of sealing steam supply. Initial actions appear to correct situation.
5	4	I-BOP	2B SG Level Transmitter drifts high causing SG to steadily fall. Requires Manual control of 2B SG Level. Can be repaired by I&C.
6	5	R-RO N-BOP	Loss of Vacuum initiates from poor turbine seals, requiring initiation of downpower. RO initiates Boration, BOP controls turbine for downpower.
7	6	M-ALL	Subsequent turbine seal failure occurs, and loss of vacuum requires initiation of Manual Plant Trip. The running 2B Main Feedwater Pump trips and its Aux Oil pump does not auto start.
8	7	C-BOP	When the 2B Aux Feedwater Pump is started (Auto or Manual) the breaker faults causing a lock-out of the 2B3 4Kv buss. When the 2C AFW pump is started it is steam bound. Steps for Total Loss of Feedwater must be implemented.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: St. Lucie

Scenario No.: 3 (back-up)

Op-Test No.: 1

Objectives: To evaluate the students ability to implement the ONPs for various instrument and component failures; perform a normal plant power reduction; and to execute the EOPs for a Large Break LOCA combined with a Loss of Offsite Power and subsequent total loss of High Pressure Safety Injection. (Functional Recovery)

Initial Conditions: Unit 2 is at 100% power MOC

Turnover: The plant is operating at 100% power, MOC. The 2A Auxiliary Feedwater Pump is out of service for bearing replacement, and is expected back for a surveillance run later this shift. Instructions to the shift are to maintain 100% power and restore the 2A Aux Feedwater pump to service this shift.

Preexisting Malfunctions: 2A EDG auto-start is disabled, and 2A train SI line is pre-faulted to provide no flow to the core after plant trip and SIAS signal.

Event No.	Malf. No.	Event Type*	Event Description
1	1	I-RO	Letdown Flow controller master input signal faults requiring placing letdown flow in manual control.
2	2	C-BOP	Seal water is lost to the 2A2 Circulating Water Pump, the seal heats, the shaft seizes and the pump requires a manual trip.
3	3	R-RO N-BOP	Rapid Downpower conducted to 90% for degrading condenser vacuum. Second Charging Pump Started, Pressurizer on Recirc Boration / CEA insertion / Turbine controls for Downpower
4	4	I-BOP	Main Generator Voltage Regulator fails to control in automatic during downpower. Swap Regulator to manual and control voltage in manual.
5	5	M-RO M-BOP	Large Break LOCA, Loss of Offsite Power
6	6	C-RO	When the 2B EDG output breaker closes the 2B3 buss differential faults. The 2A EDG fails to auto start and must be manually started.
7	7	C-RO	RAS component relay fails causing RWT suction valve to close. This causes inadequate suction and loss of flow from the 2A HPSI and LPSI pumps. Core Flow is recovered by realignment of ECCS Pump Suction Flowpaths.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: St. Lucie

Date of Examination: 5/14/01

Examination Level (circle one): RO / **SRO**

Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Ability to interpret graphs monographs and tables which contain performance data G2.1.25 2.8/3.1	Question 1: Determine HUT level change from draining RCS while on SDC Unit 2.
		Question 2: Determine SDC flow rate during Mid-Loop Operations Unit 2
	Plant parameter Verification G2.1.7 3.7/4.4	JPM: Perform SDM Calculation Unit 2
A.2	Knowledge of Surveillance Procedures G2.2.12 3.0/3.4	JPM: Monitor AFW Header for Water Hammer Conditions
A.3	Ability to perform procedures to reduce levels of radiation and exposure G2.3.10 2.9/3.3	Question 1: Respond to rapidly lowering refueling cavity with refueling operations in progress.
		Question 2: Respond to a dropped new fuel element in the Fuel Handling Building
A.4	Knowledge of the SRO responsibility in the Emergency plan G2.4.40 2.3/4.0 (SRO)	Question 1: Determine the assembly area during a General Emergency with a release occurring
		Question 2: Identify the responsibilities that the EC cannot delegate during implementation of the E-Plan

Facility: St. Lucie		Date of Examination: 5/14/01
Examination Level (circle one): RO / SRO		Operating Test Number: 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Ability to interpret graphs monographs and tables which contain performance data G2.1.25 2.8/3.1	Question 1: Determine HUT level change from draining RCS while on SDC Unit 2
		Question 2: Determine SDC flow rate during Mid-Loop Operations Unit 2
	Plant parameter Verification G2.1.7 3.7/4.4	JPM: Perform SDM Calculation Unit 2
A.2	Knowledge of Surveillance Procedures G2.2.12 3.0/3.4	JPM: Monitor AFW Header for Water Hammer Conditions
A.3	Ability to perform procedures to reduce levels of radiation and exposure G2.3.10 2.9/3.3	Question 1: Respond to rapidly lowering refueling cavity with refueling operations in progress.
		Question 2: Respond to a dropped new fuel element in the Fuel Handling Building
A.4	Knowledge of emergency action level thresholds and classifications G2.4.41 2.3/4.0	JPM: Determine RCS leak rate and evaluate leak rate to determine if the E-Plan should be implemented.

Facility: St. Lucie		Date of Examination: 5/14/01
Exam Level (circle one): RO / SRO(I) / SRO(U)		Operating Test No.: 1
B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
a. ECCS 006: Align Hot and Cold Leg Injection SRO(U)	M, S, A, L	02
b. ECCS 006: Establish Once Through Cooling	D, S, A, L	02
c. CSS 026: Verify Containment Spray	N, S, A, L	05
d. SWS 076: Loss of ICW header SRO(U)	N, S, A, L	04
e. A.C. Electrical 062: Energize 1B3 4.16 K.V. Bus from Unit 2 During Station Blackout. SRO(U)	D, C, L	06
f. Main Feedwater 059: Transfer 1A S/G Level Control From FCV- 9011 to LCV-9005. Unit 1	N, C	04
g. Pressurizer Pressure 010: Respond to Abnormal Pressurizer Pressure Condition Unit 1	M, C	03
B.2 Facility Walk-Through		
a. CRDS 001: CEA ONOP Perform Manipulations outside Control Room Unit 1 SRO(U)	D	01
b. A.C. Electrical 062: Perform Actions of SNPO for Control Room Inaccessibility Unit 1 SRO (U)	D, R, L	06
c. Inst. Air 078: Align Emergency Cooling Water to the Instrument air system during a LOOP Unit 1	D, L	08
d. (Alternate) CDRDS 001: Place CEA Subgroup on the hold bus Unit 2	D	01
e. (Alternate) A.C. Electrical 062: Disconnect 1B Instrument Inverter for Preventive Maintenance Unit 1	D	06
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA		

INITIAL SUBMITTAL

**ST. LUCIE EXAM
50-335, 389/2001-301**

MAY 14 - 18 & 21 - 25, 2001

INITIAL SUBMITTAL JPMS

**ADMINISTRATIVE JPMS/QUESTIONS
SIMULATOR JPMS,
IN-PLANT JPMS, AND
INITIAL ADMIN TOPICS OUTLINE
(ES-301-1),
CONTROL ROOM SYSTEMS &
FACILITY WALK-THROUGH OUTLINE
(ES-301-2)**

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE QUESTIONS
ST. LUCIE NUCLEAR PLANT
A1

CANDIDATE _____

EXAMINER _____

Date of exam 5/14/01

**REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE SECTION A1
QUESTIONS
ST LUCIE NUCLEAR PLANT**

KA Statement: Ability to interpret monographs and tables which contain performance data

KA #: G2.1.25 – 2.8 / 3.1

References: 2-NOP-01.04 RCS Reduced Inventory and Mid-Loop Operation
2-NOP-03.05 Shutdown Cooling

Candidate: _____ **Time Start** _____
Name **Time Finish** _____

Performance Rating:

Question 1	Sat _____	Unsat _____
Question 2	Sat _____	Unsat _____

Examiner: _____ **Signature:** _____

Comments

Question #1
(Reference allowed)

Question #1

Unit 2 is in the process of draining to Mid-Loop in preparation to install the Nozzle Damns. Current RCS level is at the top of the hot leg. It is desired to drain to the HUT to Mid-Loop. If the inservice HUT level is currently 18.6%, what will be the final HUT level when the RCS reaches Mid-Loop?

Question #1 Expected Response

HUT level change will be 12.2% for a final level of 30.8% ($\pm 0.5\%$)

Question #2

(Reference allowed)

Unit 2 is at Mid-Loop running the 2A LPSI pump on SDC. RCS temperature is 112° F.
What is the maximum SDC flow for the 2A LPSI pump?

Question #2 Expected Response

3000 GPM (\pm 50 GPM)

Question #1

CANDIDATE COPY

REFERENCE ALLOWED: X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Unit 2 is in the process of draining to Mid-Loop in preparation to install the Nozzle Damns. Current RCS level is at the top of the hot leg. It is desired to drain to the HUT to Mid-Loop. If the inservice HUT level is currently 18.6%, what will be the final HUT level when the RCS reaches Mid-Loop?

Question #2
CANDIDATE COPY

REFERENCE ALLOWED: X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Unit 2 is at Mid-Loop running the 2A LPSI pump on SDC. RCS temperature is 112° F.
What is the maximum SDC flow for the 2A LPSI pump?

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT
A.1
PERFORM A SHUTDOWN MARGIN CALCULATION
UNIT 2

CANDIDATE _____

EXAMINER _____

Date of Exam 5/14/01

Reference Material Needed:

2-NOP-100.04, "Surveillance Requirements for Shutdown Margin Modes 2, 3, 4, 5, (Subcritical)", St. Lucie Unit 2 Plant Physics Curves

Read to Candidate

Directions to candidate for Administrative JPMs:

I will explain the initial conditions and state the task to be performed. You will be allowed the use of any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided you.

Initial Conditions: Unit 2 tripped from 100% power 12 hours ago and is currently in Hot Standby with the RCS Tavg at 350°F. Core burnup is 5,000 EFPH and current RCS boron concentration is 1100 ppm.

Initiating Cues: The ANPS has directed you to perform a Shutdown Margin Calculation for the current plant conditions.

CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 tripped from 100% power 12 hours ago and is currently in Hot Standby all CEA's inserted, with RCS Tavg. at 350°F. Core burnup is 5,000 EFPH and current RCS boron concentration is 1100 ppm.

INITIATING CUE:

The ANPS has directed you to perform a Shutdown Margin Calculation for the current plant conditions.

CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 tripped from 100% power 12 hours ago and is currently in Hot Standby all CEA's inserted, with RCS Tavg. at 350°F. Core burnup is 5,000 EFPD and current RCS boron concentration is 1100 ppm.

INITIATING CUE:

The ANPS has directed you to perform a Shutdown Margin Calculation for the current plant conditions.

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT
A.2
MONITOR 1A AFW PUMP FOR WATER HAMMER
CONDITIONS

CANDIDATE _____

EXAMINER _____

Date of exam 5/14/01

**REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE
ST LUCIE NUCLEAR PLANT**

KA Statement: Knowledge of Surveillance Procedures

KA #: G2.2.12 - 3.0 / 3.4

Facility JPM #: New

Task Standard: Determine if the 1A AFW header has the potential for water hammer conditions.

Preferred Evaluation Location:

Simulator _____ Control Room X NTC X

Preferred Evaluation Method:

Perform X Simulate _____

References: 1-OSP-09.111a Monitoring 1A AFW Header for Water Hammer Conditions

Validation Time 15 minutes

Candidate: _____
Name

Time Start _____
Time Finish _____

Performance Rating: Sat _____ Unsat _____

Examiner: _____

Signature: _____

Reference Material Needed:

1-OSP-09.111a Monitoring 1A AFW Header for Water Hammer Conditions
Steam Tables

Read to Candidate

Directions to candidate for Administrative JPMs:

I will explain the initial conditions and state the task to be performed. You will be allowed the use of any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided you.

Initial Conditions: Unit 1 is in Mode 1 100% power

The 1A AFW system is idle with higher than normal discharge piping temperatures.

Initiating Cues: The ANPS has directed you to perform the surveillance to determine if the 1A AFW system has the potential to create a water hammer condition.

CANDIDATE CUE SHEET

(references allowed)

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 1 is in Mode 1 100% power

The 1A AFW system is idle with higher than normal discharge piping temperatures.

INITIATING CUE:

The ANPS has directed you to perform the surveillance to determine if the 1A AFW system has the potential to create a water hammer condition.

**Provide this sheet to the Candidate (when asked for
from step 7.1.3) ~~Put on White Board~~**
(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

*GIVE INFO
ON DEMAND*

- 1A AFW Header Pressure 71 psia.
- Contact Temperature 285°F (between MV-09-9 and Check Valve V09119)

Answer sheet

Suggested termination point is when Candidate identified $<30^{\circ}\text{F}$ subcooled and header requires flushing. (terminate prior to performance of step 7.2)

- 1A AFW header is $<30^{\circ}\text{F}$ subcooled. (actual value is 19°F subcooled, $\pm 2^{\circ}\text{F}$ acceptable)
- Candidate should recognize step 7.2 should be performed to increase subcooling.

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE QUESTIONS
ST. LUCIE NUCLEAR PLANT
A.3

CANDIDATE _____

EXAMINER _____

Date of Exam 5/14/01

**REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE SECTION A.3
QUESTIONS
ST LUCIE NUCLEAR PLANT**

KA Statement: Ability to perform procedures to reduce levels of radiation and exposure

KA #: G2.3.10 – 2.9/3.3

Facility Lesson plan 0702812-02 ONP, 0702208-8B1 Fuel Pool and fuel handling systems.

References: ONP-2-1600030, Accidents Involving New or Spent Fuel
ONP-1-0120031, Excessive Reactor Coolant System Leakage

Candidate: _____ **Time Start** _____
Name

Time Finish _____

Performance Rating: **Question 1** Sat _____ Unsat _____
 Question 2 Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

Question #1
(No Reference allowed)

Refueling operations are under way at Unit 1. A fuel assembly has just been removed from the core and has been withdrawn into the hoist box and refueling machine mast to be transferred to the upender location. The refueling machine operator notices that the refueling water level is going down rapidly. What actions must be taken by the refueling machine operator?

Question #1 Expected Response

Place the fuel assembly back in the core location it was taken from and suspend all fuel movement in the containment.

Question #2
(No Reference allowed)

Upon receiving new fuel at Unit 2, a new fuel assembly was being lifted by the new fuel crane when it was dropped to the floor of the Fuel Handling Bldg. What are the immediate operator actions?

Question #2 Expected Response

- Notify control room personnel of the accident.
- Ensure all material is left in a safe condition.
- Evaluate the New Fuel Area.
- Ensure the Spent Fuel Pool Area is evacuated.
- Ensure the FHB doors are closed and evacuate the area.
- Notify the NPS to assist for reportability.

Question #1

CANDIDATE COPY

REFERENCE ALLOWED: X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Refueling operations are under way at Unit 1. A fuel assembly has just been removed from the core and has been withdrawn into the hoist box and refueling machine mast to be transferred to the upender location. The refueling machine operator notices that the refueling water level is going down rapidly. What actions must be taken by the refueling machine operator?

Question #2
CANDIDATE COPY

REFERENCE ALLOWED: X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Upon receiving new fuel at Unit 2, a new fuel assembly was being lifted by the new fuel crane when it was dropped to the floor of the Fuel Handling Bldg. What are the immediate operator actions?

REVISION NO.: 20	PROCEDURE TITLE: EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE ST. LUCIE UNIT 2	PAGE: 19 of 30
PROCEDURE NO.: 2-0120031		

7.0 OPERATOR ACTIONS: (continued)

7.2 (continued)

INSTRUCTIONS

**CONTINGENCY
ACTIONS**

3. (continued)

T. If core alterations are in progress or the upper guide structure is in the refueling cavity, Then:

1. Stop all fuel movement in containment by placing any fuel assembly in transit in the nearest stable configuration. One of the following locations will apply:
 - a. Reactor vessel below flange level.
 - b. Upender in horizontal position.
 - c. Lower reactor cavity suspended from refueling machine.

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE QUESTIONS
ST. LUCIE NUCLEAR PLANT
A4 (SRO)

CANDIDATE _____

EXAMINER _____

Date of exam 5/14/01

**REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE SECTION A1
QUESTIONS
ST LUCIE NUCLEAR PLANT**

KA Statement: Knowledge of the SRO responsibility in the Emergency Plan

KA #: G2.4.40 – 2.3 / 4.0

References: EPIP-02 Duties and Responsibilities of the Emergency Coordinator

Candidate: _____ **Time Start** _____
Name

Time Finish _____

Performance Rating: **Question 1** Sat _____ Unsat _____

Question 2 Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

Question #1
(No References allowed)

Question #1

Unit 2 has implemented the E-plan and classified the emergency as a General Emergency. A release is occurring and the site is being evacuated. Wind direction is from 180°. What evacuation route and assembly area are you going to communicate to all personnel?

Question #1 Expected Response

Proceed South away from the plant to Jensen Public Beach Parking Area

Question #2

(No References allowed)

List the responsibilities the Emergency Coordinator **cannot** delegate.

Question #2 Expected Response

- Classification of emergency
- Decision to notify state and local authorities and the content of those notifications
- Recommendation of protective actions for the public

Question #1
CANDIDATE COPY

REFERENCE ALLOWED: ^X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Unit 2 has implemented the E-plan and classified the emergency as a General Emergency. A release is occurring and the site is being evacuated. Wind direction is from 180°. What evacuation route and assembly area are you going to communicate to all personnel?

Question #2
CANDIDATE COPY

REFERENCE ALLOWED: X
 YES NO

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

List the responsibilities the Emergency Coordinator **cannot** delegate.

REVISION NO.: 8	PROCEDURE TITLE: DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR ST. LUCIE PLANT	PAGE: 22 of 34
PROCEDURE NO.: EPIP-02		

5.0 INSTRUCTIONS (continued)

TIME / INIT

5.5 SITE AREA OR GENERAL EMERGENCY CHECKLIST (continued)

NOTE

To provide a clear announcement, the following step should be read and the content of the announcement determined prior to starting the announcement.

6. Make the necessary plant announcement using Gai-tronics and boost function:

- A. If done in Step 5.5.4 above, Then GO TO Step 5.5.6.B.

OR

Announce the following (N/A for updates):

"Attention all plant personnel, Unit (1)/(2) has declared a (SITE AREA EMERGENCY)/
(GENERAL EMERGENCY)."

____/____

NOTE

An alternate off-site Assembly Area at the Jensen Public Beach Parking Area is available if the wind direction is from 146° to 270°.

/R8

- B. If the site is **NOT** evacuated and there is **NOT** or has **NOT** been a radiological release, Then announce the following:

"All non-emergency response organization personnel are to commence evacuation of the Owner Controlled Area, report to your vehicle and proceed to your homes."

OR

If the site is **NOT** evacuated and there is or has been radiological release, Then announce the following:

REVISION NO.: 8	PROCEDURE TITLE: DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR	PAGE: 23 of 34
PROCEDURE NO.: EPIP-02	ST. LUCIE PLANT	

5.0 INSTRUCTIONS (continued)

TIME / INIT

5.5 SITE AREA OR GENERAL EMERGENCY CHECKLIST (continued)

6. (continued)

B. (continued)

"All non-emergency response organization personnel are to commence evacuation of the Owner Controlled Area. Persons leaving the site are to proceed (North)/(South) away from the plant to (Jaycee Park)/(Jensen Public Beach Parking Area) for contamination check, accountability and further instructions."

/R8

7. If a SITE AREA EMERGENCY, Then REPEAT Steps 5.5.6.A and 5.5.6.B above (N/A for updates).

OR

If a GENERAL EMERGENCY, Then REPEAT Step 5.5.6.A above (N/A for updates).

8. If the site is **NOT** evacuated, Then order Security to ensure evacuation of the Owner Controlled Area and to report personnel accountability as soon as possible (N/A for updates).

____/____

REVISION NO.: 8	PROCEDURE TITLE: DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR	PAGE: 8 of 34
PROCEDURE NO.: EPIP-02	ST. LUCIE PLANT	

5.0 INSTRUCTIONS (continued)

5.1 General Overview (continued)

2. (continued)

The EC shall not delegate the following responsibilities prior to Emergency Operations Facility (EOF) being declared operational:

- A.** Classification of the emergency.
- B.** The decision to notify state and local authorities and the content of those notifications.
- C.** Recommendation of protective actions for the public.

Once the EOF is operational and proper turnover has been conducted, the Recovery Manager (RM) will assume responsibility for off-site notifications to the state and local authorities and for recommending protective actions.

3. Order of Succession

If the NPS is incapacitated, Then the EC shall be (in order of succession):

- A.** Assistant Nuclear Plant Supervisor (ANPS) (from the affected unit)
- B.** Nuclear Watch Engineer (NWE)
- C.** Any other member of the plant staff with an active SRO license.

4. Watch Relief

- A.** The EC shall grant permission for watch relief, including his/her own, only when it is safe in his/her judgement to do so.

REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT
A.4 (RO)

CALCULATE RCS LEAKRATE AND EVALUATE LEAK
RATE TO DETERMINE IF THE E-PLAN SHOULD BE
IMPLEMENTED

CANDIDATE _____

EXAMINER _____

**REGION II
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE
ST LUCIE NUCLEAR PLANT**

KA Statement: Knowledge of Emergency Action Level Thresholds and Classifications

KA #: G2.4.41 - 2.3 / 4.0

Facility Lesson Plan 0702833-03 EPIP's for Reactor Operators

Facility JPM #: New

Task Standard: Calculate RCS leakrate and determine if leakrate requires E-Plan implementation

Preferred Evaluation Location:

Simulator _____ Control Room X NTC X

Preferred Evaluation Method:

Perform X Simulate _____

References: OP-2-0010125A Surveillance Data Sheets
EPIP-01 Classification of Emergencies

Validation Time 20 minutes

Candidate: _____ **Time Start** _____
Name **Time Finish** _____

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Reference Material Needed:

OP-2-0010125A Surveillance Data Sheets (Data Sheet 1)
EPIP-01 Classification of Emergencies

Read to Candidate

Directions to candidate for Administrative JPMs:

I will explain the initial conditions and state the task to be performed. You will be allowed the use of any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided you.

Initial Conditions: Unit 2 is at 100% power when the RCS leakage recorder indicates a step change. Letdown flow has lowered in response to the increased leakage.

Initiating Cues: Perform a RCS leakrate and evaluate the leakage to determine if the E-Plan should be implemented.

CANDIDATE CUE SHEET

(References allowed)

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 is at 100% power when the RCS leakage recorder indicates a step change. Letdown flow has lowered in response to the increased leakage.

INITIATING CUE:

Perform a RCS leakrate and evaluate the leakage to determine if the E-Plan should be implemented.

CANDIDATE CUE SHEET
(to be handed out when candidate asks for data)
(references allowed)

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF TASK)

Time
0100

Tcold 548.8° F
VCT Level 58%
PZR Level 67%
B.A. Integrator 0
PMW Integrator 0
QT Level 55%

Time
0148

Tcold 548.8
VCT Level 55%
PZR Level 67%
B.A. Integrator 0
PMW Integrator 0
QT Level 56%

No change in Charging pump Seal Tank levels

ANSWER SHEET

VCT level change 58-55% = 3% x 33.8 gal. = 101.4 gallons

QT Level change 55%-56% = 1% x 16.5 gal = 16.5 gallons

Total inventory change 117.4 gallons/48 minutes = 2.45 gpm leakrate

± .5 GPM
ACCEPTABLE 2-3 GPM
CRITICAL

<10 gpm does not qualify for entry into E-Plan *critical call*

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.a

ALIGN ECCS FOR HOT AND COLD LEG
INJECTION UNIT 2

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Align the ECCS to Provide Hot and Cold Leg Injection – Unit 2

Alternate Path:

Yes

Facility JPM #:

0821158 Modified

K/A Rating(s): 4.4/4.4

Ability to manually operate and/or monitor in the control room ECCS pumps and valves.

Task Standard:

This JPM is complete when the student informs the ANPS that hot and cold leg injection is aligned.

Evaluation Location:

Simulator ☒ In-Plant ☐

Evaluation Method:

Perform ☒ Simulate ☐

References:

2-EOP-99, Appendix O, "Hot and Cold Leg Injection"

Validation Time: 15 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ____ UNSAT ____ Performance Time ____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

2-EOP-99, Appendix O, "Hot and Cold Leg Injection"

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

A loss of coolant accident has occurred and has been diagnosed in Unit 2.

It is three (3) hours post-trip, and Shutdown Cooling can **NOT** be established.

INITIATING CUES:

The ANPS has directed that the RCS be aligned for simultaneous ECCS Hot and Cold Leg Injection IAW 2-EOP-99, Appendix O.

<p>STEP 1: Align the 2A HPSI train as follows:</p>	
<p>STEP 1a: Ensure HCV-3617, 3627, 3637, 3647 2A HPSI injection valves are full OPEN.</p> <p>STANDARD: Observe HCV-3627 not full open. Manually opens HCV-3627. Ensures HCV-3616, 3637, 3647 are full open.</p> <p>*EXAMINER'S CUE: HCV-3627 indicates Red and Green light on. HCV-3616, 3637, 3647 indicate red light on green light off.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1b: Open V3550, "To Hot Leg 2A Valve".</p> <p>STANDARD: (Obtains Key 57) V3550 control switch is placed in OPEN position.</p> <p>*EXAMINER'S CUE: V3550 RED LIGHT ON, GREEN LIGHT OFF.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1c: Open V3540, "To Hot Leg 2A Valve".</p> <p>STANDARD: (Obtains Key 55) V3540 control switch is placed in OPEN position.</p> <p>*EXAMINER'S CUE: V3540 RED LIGHT ON, GREEN LIGHT OFF.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1d: Close V3656 "Pump 2A Discharge Valve".</p> <p>STANDARD: (Obtains Key 67) V3656 control switch is placed in CLOSE position.</p> <p>*EXAMINER'S CUE: V3656 GREEN LIGHT ON, RED LIGHT OFF.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p><u>STEP 2:</u> Align the 2B HPSI train as follows:</p>	
<p><u>STEP 2a:</u> Ensure HCV-3616, 3626, 3636, 3646 2B HPSI injection valves are full OPEN.</p> <p><u>STANDARD:</u> Observe that HCV-3616, 3626, 3636, 3646 2B HPSI injection valves are OPEN.</p> <p>*EXAMINER'S CUE: HCV-3616, 3626, 3636, 3646 indicate red light on green light off.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2b:</u> Open V3551, "To Hot Leg 2B Valve".</p> <p><u>STANDARD:</u> (Obtains Key 58) V3551 control switch is placed in OPEN position.</p> <p>*EXAMINER'S CUE: V3551 OPEN; RED LIGHT ON, GREEN LIGHT OFF.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2c:</u> Open V3523, "To Hot Leg 2B Valve".</p> <p><u>STANDARD:</u> (Obtains Key 53) V3523 control switch is placed in OPEN position .</p> <p>*EXAMINER'S CUE: V3523 RED LIGHT ON, GREEN LIGHT OFF.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2d: Close V3654, "Pump 2B Discharge Valve".</p> <p>STANDARD: (Obtains Key 65) V3654 control switch placed in CLOSE position.</p> <p>*EXAMINER'S CUE: V3654 GREEN LIGHT ON, RED LIGHT OFF.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 3: Ensure 2A and 2B HPSI pumps are RUNNING.</p> <p>STANDARD: Observe that 2A HPSI pumps is running. 2B HPSI pump is off. Manually starts 2B HPSI pump.</p> <p>*EXAMINER'S CUE: 2A HPSI pump red light on green light off, amps indicate in the green band. 2B HPSI pump green light on red light off amps indicate '0'</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 4: Verify proper HPSI injection flow by BOTH of the following:</p>	
<p>STEP 4a: Minimum Cold Leg injection greater than or equal to 220 gpm.</p> <p>STANDARD: It is observed that combined cold leg flow is ≥ 220 gpm by using FI-3311, 3321, 3331, 3341.</p> <p>*EXAMINER'S CUE: COLD LEG FLOW INDICATES 205 GPM ON EACH OF FI-3311, 3321, 3331, 3341 (COMBINED FLOW = 820 GPM).</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 4b: Minimum Hot Leg injection greater than or equal to 220 gpm.</p> <p>STANDARD: It is observed that combined hot leg flow is ≥ 220 gpm by using FI-3315 and FI-3325.</p> <p>*EXAMINER'S CUE: HOT LEG FLOW INDICATES 235 GPM ON EACH OF FI-3315 AND FI-3325 (COMBINED FLOW = 470 GPM).</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>____ SAT</p> <p>____ UNSAT</p>

SIMULATOR SETUP SHEET

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A loss of coolant accident has occurred and has been diagnosed in Unit 2.

It is three (3) hours post-trip, and Shutdown Cooling can NOT be established.

INITIATING CUES:

The ANPS has directed that the RCS be aligned for simultaneous ECCS Hot and Cold Leg Injection IAW 2-EOP-99, Appendix O.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.b

ESTABLISH ONCE THROUGH COOLING UNIT 2

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Establish Once-Through-Cooling on Unit 2.

Alternate Path:

No

Facility JPM #:

0821037

K/A Rating(s): 4.1/4.1

Ability to monitor automatic operation of the ECCS including pumps and valves

Task Standard:

This JPM is complete when once-through-cooling has been established and safety injection flow to the RCS has been verified.

Evaluation Location:

Simulator X In-Plant

Evaluation Method:

Perform X Simulate

References:

2-EOP-15, Functional Recovery, RCS and Core Heat Removal, Success Path 4
2-EOP-99, Figure 2

Validation Time: 15 minutes **Time Critical:** No

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT UNSAT Performance Time

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

2-EOP-15, Functional Recovery, RCS and Core Heat Removal, Success Path 4
2-EOP-99, Figure 2

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions and state the task to be performed. All inplant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. Direct all communications to me. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the Candidate Cue Sheet that I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the Candidate Cue Sheet that I provided you. Do you have any questions before we begin?

INITIAL CONDITIONS:

Unit 2 is experiencing a total loss of feedwater event. All attempts to restore main and auxiliary feedwater have been unsuccessful, and both steam generator levels indicate less than 15% wide range. The ANPS has directed that once-through-cooling be established.

INITIATING CUES:

You are the Desk RCO. The ANPS has directed you to establish once-through-cooling IAW 2-EOP-15, RCS and Core Heat Removal, Success Path 4.

<p>STEP 1A: Ensure 'A' and 'B' Trains of SIAS and CIAS have actuated.</p> <p>STANDARD: DEPRESS "think" pushbutton above each switch and POSITION SIAS Train A and Train B actuation switches to SIAS ON.</p> <p>DEPRESS "think" pushbutton above each switch and POSITION CIAS Train A and Train B actuation switches to CIS ON</p> <p>*EXAMINER'S CUE: As each switch is positioned, cue that switch shows Green light OFF, Red light ON</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1B: If Steam Bypass Control System (SBCS) is available, then place the steam bypass permissive in MANUAL and open all SBCS valves.</p> <p>STANDARD: DETERMINE that SBCS is NOT available due to MSIVs CLOSED</p> <p>*EXAMINER'S CUE: Vacuum is NORMAL but DROPPING SLOWLY; if asked, MSIVs show Green lights ON, Red lights OFF; if candidate opens SBCS valves, report no drop in SG pressure</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1C: Open ADVs if available.</p> <p>STANDARD: POSITION all four ADVs to OPEN by any of the following methods:</p> <ul style="list-style-type: none"> • ADV control switches in MANUAL and OPEN • ADV controller in "M" mode with manual output at 100% • ADV controller in "A" mode with setpoint set to 0 <p>*EXAMINER'S CUE: All four ADVs show Green lights OFF, Red lights ON</p> <p>COMMENTS: Add steps</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 1D: Ensure all RCPs stopped.</p> <p>STANDARD: DETERMINE that all RCPs are STOPPED</p> <p>*EXAMINER'S CUE: RCPs all show Green lights ON, Red lights OFF; if asked, amps = 0</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1E: Ensure all available charging pumps running.</p> <p>STANDARD: POSITION A and C charging pump control switches to START</p> <p>*EXAMINER'S CUE: A and C green lights on, Red light off, B Green light OFF, Red light ON</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1F: Ensure all available HPSI pumps running.</p> <p>STANDARD: DETERMINE that both HPSI pumps are RUNNING</p> <p>*EXAMINER'S CUE: Both HPSI pumps show Green lights OFF, Red lights ON; if asked, amps are normal for running condition</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1G Ensure HPSI pumps aligned for cold leg injection.</p> <p>STANDARD: VERIFY eight HPSI injection valves are OPEN (HCV-3617, 3627, 3637, 3647, 3616, 3626, 3636, 3646)</p> <p>*EXAMINER'S CUE: All eight valves show Green lights OFF, Red lights ON</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 1H1: Place the control switch(es) for V1474 and V1475, PORVs, to the OVERRIDE position.</p> <p>STANDARD: POSITION V1474 and V1475 control switches to OVERRIDE</p> <p>*EXAMINER'S CUE: Both PORV switches in OVERRIDE</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1H2: Initiate a high pressure reactor trip signal by pulling two (2) RPS Hi Pzr. Press. trip bistables.</p> <p>STANDARD: UNFASTEN and PULL any two of four HI PZR PRESS trip unit bistables on RPS Cabinets</p> <p>*EXAMINER'S CUE: Channel A and B HI PZR PRESS trip unit bistables are PULLED</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1H3: Verify open V1476 and V1477, "PORV Block Valves".</p> <p>STANDARD: VERIFY V1476 is OPEN POSITION V1477 control switch to OPEN</p> <p>*EXAMINER'S CUE: V1476 shows Green light OFF, Red light ON; before opening, V1477 shows Green light ON, Red light OFF; after opening, V1477 shows Green light OFF, Red light ON</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 1H4: Place the control switch(es) for V1474 and V1475, PORVs, to the OFF position.</p> <p>STANDARD: POSITION V1474 and V1475 control switches to OFF</p> <p>*EXAMINER'S CUE: V1474 and V1475 switches are in OFF</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1H5: Verify both PORVs open.</p> <p>STANDARD: VERIFY V1474 and V1475 are OPEN</p> <p>*EXAMINER'S CUE: V1474 and V1475 show Green lights OFF, Red lights OFF;</p> <p>If asked, Quench Tank level, pressure, temperature RISING and acoustic flow monitors show all Red LEDs LIT</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1I: Verify safety injection flow per Figure 2, "Safety Injection Flow vs. RCS Pressure".</p> <p>STANDARD: SUM safety injection flows on FI-3311/3321/3331/3341 and VERIFY total flow is to RIGHT of "2 Full Trains in Operation" curve on Figure 2 in 2-EOP-99.</p> <p>*EXAMINER'S CUE: RCS pressure is 800 psia; each flow indicator shows 190 gpm (minimum expected is 625 gpm)</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p><u>STEP (done):</u> Notify Control Room that task is complete.</p> <p><u>STANDARD:</u> NOTIFY Control Room that once-through-cooling has been established IAW EOP-15, RCS and Core Heat Removal, Success Path 4</p> <p>EXAMINER'S CUE: ANPS ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p style="text-align: right;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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SIMULATOR JPM SETUP

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 is experiencing a total loss of feedwater event. All attempts to restore main and auxiliary feedwater have been unsuccessful, and both steam generator levels indicate less than 15% wide range. The ANPS has directed that once-through-cooling be established.

INITIATING CUES:

You are the Desk RCO. The ANPS has directed you to establish once-through-cooling IAW 2-EOP-15, RCS and Core Heat Removal, Success Path 4.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.c

VERIFY CONTAINMENT SPRAY SYSTEM

CANDIDATE

EXAMINER

JOB PERFORMANCE MEASURE

Task: Verify Containment Spray System

Alternate Path:

Yes

Facility JPM #:

New

K/A Rating(s): 4.3/4.5

Ability to monitor automatic operation of the CSS including pump starts and correct MOV positioning

Task Standard:

This JPM is complete when the candidate completes EOP-99 Table 3.

Evaluation Location:

Simulator ☐ In-Plant ☐

Evaluation Method:

Perform ☐ Simulate ☐

References: 2-EOP-03 Loss of Coolant Accident
2-EOP-99 Appendixes/Figures/Tables (Table 3)

Validation Time: 10 min. **Time Critical:** NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ☐ UNSAT ☐ Performance Time _____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

<p>STEP 1: Verify A and B train CSAS has actuated:</p> <p>STANDARD: Recognizes 'A' train CSAS has not actuated</p> <p>* EXAMINERS CUE: Red light off green light on for A train CSAS. Red light on green light off for B train CSAS actuation.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2: Manually INITIATE A train CSAS</p> <p>STANDARD: Depresses 'A' CSAS pushbutton while turning 'A' train CSAS switch to ACTUATE.</p> <p>*EXAMINER'S CUE: Red light on green light off for A train CSAS actuation</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 3: Two (2) Containment Spray Pumps start</p> <p>STANDARD: Verifies 2A and 2B CS pumps are running</p> <p>*EXAMINER'S CUE: 2A CS pump red light off green light on, 2B CS pump red light on green light off</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 4: Starts 2A CS pump.</p> <p>STANDARD: Turns 2A CS pump switch to start</p> <p>*EXAMINER'S CUE: Red light on, green light off</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 5: Two (2) Containment Spray Header Isol. Valves (FCV-07-1A, FCV-07-1B) open.</p> <p>STANDARD: Verifies both FCV fully open</p> <p>*EXAMINER'S CUE: FCV-07-1A red light on green light off. FCV-07-1B red light off green light on.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: Fully opens FCV-07-1B</p> <p>STANDARD: Takes FCV-07-1B to the open position</p> <p>*EXAMINER'S CUE: FCV-07-1B red light on green light off.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 7: One Hydrazine Pump (2A) start</p> <p>STANDARD: Verifies red light on green light off 2A Hydrazine pump</p> <p>*EXAMINER'S CUE: Red light on green light off on 2A Hydrazine pump.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8: One Hydrazine Pump Discharge valve (SE-07-3A) open</p> <p>STANDARD: Verifies red light on green light off SE-07-3A</p> <p>*EXAMINER'S CUE: Red light on green light off SE-07-3A</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p><u>STEP 9:</u> One Hydrazine Pump (2B) start</p> <p><u>STANDARD:</u> Verifies red light on green light off 2B Hydrazine pump</p> <p>*EXAMINER'S CUE: Red light on green light off on 2B Hydrazine pump.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 10:</u> One Hydrazine Pump Discharge valve (SE-07-3B) open</p> <p><u>STANDARD:</u> Verifies red light on green light off SE-07-3B</p> <p>*EXAMINER'S CUE: Red light on green light off on SE-07-3B.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 11:</u> Verify Containment Spray flow on FI-07-1A and FI-07-1B (Minimum containment spray flow of 2700 gpm required)</p> <p><u>STANDARD:</u> Observes Containment Spray flow on FI-07-1A and FI-07-1B to be greater than minimum required</p> <p>*EXAMINER'S CUE: FI-071A indicates 3200 gpm, FI-07-1B indicates 3050 gpm</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 4b:</u> Verify Hydrazine flow on FI-07-2-1 and FI-07-2-2</p> <p><u>STANDARD:</u> Observes Hydrazine flow to be 2-4 gpm</p> <p>*EXAMINER'S CUE: FI-07-2-1 and FI-07-2-2 indicate 3.5 gpm</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

SIMULATOR SETUP SHEET

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 has experienced a large break LOCA. Containment pressure is >6 psig.

INITIATING CUES:

The ANPS has directed you to:

Verify Containment Spray

Tools/Equipment/Procedures Needed:

2-EOP-03 Loss of Coolant Accident
2-EOP-99 Appendixes/Figures/Tables (Table 3)

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

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DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

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INITIAL CONDITIONS:

Unit 2 has experienced a large break LOCA. Containment pressure is >6 psig.

INITIATING CUES:

The ANPS has directed you to:

Verify Containment Spray

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.d

LOSS OF ICW HEADER

CANDIDATE

EXAMINER

JOB PERFORMANCE MEASURE

Task: Respond to loss of ICW header

Examiners note: To satisfactorily complete this JPM it is not intended for the candidate to look up the various valve numbers that are directed to be manipulated by the outside operators. The candidate should communicate to the outside operator the noun name of the valves as specified in the procedure.

Alternate Path:

Yes

Facility JPM #:

New

K/A Rating(s): 3.5/3.7

Ability to predict the impact of loss of SWS and use procedures to correct, control or mitigate those malfunctions.

Task Standard:

This JPM is complete when the candidate has completed all contingency actions for loss of the 2A ICW header.

Evaluation Location:

Simulator ___x___ In-Plant ___

Evaluation Method:

Perform ___x___ Simulate ___

References: 2-0640030 Intake Cooling Water System

Validation Time: 20 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ___ UNSAT ___ Performance Time ___

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

2-0640030 INTAKE COOLING WATER SYSTEM

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

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DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

Unit is in Mode 1 45% power waiting to increase power. The up power is on hold due to secondary side chemistry not within specifications. The 2C ICW pump is OOS for overhaul.

INITIATING CUES:

The ANPS has directed you to investigate the 2A ICW header for abnormally high amps on the 2A ICW pump.

<p>STEP 1: Observes 2A ICW ammeter and compares it to the 2B ICW ammeter</p> <p>STANDARD: Identifies 2A ICW ammeter 10 amps higher than 2B ICW ammeter. Calls ANPO to investigate</p> <p><i>EXAM NOTE: APPLICABLE MAY NOT CALL OUT VALUES</i></p> <p>* EXAMINERS CUE: 2A ICW amps 84 amps, 2B ICW pump 74 amps</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2: Identify amps steadily increase to full scale. Manually trips pump.</p> <p>STANDARD: Identifies 2A ICW pump full scale amps. Implements 2-0640030 INTAKE COOLING WATER SYSTEM off normal procedure. May refer to Annunciator summary for E-6 2A ICW pump motor overload trip alarm if alarm received.</p> <p>*EXAMINER'S CUE: 2A ICW pump indicates 0 amps, green light on red light off</p> <p>COMMENTS: <i>should show man trip</i> <i>NOT CRITICAL BECAUSE WILL AUTO TRIP EVENTUALLY</i></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 3: Attempts one restart of the 2A ICW pump</p> <p>STANDARD: Takes switch to start and identifies 2A ICW does not start (NOTE: This step may not be performed due to obvious problem with pump)</p> <p>*EXAMINER'S CUE: 2A ICW pump indicates 0 amps, green light on red light off.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 4: Reduce MVARs to minimum</p> <p>STANDARD: Lowers MVARs to no more than 50 MVARs 'out'</p> <p>*EXAMINER'S CUE: MVARs indicate 50 MVARs out</p> <p>COMMENTS: <i>only critical if off < 50 mvar</i></p>	<p>CRITICAL* STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 5: Reduce Turbine load as needed to within the heat removal capability of the TCW system.</p> <p>STANDARD: Identifies 1 (one) ICW pump should be adequate for 45% power. Acknowledges TCW system will be monitored for adequate heat removal. Identifies generator cold gas temperature <45°C.</p> <p>*EXAMINER'S CUE: Cold Gas temperature is 34°C</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6: Isolates S/G blowdown, then place the Open Blowdown heat exchanger TCV's in MANUAL and closed.</p> <p>STANDARD: Closes FCV's 23-3, 23-4, 23-5, 23-6 blowdown isolation valves and calls NPO to close TCV's 34-3A and 34-3B Open blowdown TCV's.</p> <p>*EXAMINER'S CUE: FCV's 23-3, 23-4, 23-5, 23-6 green light on red light off. NPO reports TCV's 34-3A and 34-3B in manual and closed.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7: Ensure CCW N-Header valves are open, then throttle closed the affected side CCW HX shell side outlet to NOT less than 3,000 gpm flow on the affected side.</p> <p>STANDARD: Verifies HCV-14-8A, 8B and HCV-14-9, 10 are open. Calls SNPO to throttle CCW shell side outlet SB-14166 to close to but not less than 3000 gpm. Verifies from FI-14-1A (RTGB 206) CCW flow is slightly greater than 3000 gpm.</p> <p>*EXAMINER'S CUE: HCV-14-8A, 8B and HCV-14-9, 10 red lights on green lights off. SNPO throttles SB-14166 and requests indicated flow on RTGB 206. FI-14-1A indicates 3200 gpm</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 8: Align Fuel pool cooling to the throttled side</p> <p>STANDARD: Ensures MV-14-18 and MV-14-20 open and MV-14-17 and MV-14-19 closed.</p> <p>*EXAMINER'S CUE: MV-14-18 and MV-14-20 red light on green light off and MV-14-17 and MV-14-19 red light off green light on.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 9: Open the TCW cross-tie SB 13139 and close the affected side TCW HX shell side outlet valve SB 13147.</p> <p>STANDARD: Directs NPO to open SB 13139 and close SB 13147 TCW HX shell side outlet valve.</p> <p>*EXAMINER'S CUE: NPO communicates SB 13139 and SB 13147 are closed.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 10: Secure any operating Concentrators and isolate CCW by closing SB 14218</p> <p>STANDARD: Candidate calls SNPO to verify Concentrators not running OR communicates to examiner Concentrators have not been in service for some time. Directs SNPO to close SB 14218</p> <p>*EXAMINER'S CUE: SNPO communicates Concentrators are shut down and SB 14218 is closed</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 11: If adequate cooling to CCW cannot be maintained, immediately shutdown the reactor and turbine and secure ICW to TCW flow by closing MV-21-2 or MV-21-3 on the non-affected header</p> <p>STANDARD: Candidate determines adequate ICW for this power level by monitoring temperatures. Candidate should contact NPO to monitor critical parameters such as Lube oil temperatures, <i>cool GAS, BEARING oil T, MFW pump T</i></p> <p>*EXAMINER'S CUE: No alarms associated with high CCW or TCW temperatures</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 9: Continue efforts to restore at least 2 ICW pumps and refer to Technical Specifications for further actions</p> <p>STANDARD: Candidate should solicit support from Electrical and/or Mechanical to restore the 2A ICW pump. Refer to Technical Specifications for 2 ICW pumps OOS</p> <p>*EXAMINER'S CUE: Acknowledge from Electrical and/or Mechanical they are still working on the problem on 2A ICW pump.</p> <p>NOTE: Examiner option to have Candidate determine Technical Specifications.</p> <p>COMMENTS:</p> <p style="text-align: center;"><u>END OF TASK</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.e

ENERGIZE 1B3 4.16 K.V. BUS FROM UNIT 2 DURING
STATION BLACKOUT

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Energize 1B3 4.16KV Bus from Unit 2 during station blackout using SBO cross-tie breaker on Unit 1.

Alternate Path:

NO

Facility JPM #:

0821121

K/A Rating(s):

3.1/3.1 – Ability to manually operate and/or monitor synchronizing and paralleling of different AC supplies in the Control Room.

Task Standard:

This JPM is complete when the student informs the ANPS that the 1B3 4.16KV Bus is energized from Unit 2 via the SBO cross-tie breaker.

Evaluation Location:

Simulator _____ In-Plant ☒ _____

Evaluation Method:

Perform _____ Simulate ☒ _____

References:

1-EOP-99, Appendix V

Validation Time: 20 min. **Time Critical:** NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

1-EOP-99, Appendix V

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

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DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

St. Lucie has experienced a loss of offsite power due to electrical grid instability. Unit 2 is stable in hot standby with both its 4.16 KV emergency buses powered from the emergency diesel generators.

Unit 1 is in a station blackout condition because 1A EDG is tagged out for maintenance and 1B EDG cannot be started due to an unknown fault. 1C AFW Pump is feeding both steam generators.

INITIATING CUES:

You are the Desk RCO. The ANPS has directed you to cross-tie the 1AB and 2AB 4.16KV Buses and energize 4.16KV Bus 1B3 IAW 1-EOP-99, Appendix V.

<p>STEP 1: Establish communications with Unit 2 via Gai-Tronics or plant radio (if available).</p> <p>STANDARD: NOTIFY Unit 2 Control Room of intent to cross-tie 1AB and 2AB Buses</p> <p>EXAMINER'S CUE: Communications with Unit 2 ESTABLISHED</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2A: Select the 4.16 KV vital bus to be energized on Unit 1.</p> <p>STANDARD: Select Bus 1B3 (per Initiating Cue)</p> <p>EXAMINER'S CUE: As per the initiating cue</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2B: Place the following pump switches in the PULL-TO-LOCK position:</p> <ul style="list-style-type: none"> • 1A ICW Pump • 1B ICW Pump • 1C ICW Pump • 1A CCW Pump • 1B CCW Pump • 1C CCW Pump. <p>STANDARD: Position above pump control switches to PULL-TO-LOCK</p> <p>EXAMINER'S CUE: Control switch turned counterclockwise and pulled out to the PULL-TO-LOCK position.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2C1: Ensure Table 7, "Vital Power Breaker Configuration/Station Blackout" of 1-EOP-99, has been completed.</p> <p>STANDARD: Ensure Table 7 breaker alignment is completed.</p> <p>EXAMINER'S CUE: Table 7 breaker alignment has been COMPLETED</p> <p>EVALUATOR NOTE: To save time, the intent of this step is NOT to perform Table 7 by individual component alignment but to assume it has been done and to move on to the next step.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2C2: Verify the EDG output breaker on the selected 4.16 KV bus is open, 1-20211 (1-20401).</p> <p>STANDARD: Verify Breaker 1-20401 is OPEN</p> <p>EXAMINER'S CUE: Breaker 1-20401 shows Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2D: When the Unit 2 Control Room is ready to cross-tie AB 4.16 KV buses, then close in the Unit 1 SBO breaker (1-20501).</p> <p>STANDARD: Obtain Key 40 and position Breaker 1-20501 control switch to CLOSE</p> <p>EXAMINER'S CUE: Unit 2 reports READY to cross-tie.</p> <p>If asked prior to closure, 1-20501 Amber light is LIT;</p> <p>After Breaker 1-20501 is closed, it shows Green light OFF, Red light ON</p> <p>EVALUATOR NOTE: Candidate should verify that Unit 2 is ready to cross-tie before closing this breaker but this is not "critical"</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2E: Request the Unit 2 Control Room to close the Unit 2 SBO breaker (2-20501).</p> <p>STANDARD: Request Unit 2 to close its SBO breaker, 2-20501</p> <p>EXAMINER'S CUE: Unit 2 ACKNOWLEDGES and REPORTS that Breaker 2-20501 is CLOSED;</p> <p>If asked, VM-942 reads 4160 volts, and Breaker 2-20501 shows Green light OFF, Red light ON</p> <p>EVALUATOR NOTE: 1AB Bus is now energized from Unit 2</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2F: Place the RTGB control switches on the selected 4.16 KV vital bus for the HPSI, LPSI, and Containment spray pumps in the OFF position.</p> <p>STANDARD: Position 1B HPSI, 1B LPSI and 1B CS pump control switches to STOP</p> <p>EXAMINER'S CUE: Pump switches ^{are} in STOP (as each is positioned)</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2G: Align the selected 1B3 4.16 KV vital bus to the 1AB 4.16 KV Bus by closing 1-20409 and 1-20504.</p> <p>STANDARD: Position Breaker 1-20409 and 1-20504 control switches to CLOSE</p> <p>EXAMINER'S CUE: Breakers 1-20409 and 1-20504 show Green light OFF, Red light ON (as each is positioned)</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 2H:</u> Verify proper bus voltage on the selected vital bus.</p> <p><u>STANDARD:</u> Verify VM-964 shows 4160 volts.</p> <p>EXAMINER'S CUE: VM-964 reads 4160 volts;</p> <p style="padding-left: 150px;">if asked, AM-942 and AM-935 show \approx 26 amps (due to 1B AFW Pump)</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2J:</u> Notify ANPS that task is complete.</p> <p><u>STANDARD:</u> Notify ANPS that Bus 1B3 has been energized from Unit 2 via the SBO cross-tie breakers IAW 1-EOP-99, Appendix V</p> <p>EXAMINER'S CUE: ANPS ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

St. Lucie has experienced a loss of offsite power due to electrical grid instability. Unit 2 is stable in hot standby with both its 4.16 KV emergency buses powered from the emergency diesel generators.

Unit 1 is in a station blackout condition because 1A EDG is tagged out for maintenance and 1B EDG cannot be started due to an unknown fault. 1C AFW Pump is feeding both steam generators.

INITIATING CUES:

You are the Desk RCO. The ANPS has directed you to cross-tie the 1AB and 2AB 4.16KV Buses and energize 4.16KV Bus 1B3 IAW 1-EOP-99, Appendix V.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.f

TRANSFER 1A S/G LEVEL CONTROL FROM FCV-9011
TO LCV-9005 - UNIT 1

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Transfer 1A S/G level control from FCV-9001 to LCV-9005 – Unit 1

Alternate Path:

NO

Facility JPM #:

New

K/A Rating(s): 3.0/2.9

Ability to manually operate and monitor feedwater regulating valve controller in the Control Room.

Task Standard:

This JPM is complete when the student informs the ANPS that the 1A S/G level control has been transferred from FCV-9011 to LCV-9005.

Evaluation Location:

Simulator _____ In-Plant __x__

Evaluation Method:

Perform _____ Simulate __x__

References:

ONP-1-0700030, Main Feedwater Off-Normal, Appendix B

Validation Time: 15 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ____ UNSAT ____ Performance Time ____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

ONP-1-0700030, Main Feedwater Off-Normal, Appendix B

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

The 1A Main Feed Reg. Valve, FCV-9011, has been operating erratically and not responding properly in automatic. The 1A S/G level is slowly drifting down.

INITIATING CUES:

The ANPS has directed you to transfer the 1A S/G level control from the Main Feed Reg. Valve, FCV-9011, to the 15% Bypass Valve, LCV-9005, in accordance with ONP-1-0700030, Main Feedwater Off-Normal Procedure, Appendix B.

<p>STEP 1: Transferring 1A S/G level control from FCV-9011 to LCV-9005.</p>	
<p>STEP 1a: Notify Load Dispatcher of load threatening evolution.</p> <p>STANDARD: Observe Load Dispatcher notification on Load Dispatcher phone.</p> <p>EXAMINERS CUE: Load dispatcher acknowledges load threatening activities</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1b: Restrict plant activities (such as NI adjustments) that could impact feedwater control or power level.</p> <p>STANDARD: Observe announcement to ANPS/Control Room to restrict plant activities that could impact feedwater control or power level.</p> <p>EXAMINERS CUE: ANPS has informed crew no activities will take place that could affect feedwater control or power level</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1c: Station an operator in direct communication with the Control Room at breaker 1-40820, MV-09-3, to reset breaker in case of overload.</p> <p>STANDARD: Observe operator being stationed at breaker 1-40820, with direct communication with the Control Room.</p> <p>EXAMINERS CUE: Operator is standing by with radio contact</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1d: Using LIC 9005, 1A S/G Level 15% Bypass Valve, manually OPEN LCV-9005 until minimal output is shown on LIC-9005 or LCV-9005 indicates dual position.</p> <p>STANDARD: Observe LCV-9005 being manually opened by using the OPEN pushbutton on LIC-9005 until controller output is > 0% or LCV-9005 indicates dual position with red and green indicating lights on.</p> <p>EXAMINER'S CUE: LIC-9005 indicates controller output > 0% and LCV-9005 red and green position indicating lights are on.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 2: If FCV-9011, S/G 1A Main Feedwater Flow Control Valve, is NOT responding properly in automatic or manual transfer is preferred, then perform the following:</p>	
<p>STEP 2a: Place FIC-9001, S/G 1A Flow Control, in MANUAL.</p> <p>STANDARD: Observe FIC-9011 placed in MANUAL by depressing manual pushbutton on the controller.</p> <p>*EXAMINER'S CUE: FIC-9011 MANUAL pushbutton depressed</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2b: In small increments, throttle CLOSE FCV-9011 while throttling OPEN LCV-9005, 1A S/G Level 15% Bypass Valve, until LIC-9005, indicates approximately 50%.</p> <p>STANDARD: Observe FCV-9011 being throttled CLOSED by using the CLOSE pushbutton, while LCV-9005 is being throttled OPEN by using the OPEN pushbutton, until LIC-9005 indicates approximately 50%.</p> <p>*EXAMINER'S CUE: FCV-9011 red and green lights on, LCV-9005 red and green lights on. LIC-9005 indicates 50%.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2c: In small increments, throttle CLOSE FCV-9011 while throttling OPEN MV-09-3, S/G 1A Bypass Valve, until FCV-9011 is fully closed.</p> <p>STANDARD: Observe FCV-9011 being throttled CLOSED by using the CLOSE pushbutton, while MV-09-3 is being throttled OPEN using the 100% Bypass Valve control switch, until FCV-9011 is fully closed.</p> <p>*EXAMINER'S CUE: FCV-9011 green light on, red light off. MV-09-3 indicates 10% on the position indication.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2d: Place LIC-9005, 1A S/G Level 15% Bypass Valve in automatic.</p> <p>STANDARD: Observe controller, LIC-9005, placed in automatic by depressing the AUTO pushbutton.</p> <p>*EXAMINER'S CUE: LIC-9005 in automatic</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2e: Monitor 1A S/G level and feedwater flow rate to ensure LCV-9005 is properly controlling in automatic.</p> <p>STANDARD: Observe 1A S/G level monitored on LIC-9013A,B,C, and D (narrow range) and LR 9011/21. Observe 1A S/G feedwater flow rate being monitored on FI-08-1A and FR 8011/9011.</p> <p>*EXAMINER'S CUE: 1A S/G level is 64% and feedwater flow rate is 5×10^6 lb/hr.</p> <p>COMMENTS: <i>LEVEL IS STABLE</i></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2f: When 1A S/G level is being controlled by FCV-9005, then CLOSE MV-09-5, S/G 1A Reg. Block Valve.</p> <p>STANDARD: Observe 1A S/G Reg. Block Valve, MV-09-5 closed by using control switch.</p> <p>*EXAMINER'S CUE: MV-09-5 green light on, red light off.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2g: Notify Chemistry Dept. to sample the 1A S/G.</p> <p>STANDARD: Observe Chemistry Dept. notification.</p> <p>*EXAMINER'S CUE: Chemistry Dept. notified to sample 1A S/G.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p><u>STEP 2h:</u> If power changes are made while level control is established by use of LCV-9005, then operate MV-09-3 as necessary to control feedwater flow while maintaining LIC-9005 output at approximately 50%.</p> <p><u>STANDARD:</u> Observe no power changes being made while level control is established using LCV-9005.</p> <p>*EXAMINER'S CUE: No power changes being made while level control is established using FCV-9005.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The 1A Main Feed Reg. Valve, FCV-9011, has been operating erratically and not responding properly in automatic. The 1A S/G level is slowly drifting down.

INITIATING CUES:

The ANPS has directed you to transfer the 1A S/G level control from the Main Feed Reg. Valve, FCV-9011, to the 15% Bypass Valve, LCV-9005, in accordance with ONP-1-0700030, Main Feedwater Off-Normal Procedure, Appendix B.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.1.g

RESPOND TO PRESSURIZER
PRESSURE ANOMALY – UNIT 1

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Respond to pressurizer pressure anomaly on Unit 1.

Alternate Path:

No

Facility JPM #:

Modified from 0821043 'Respond to PZR. pressure control channel failure on Unit 1.

K/A Rating(s): 4.0/3.8

Ability to manually operate and/or monitor in the Control Room PORV and block valves

Task Standard:

This JPM is complete when PORV block valve V-1473 is closed

Evaluation Location:

Simulator _____ In-Plant X

Evaluation Method:

Perform _____ Simulate X

References:

ONP 1-0120035, Pressurizer Pressure and Level
1-0120036 Pressurizer Relief/Safety Valve Off-Normal Operating Procedure

Validation Time: 10 minutes **Time Critical:** No

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

ONP 1-0120035, Pressurizer Pressure and Level
1-0120036 Pressurizer Relief/Safety Valve Off-Normal Operating Procedure

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions and state the task to be performed. All inplant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. Direct all communications to me. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the Candidate Cue Sheet that I provided you. Do you have any questions before we begin?

INITIAL CONDITIONS:

Unit 1 is operating at 100% power steady state conditions. Pressurizer pressure is 2225 psia and slowly lowering.

INITIATING CUES:

You are the Board RCO. The ANPS has directed you to investigate and respond to the RCS pressure condition.

<p>STEP 1a: Enters ONP 1-0120035 Pressurizer Pressure and level.</p> <p>Verify pressurizer spray, proportional and back-up heaters are operating properly. Refer to Appendix 'A' for expected automatic actions.</p> <p>STANDARD: Observes spray valves position, pressurizer heater status</p> <p>EXAMINER'S CUE: Green light on red light off on main and auxiliary spray valve Red light on green light off on porportional heaters Backup heaters A1, A2, B1, B2 red light on green light off. Remainder of heaters red light off green light on.</p> <p>NOTE: Candidate may elect to turn on additional backup heaters, but should realize the Pressurizer Pressure control system is operating properly by the time step 3 is complete.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1b: Compares Channel X and Y</p> <p>STANDARD: Determines Pressure control system is operating properly.</p> <p>EXAMINER'S CUE: Pressurizer pressure control channels indicate as follows:</p> <ul style="list-style-type: none"> • X ≈2225 psia slowly lowering • Y ≈2225 psia slowly lowering <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 1c: Observes HIC-1100 (spray controller) output</p> <p>STANDARD: Verifies output from HIC-1100 is '0'.</p> <p>EXAMINER'S CUE: HIC-1100 output indicates '0'</p> <p>NOTE: '0' indicates full output to proportional heaters, 0 output to spray valves</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

(2) ADD PLOT HEATER CONTROLLED MAX OUTPUT
SPLIT CUES INTO BULBS

<p>STEP 2: Verify SE-02-03 and SE-02-04 'Auxiliary Spray Valves are closed</p> <p>STANDARD: Observes green light on red light off</p> <p>EXAMINER'S CUE: SE-02-03 and SE-02-04 green light on red light off</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 3: Verify power operated relief valves are closed</p> <p>STANDARD: Observes green light on red light off on V-1402 and V-1404. Observes TIA-1106 and TIA-1107 PORV and safety valves line temperatures. Recognizes a PORV is leaking by.</p> <p>EXAMINER'S CUE: TIA-1106 indicates 240°F and TIA-1107 indicates 170°F</p> <p>NOTE: If candidate asks for Quench tank parameters give the following:</p> <p style="padding-left: 40px;">Temperature: 110°F slowly going up Pressure 3.5 psia slowly going up Level is 60% slowly going up</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><i>close block valve stuff and enter</i></p> <p>STEP 4: Enters 1-0120036 Pressurizer Relief/Safety Valve. Determine which PORV is open or leaking by observing acoustic flow monitors or PORV position indicating lights</p> <p>STANDARD: Observes acoustic monitor to determine which PORV is leaking by. Recognizes both PORV's indicating lights are green light on, red light off.</p> <p>EXAMINER'S CUE: PORV-1402 green light on red light off. One LED is red on acoustic monitor for PORV-1402</p> <p>COMMENTS:</p>	<p>* CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 5: If PORV has failed open, then place the control switch to OVERRIDE position and verify valve closure by position indicating lights, acoustic flow monitoring, discharge line temperature, quench tank parameters</p> <p>STANDARD: Places PORV-1402 to the override position and observes all the above to determine if leakage still exists.</p> <p>EXAMINER'S CUE: PORV-1402 green light on, red light off. Acoustic monitor indicates one LED red light on, Discharge line temperature TIA-1106 is 245°F and slowly going up. Quench tank temperature is 115°F and slowly going up.</p> <p>NOTE: Candidate may elect to bypass this step due to recognizing PORV not actually OPEN, just leaking by.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: If PORV show signs of leakage as indicated by either tailpipe temperature >210°F or tailpipe temperature >190°F and other parameters indicate leakage (Quench tank or acoustic monitor) then PERFORM the following:</p> <p>If V1-402 indicates flow, then close PORV block valve V-1403 and verify temperature decrease on TIA-1106,</p> <p>STANDARD: Identifies V-1402 is leaking, closes PORV V-1402 block valve V-1403</p> <p>EXAMINER'S CUE: TIA-1106 indicates 240°F and slowly going down. Pressurizer pressure is 2230 psia and slowly going up</p> <p>COMMENTS:</p> <p><i>26 transition to 0120056</i></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP (done): Notify ANPS that task is complete.</p> <p>STANDARD: NOTIFY ANPS that PORV V-1402 was leaking by and V-1403 has been closed and Pressurizer pressure is returning to normal.</p> <p>EXAMINER'S CUE: ANPS acknowledges</p> <p>COMMENTS:</p> <p>END OF TASK</p>	<p>____ SAT</p> <p>____ UNSAT</p>

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 1 is operating at 100% power steady state conditions. Pressurizer pressure is 2225 psia and slowly lowering.

INITIATING CUES:

You are the Board RCO. The ANPS has directed you to investigate and respond to the RCS pressure condition.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.2.a

CEA ONOP, PERFORM MANIPULATIONS OUTSIDE THE
CONTROL ROOM – UNIT 1

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

CEA ONOP, Perform Manipulations Outside the Control Room – Unit 1

Alternate Path:

NO

Facility JPM #:

0821111

K/A Rating(s): 2.7/2/9

Resetting CRDM Circuit breakers

Task Standard:

This JPM is complete when actions from Appendix A of ONOP 1-0110030 "CEA Off-Normal Operation and Realignment" are complete.

Evaluation Location:

Simulator _____ In-Plant X

Evaluation Method:

Perform _____ Simulate X

References:

ONOP 1-0110030 "CEA Off-Normal Operation and Realignment."

Validation Time: 20 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

ONOP 1-0110030 "CEA Off-Normal Operation and Realignment".

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 was at 100% power.

The operator was conducting a CEAs periodic test when CEA 62 dropped to the bottom of the core.

Reactor and turbine power were matched.

All attempts from the control room to operate CEA 62 have failed.

INITIATING CUES:

The ANPS has directed you to check the status of CEDM coil power supply panels IAW Appendix A of ONOP 1-0110030 'CEA Off-Normal Operation and Realignment'.

<p>STEP 1: Check the status of the CEDM coil power supply panels in the cable spreading room. Red "Circuit Breaker Closed" light should be lit.</p> <p>STANDARD: Observes red light extinguished.</p> <p>EXAMINER'S CUE: Red circuit breaker light is NOT lit.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2A: Open CEA 62 panel door and open (if not already open) the 4 pole breaker.</p> <p>STANDARD: Identifies breaker open.</p> <p>NOTE: Candidate is not to open the panel door</p> <p>EXAMINER'S CUE: Breaker is in the 'off' position.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2B: Closes the 4 pole breaker.</p> <p>STANDARD: Breaker is in the on position</p> <p>EXAMINER'S CUE: Breaker is in the 'on' position.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: White "Circuit Breaker Open" light should be out</p> <p>STANDARD: Observes white Circuit Breaker light out</p> <p>EXAMINER'S CUE: White "Circuit Breaker Open" light is extinguished.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 4:</u> Green "Power On" light on the timer module should be lit.</p> <p><u>STANDARD:</u> Observes Green "Power On" light lit</p> <p>EXAMINER'S CUE: Green Power On light is illuminated</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> Red CEDM 15V Transient Monitor System power supply lights (two lights per CEA on rear of the coil power supply panels) should be out</p> <p><u>STANDARD:</u> Identifies 17B on, 17BB off. Makes note 17B on.</p> <p>EXAMINER'S CUE: Light PS 17B is on PS 17BB is off.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> Attempt to reset the power supply red light by depressing the light itself.</p> <p><u>STANDARD:</u> Depresses the illuminated red light on PS 17B</p> <p>EXAMINER'S CUE: Red light is extinguished on PS 17B</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 7:</u> Test the power supply lights on CEDM 62 to make sure the bulbs are good. This is done by pressing the four push-buttons on the side of the CEDM 15V Transient Monitor System.</p> <p><u>STANDARD:</u> Depresses the four push-buttons on CEDM 62. Verifies the power supply lights are good.</p> <p>EXAMINER'S CUE: ⁸ Four lights illuminate</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 8:</u> Again reset the red lights</p> <p><u>STANDARD:</u> Individual lights are depressed</p> <p>EXAMINER'S CUE: Individual lights extinguish as they are depressed.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 9:</u> If lights still lit, Then CONTACT the I&C department for assistance and NOTIFY them of the problem and any abnormalities found.</p> <p><u>STANDARD:</u> Identified all lights have been extinguished. I&C not required to be notified.</p> <p>NOTE: Candidate may elect to notify I&C even though all lights have been extinguished.</p> <p>EXAMINER'S CUE: Acknowledge as I&C being notified (if required)</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 10: Check the air conditioning system for proper operation.</p> <p>STANDARD: Recognizes the temperature in the cable spreading room as adequate.</p> <p>EXAMINER'S CUE: Temperature in cable spreading room is 70°F. <i>HVAC is on and it is cool.</i></p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 11: Check the coil power programmer and supply fans for proper operation.</p> <p>STANDARD: Recognize the fans for CEDM 62 are in operation</p> <p>EXAMINER'S CUE: Air and fan noise coming from CEDM 62</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 12: Contact the I&C Department for assistance and notify them of the problem and any abnormalities found.</p> <p>STANDARD: CONTACT the I&C Department and notify them of the four pole breaker being open and one of the Red CEDM 15V Transient Monitor System power supply lights being illuminated. (If not already performed)</p> <p>EXAMINER'S CUE: Acknowledge as I&C being notified END OF TASK</p> <p>COMMENTS:</p> <p>END OF TASK</p>	<p>____ SAT</p> <p>____ UNSAT</p>

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 1 was at 100% power.

The operator was conducting a CEAs periodic test when CEA 62 dropped to the bottom of the core.

Reactor and turbine power were matched.

All attempts from the control room to operate CEA 62 have failed.

INITIATING CUES:

The ANPS has directed the operator to check the status of CEDM coil power supply panels IAW Appendix A of ONOP 1-0110030 'CEA Off-Normal Operation and Realignment'.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 1 was at 100% power.

The operator was conducting a CEAs periodic test when CEA 62 dropped to the bottom of the core.

Reactor and turbine power were matched.

All attempts from the control room to operate CEA 62 have failed.

INITIATING CUES:

The ANPS has directed the operator to check the status of CEDM coil power supply panels IAW Appendix A of ONOP 1-0110030 'CEA Off-Normal Operation and Realignment'.

**REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT**

B.2.b

**Perform SNPO Actions During Control Room
Inaccessibility – Unit 1**

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Perform the SNPO actions during Control Room inaccessibility at Unit 1.

Alternate Path:

NO

Facility JPM #:

0821071

K/A Rating(s): 2.6/2.7

Ability to locally operate breakers.

Task Standard:

This JPM is complete when the SNPO has completed Appendix D of 1-ONP-100.02 and established communications with the Hot Shutdown Control Panel.

Evaluation Location:

Simulator _____ In-Plant x

Evaluation Method:

Perform _____ Simulate x

References:

1-ONP-100.02, Appendix D

Validation Time: 20 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ____ UNSAT ____ Performance Time ____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

1-ONP-100.02, Appendix D

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

1-ONP-100.02, Control Room Inaccessibility, has been implemented due to a chemical spill in the Unit 1 Control Room. The Control Room actions in the ONP have been performed. All personnel have just evacuated the Control Room to perform the subsequent actions in the ONP. ICW and CCW Pumps 1A and 1B are in service.

INITIATING CUES:

You are the SNPO. The ANPS has directed you to perform 1-ONP-100.02, Appendix D.

<p><u>STEP 1(1):</u> Position the following Normal/Isolate switches as indicated in Electrical Penetration Room 1B:</p> <ul style="list-style-type: none"> • SS-117-2, PORV V1404, ISOLATE <p><u>STANDARD:</u> Position V1404 handswitch on <u>Box B158E</u> to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 1(2):</u> Position the following Normal/Isolate switches as indicated in Electrical Penetration Room 1B:</p> <ul style="list-style-type: none"> • SS-3/1255, V1445 Hdr Vent to Quench Tank, ISOLATE <p><u>STANDARD:</u> Position V1445 keyswitch on Box B134C to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 1(3):</u> Position the following Normal/Isolate switches as indicated in Electrical Penetration Room 1B:</p> <ul style="list-style-type: none"> • SS-4/1255, V1449 Hdr Vent to Accum, ISOLATE <p><u>STANDARD:</u> Position V1449 keyswitch on Box B134C to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2(1): Position the following Normal/Isolate switches as indicated in Electrical Penetration Room 1A:</p> <ul style="list-style-type: none"> • SS-117-1, PORV V1402, ISOLATE <p>STANDARD: Position V1402 handswitch on Box B157E to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2(2): Position the following Normal/Isolate switches as indicated in Electrical Penetration Room 1A:</p> <ul style="list-style-type: none"> • SS-3/1256, V1446 Hdr Vent to Atmos, ISOLATE <p>STANDARD: Position V1446 keyswitch on Box B133C to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: If at any time CCW flow to the RCPs is lost, then close V2198, RCP Bleedoff to VCT Throttle, located in the Pipe Penetration.</p> <p>STANDARD: Determine step to be N/A</p> <p>EXAMINER'S CUE: If asked, last known status is that CCW flow was established to the RCPs</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 4A(1):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-20502, 1C Component Cooling Water Pump, ISOLATE <p><u>STANDARD:</u> Position Normal/Isolate switch on 4160 Swgr 1AB Cubicle 1-20502 to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4A(2):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Breaker 1-20502, 1C Component Cooling Water Pump, TRIPPED <p><u>STANDARD:</u> Position 4160 Swgr 1AB Breaker 1-20502 to TRIP</p> <p>EXAMINER'S CUE: Breaker shows Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4A(3):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-20503, 1C Intake Cooling Water Pump, ISOLATE <p><u>STANDARD:</u> Position Normal/Isolate switch on 4160 Swgr 1AB Cubicle 1-20503 to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 4A(4):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Breaker 1-20503, 1C Intake Cooling Water Pump, TRIPPED <p><u>STANDARD:</u> Position 4160 Swgr 1AB Breaker 1-20503 to TRIP</p> <p>EXAMINER'S CUE: Breaker shows Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4A(5):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-20504, Incoming Feeder from 4.16KV Vital Swgr 1B3, ISOLATE <p><u>STANDARD:</u> Position Normal/Isolate switch on 4160 Swgr 1AB Cubicle 1-20504 to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 4A(6): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-20505, Incoming Feeder from 4.16KV Vital Swgr 1A3, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 4160 Swgr 1AB Cubicle 1-20505 to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4B(1): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-40701, Feeder from 480V L.C. 1A2, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 480V Load Center 1AB Cubicle 1-40701 for LC 1A2 to ISOLATE</p> <p>EXAMINER'S CUE: Switch #1 is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4B(2): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-40705, Feeder from 480V L.C. 1B2, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 480V Load Center 1AB Cubicle 1-40705 for LC 1B2 to ISOLATE</p> <p>EXAMINER'S CUE: Switch #2 is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4B(3): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Cubicle 1-40705, 1C Charging Pump, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 480V Load Center 1AB Cubicle 1-40705 for 1C Charging Pump to ISOLATE</p> <p>EXAMINER'S CUE: Switch #3 is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 4B1: If there is a fire in the Control Room or Cable Spreading Room, then ensure Bkr 1-40706, Supply from 480V Vital Load Center 1B2 is closed.</p> <p>STANDARD: Determine step to be N/A</p> <p>EXAMINER'S CUE: If asked, breaker shows Green light OFF, Red light ON</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4C(1): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Frequency Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1B EDG Control Panel for Frequency Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4C(2): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Start Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1B EDG Control Panel for Start Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4C(3): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Voltage Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1B EDG Control Panel for Voltage Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 4C(4):</u> Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • ESFAS Isolation, ISOLATE <p><u>STANDARD:</u> Position Normal/Isolate switch on 1B EDG Control Panel for ESFAS Isolation to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> If a loss of offsite power has occurred, then verify 1B Diesel Generator is operating at 4160V and 60 Hertz.</p> <p><u>STANDARD:</u> Determine step to be N/A</p> <p>EXAMINER'S CUE: Loss of offsite power has NOT occurred</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> If a loss of offsite power has occurred and 1B Diesel Generator is NOT operating, then perform applicable sections <i>actions</i> of Appendix G to place 1B Diesel Generator in service.</p> <p><u>STANDARD:</u> Determine step to be N/A</p> <p>EXAMINER'S CUE: Loss of offsite power has NOT occurred</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 7: Notify the HSCP that Appendix D critical actions are complete.</p> <p>STANDARD: Notify Control Room that Appendix D critical actions are complete</p> <p>EXAMINER'S CUE: HSCP acknowledges Appendix D critical actions complete.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8A(1): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Voltage Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1A EDG Control Panel for Voltage Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8A(2): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Frequency Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1A EDG Control Panel for Frequency Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8A(3): Position the following Normal/Isolate switches as indicated:</p> <ul style="list-style-type: none"> • Start Control, ISOLATE <p>STANDARD: Position Normal/Isolate switch on 1A EDG Control Panel for Start Control to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 9: If there is a fire in the Cable Spreading Room, then place BOTH 1A EDG overspeed trip levers in TRIP by depressing the engine mounted control panel Emergency Trip pushbutton (one per engine).</p> <p>STANDARD: Determine step to be N/A</p> <p>EXAMINER'S CUE: There is no fire in the Cable Spreading Room</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10(1): If there is not a fire in the Cable Spreading Room, then perform the following, as applicable:</p> <ul style="list-style-type: none"> • If a Loss of Offsite Power has occurred, then verify 1A D/G is operating at 1460V and 60 hertz. <p>STANDARD: Determine step to be N/A</p> <p>EXAMINER'S CUE: A Loss of Offsite Power has not occurred</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10(2): If there is not a fire in the Cable Spreading Room, then perform the following, as applicable:</p> <ul style="list-style-type: none"> • If a Loss of Offsite Power has occurred and the 1A D/G is NOT operating, then perform the applicable actions of Appendix G to place the 1A D/G in service. <p>STANDARD: Determine step to be N/A</p> <p>EXAMINER'S CUE: A Loss of Offsite Power has not occurred</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 11: Establish communications with the Hot Shutdown Control Panel using at least ONE of the following:</p> <ul style="list-style-type: none"> • Sound Powered Phone System (Circuit 1 preferred) • Plant radio • Gaitronics <p>STANDARD: Locates the Sound Power Phones (circuit 1) and establishes communications with the Hot Shutdown Control Panel.</p> <p>EXAMINER'S CUE: Communications has been established with the Hot Shutdown Panel</p> <p>COMMENTS: <i>END OF TASK</i></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

1-ONP-100.02, Control Room Inaccessibility, has been implemented due to a chemical spill in the Unit 1 Control Room. The Control Room actions in the ONP have been performed. All personnel have just evacuated the Control Room to perform the subsequent actions in the ONP. ICW and CCW Pumps 1A and 1B are in service.

INITIATING CUES:

You are the SNPO. The ANPS has directed you to perform 1-ONP-100.02, Appendix D.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.2.c

ALIGN EMERGENCY COOLING WATER TO THE 1A
INSTRUMENT AIR COMPRESSOR

CANDIDATE

EXAMINER

JOB PERFORMANCE MEASURE

Task:

Align Emergency Cooling Water To the 1A Instrument Air Compressor

Alternate Path:

No

Facility JPM #:

0821068

K/A Rating(s): 2.6/2.9

Knowledge of physical connections and/or cause-effect relationships between the IAS and cooling water to compressor.

Task Standard:

This JPM is complete when the Control Room has been notified that the 1A Instrument Air Compressor is ready to start.

Evaluation Location:

Simulator _____ In-Plant X

Evaluation Method:

Perform _____ Simulate X

References:

1-EOP-99, Appendix H, "Operation of the 1A and 1B Instrument Air Compressors"

Validation Time: 30 min. **Time Critical:** NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT ____ UNSAT ____ Performance Time ____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

12' (Minimum) Ladder

1-EOP-99, Appendix H, "Operation of the 1A and 1B Instrument Air Compressors"

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

A loss of off-site power on has been diagnosed and is in progress.

INITIATING CUES:

The control room operator has just directed you to align the Emergency Cooling System to the 1A Instrument Air Compressor IAW 1-EOP-99, Appendix H. He also informs you that MCC 1AB is powered and breakers 1-42434 "INSTR. AIR COMPRESSOR COOLING FAN", 1-42435 "INSTR. AIR COMPRESSOR COOLING SYS WATER PUMP" and 1-41324 "1A INSTR. AIR COMPRESSOR" are closed.

<p>STEP 2A: OPEN jacket cooling inlet to the 1A Instrument Air Compressor; V13197 "1A INSTR AIR COMP JACKET INLET ISOL".</p> <p>(At the 1A instrument air compressor)</p> <p>STANDARD: POSITION V13197 to fully counter clockwise.</p> <p>EXAMINER'S CUE: <i>V13197 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>COMMENTS: <i>Exam note: Due to LOSP, STEP 2 Applies</i></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2B: OPEN jacket cooling outlet to the 1A Instrument Air Compressor; V13201 "1A INSTR AIR COMP JACKET OUTLET ISOL".</p> <p>(At the 1A instrument air compressor)</p> <p>STANDARD: POSITION V13201 to fully counter clockwise.</p> <p>EXAMINER'S CUE: <i>V13201 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2C: Ensure sufficient level exists in the instrument air compressor head tank. (Tank is on Mezz. level 43', above the compressor).</p> <p>STANDARD: ENSURE the tank is full</p> <p>EXAMINER'S CUE: <i>THE HEAD TANK IS FULL.</i></p> <p>NOTE: TANK IS ON TURBINE MEZZANINE LEVEL, WEST OF FHW-4A AND JUST NORTH OF COLUMN B-8.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 2D: Ensure Bkr. 1-42434, "Instr Air Compressor Cooling Fan" and Bkr. 1-42435, "Instr Air Compressor Cooling System Water Pump" are CLOSED (Bkrs located on 1AB-MCC in the Cable Spreading Room)</p> <p>STANDARD: OBSERVE the green lights illuminated above the "START" & "STOP" pushbuttons for the Cooling Fan <u>and</u> the Water Pump.</p> <p>EXAMINER'S CUE: GREEN LIGHTS ON RED LIGHTS OFF FOR BOTH COMPONENTS IN LOCAL PANEL B-168A</p> <p>NOTE: CUE STATES THAT THESE BREAKERS ARE CLOSED, SO STUDENT NEED NOT CHECK THE PHYSICAL BREAKERS.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2E: ^(V13383) CLOSE SH13383, "Air Compressors Outlet Isol." (Next to column B-8 ≈ elevation 35")</p> <p>(Below and South of V13417)</p> <p>STANDARD: POSITION SH13383 to fully clockwise.</p> <p>EXAMINER'S CUE: SH13383 IS ROTATED FULLY CLOCKWISE UNTIL HARD STOP.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2E: ^(V13380) CLOSE SH13380, "Air Compressors Inlet Header Isol." (Next to column B-8 ≈ elevation 35")</p> <p>(Below and South of V13417)</p> <p>STANDARD: POSITION SH13380 to fully clockwise.</p> <p>EXAMINER'S CUE: SH13380 IS ROTATED FULLY CLOCKWISE UNTIL HARD STOP.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2F1: Ensure the following valves are OPEN:</p> <p>V13417, "Air Compressor Cooler Inlet From Recirc. Pump Isol."</p> <p>(V13417 is above the Radiator)</p> <p>STANDARD: <u>POSITION</u> V13417 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>V13417 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2F2: Ensure the following valves are OPEN:</p> <p>V13420, "Air Compressor Cooler To Fan Cooler Isol."</p> <p>(V13420 is above the Radiator)</p> <p>STANDARD: <u>POSITION</u> V13420 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>V13420 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>NOTE: VALVE IS ABOVE V13417.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2F3: Ensure the following valves are OPEN:</p> <p>V13424, "1A Recirc. Pump From Head Tank Isol."</p> <p>(V13424 is at floor level south of recirc pump)</p> <p>STANDARD: <u>POSITION</u> V13424 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>V13424 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>NOTE: VALVE IS UNDER FAN MOTOR.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 2G: OPEN SH13419, "Fan Cooler Inlet Isolation" (SH 13419 is below V13417)</p> <p>STANDARD: <u>POSITION</u> SH13419 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>SH13419 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>NOTE: VALVE IS ABOUT 5 FT ABOVE FAN MOTOR.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2G: OPEN SH13418, "1A Recirc. Pump Discharge Isol." (SH13418 is above V13417)</p> <p>STANDARD: <u>POSITION</u> SH13418 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>SH13418 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p>NOTE: VALVE IS ABOUT 8 FT ABOVE FAN MOTOR.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UN</p>
<p>STEP 2H: Verify V18109 "1A Instrument Air Receiver Inlet From Aftercooler" is OPEN (Near column A-6, above the instrument air control panel).</p> <p>STANDARD: <u>VERIFY</u> V18109 <u>OPEN</u>.</p> <p>EXAMINER'S CUE: <i>V18109 IS ROTATED COUNTER CLOCKWISE UNTIL HARD STOP.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 2I: Start Instrument Air Compressor Cooling System <u>pump</u> and <u>fan</u>. (Local Panel B-168A above the pushbuttons)</p> <p>STANDARD: DEPRESS the START pushbuttons for the 1A Compressor Cooling System pump and fan and OBSERVE the red indicating lights illuminated.</p> <p>EXAMINER'S CUE: RED LIGHTS ON AND GREEN LIGHTS OFF FOR BOTH COMPONENTS.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2J: CLOSE V18586, "1C/1D Instrument Air Compressor Discharge Isolation". (In the overhead above the IA receiver)</p> <p>STANDARD: POSITION V18586 to CLOSE.</p> <p>EXAMINER'S CUE: V18586 IS ROTATED CLOCKWISE UNTIL HARD STOP.</p> <p>NOTE: VALVE IS ABOVE AND NW OF IA RECEIVER.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2K: Notify Unit 1 Control Room that the 1A Instrument Air Compressor is ready to start.</p> <p>STANDARD: Control Room NOTIFIED</p> <p>EXAMINER'S CUE: ANPS ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p>END OF TASK</p>	<p>____ SAT</p> <p>____ UNSAT</p>

STOP TIME: _____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A loss of off-site power has been diagnosed and is in progress.

INITIATING CUES:

The control room operator has just directed you to align the Emergency Cooling System to the 1A Instrument Air Compressor IAW 1-EOP-99, Appendix H. He also informs you that MCC 1AB is powered and breakers 1-42434 "INSTR. AIR COMPRESSOR COOLING FAN", 1-42435 "INSTR. AIR COMPRESSOR COOLING SYS WATER PUMP" and 1-41324 "1A INSTR. AIR COMPRESSOR" are closed.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.2.d

RESPOND TO CEA CONTINUOUS GRIPPER VOLTAGE
HI ALARM OUTSIDE THE CONTROL ROOM – UNIT 2

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Respond to CEA Continuous Gripper Voltage Hi Alarm Outside the Control Room – Unit 2

Alternate Path:

NO

Facility JPM #:

0821112

K/A Rating(s): 2.6/3.6

Isolation of CEA coil to prevent coil burnout

Task Standard:

This JPM is complete when subgroup 22 is on the Hold Bus disconnects for CEAs 88, 89, 90, and 91 are open.

Evaluation Location:

Simulator _____ In-Plant X_____

Evaluation Method:

Perform _____ Simulate X_____

References:

ONP 2-0110030, Appendix J.
ONP 2-0110030, "CEA Off-Normal Operation and Realignment"

Validation Time: 10 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

ONP 2-0110030, Appendix J.
ONP 2-0110030, "CEA Off-Normal Operation and Realignment"

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 2 is at 100% power, no surveillances are in progress.

Annunciator (K-36) "CONTINUOUS GRIPPER VOLT HIGH" alarms and locks in.

INITIATING CUES:

The ANPS has directed you to determine the affected subgroup and place that group on the hold bus in accordance with appendix J of ONP 2-0110030, "CEA Off-Normal Operation and Realignment".

<p>STEP 2 1: (From Caution Statement) Verify no other CEA subgroup is in the high voltage condition</p> <p>STANDARD: <u>VERIFY</u> no additional subgroups have continuous gripper high voltage.</p> <p>EXAMINER'S CUE: ALL OTHER SUBGROUP CONTINUOUS GRIPPER HIGH VOLTAGE LIGHTS EXTINGUISHED.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2 a: Placing subgroup on hold bus.</p> <p>STANDARD: Determine which subgroup(s) is in high voltage condition by the illuminated Continuous Gripper High Voltage lights (located at the bottom of each subgroup cabinet).</p> <p>EXAMINER'S CUE: SD-A, SUBGROUP 22, HV LIGHTS 15 & 17, "CONTINUOUS GRIPPER HIGH VOLTAGE" LIGHTS ILLUMINATED.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 2 b: Placing subgroup on hold bus</p> <p>STANDARD: Energize the Hold Bus by placing the appropriate Subgroup Maint toggle switch to the ON position.</p> <p>EXAMINER'S CUE: "SUBGROUP MAINT 22" RED LIGHT ILLUMINATED.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 1d: Placing subgroup on hold bus</p> <p>STANDARD: Slowly and firmly depress the appropriate (red) Hold Bus HV pushbutton four (4) times.</p> <p>EXAMINER'S CUE: "HVC3" BUTTON PUSHED FOUR TIMES.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 1e: Placing subgroup on hold bus</p> <p>STANDARD: Open all CEA Disconnect Breakers for the appropriate subgroup.</p> <p>EXAMINER'S CUE: GREEN LIGHTS ON.</p> <p>COMMENTS:</p> <p>END OF TASK</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 is at 100% power, no surveillances are in progress.

Annunciator (K-36) "CONTINUOUS GRIPPER VOLT HIGH" alarms and locks in.

INITIATING CUES:

The ANPS has directed you to determine the affected subgroup and place that group on the hold bus in accordance with appendix J of ONP 2-0110030, "CEA Off-Normal Operation and Realignment".

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APPENDIX J

CONTINUOUS GRIPPER VOLTAGE HI (ANNUNCIATOR K-36) ALARM

(Page 1 of 3)

CAUTION

The following must be performed within 10 minutes after receiving annunciator K-36 to prevent damaging the upper gripper coils.

NOTE

Degradation or failure of a power supply may result in annunciator K-23 CEDMCS Trouble, K-31 CEDMCS Abnormal, and/or K-36 Continuous Gripper Volt High to alarm and lock in. If this condition occurs, it is possible to have Gripper High Voltage lights lit on multiple CEAs.

CAUTION

If more than one CEA subgroup is in the high voltage condition, (more than 2 continuous gripper high voltage lights illuminated) notify the Control Room to trip the reactor and implement 2-EOP-01, "Standard Post Trip Actions."

NOTE

CEAs on the hold bus will still de-energize on a reactor trip.

1. If no Continuous Gripper High Voltage lights are lit, Then STATION personnel in the CEDMCS room to continuously monitor for Continuous Gripper High Voltage lights (located at the bottom of each subgroup cabinet) for the duration that K-36 is illuminated.
2. Placing a Subgroup on the Hold Bus
 - A. Determine which subgroup(s) is in high voltage condition by the illuminated Continuous Gripper High Voltage lights (located at the bottom of each subgroup cabinet).
 - B. Energize the Hold Bus by placing the appropriate Subgroup Maintenance toggle switch to the ON position.

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APPENDIX J
CONTINUOUS GRIPPER VOLTAGE HI (ANNUNCIATOR K-36) ALARM
 (Page 2 of 3)

INITIAL

2. (continued)
 - C. Slowly and firmly depress the appropriate (red) Hold Bus HV pushbutton four (4) times.
 - D. Open all CEA Disconnect Breakers for the appropriate subgroup.
 - E. Contact I&C Department and inform them of the plant condition.
3. Removing a Subgroup from the Hold Bus
 - A. If any CEA on the Hold Bus is withdrawn, Then OBTAIN PGM concurrence prior to removing the Subgroup from the Hold Bus.
 - B. CLOSE disconnect breakers for the appropriate subgroup.
 - C. Reset appropriate Automatic CEA Timer Modules (ACTMs).

NPS

NOTE

While the subgroup is on the Hold Bus, it is possible that the High Voltage light and the Upper Gripper or the Lower Gripper LEDs will be on simultaneously.

- D. Ensure that the Upper Gripper LED or the Lower Gripper LED is lit.
- E. If the Lower Gripper or the Upper Gripper LED is NOT lit, Then DO NOT remove the Subgroup from the HOLD Bus and contact the I&C Dept.

REVISION NO.: 46	PROCEDURE TITLE: CEA OFF-NORMAL OPERATION AND REALIGNMENT ST. LUCIE UNIT 2	PAGE: 29 of 30
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APPENDIX J
CONTINUOUS GRIPPER VOLTAGE HI (ANNUNCIATOR K-36) ALARM
 (Page 3 of 3)

3. (continued)

- F. If the Lower Gripper or the Upper Gripper LED is lit on ALL the ACTMs for the appropriate subgroup, Then de-energize the Hold Bus by placing the appropriate Subgroup maintenance toggle switch to the OFF position.
- G. If any ACTMs indicate a Lower Gripper condition, Then reset the ACTMs and verify an Upper Gripper condition.
- H. If ACTMs have been reset and continue to indicate a Lower Gripper condition, Then contact the I&C Dept.

END OF APPENDIX J

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE
ST. LUCIE NUCLEAR PLANT

B.2.e

Disconnect 1B Instrument Inverter For Preventative
Maintenance – Unit 1

CANDIDATE _____

EXAMINER _____

JOB PERFORMANCE MEASURE

Task:

Perform the SNPO actions to disconnect the 1B Instrument Inverter for preventative maintenance on Unit 1.

Alternate Path:

NO

Facility JPM #:

0821067

K/A Rating(s): 2.5/2.8

Ability to predict and monitor the effect on instrumentation and controls of switching power supplies.

Task Standard:

This JPM is complete when the Control Room acknowledges that the Instrument AC transfer is complete and the 1B Instrument Inverter is out of service.

Evaluation Location:

Simulator _____ In-Plant ☒ _____

Evaluation Method:

Perform _____ Simulate ☒ _____

References:

OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)"

Validation Time: 10 min.

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)"

READ TO OPERATOR

DIRECTIONS TO CANDIDATE FOR IN-PLANT OR CONTROL ROOM JPMs:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, **shall be simulated** for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DIRECTIONS TO CANDIDATE FOR SIMULATOR JPMs:

I will explain the initial conditions and state the task to be performed. All simulator JPM steps, including any communications, shall be performed for this JPM. You are to operate any plant equipment that is necessary for the completion of this JPM. The simulator will provide the cues as you perform this JPM. Ensure you indicate to me when you finish your assigned task by returning the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is at 100% power and stable with each instrument bus aligned to receive power from its respective inverter.

INITIATING CUES:

You are the SNPO. The ANPS has directed you to take the 1B 120 Volt Instrument Inverter out of service for preventive maintenance IAW OP 1-0970020.

<p><u>STEP 1:</u> Close the applicable maintenance bypass bus breaker on the maintenance bypass bus for alternate feed:</p> <ul style="list-style-type: none"> • Inverter 1B: Maintenance Bypass Bus 1B Ckt 13 <p><u>STANDARD:</u> Position Maintenance Bypass Bus 1B Ckt 13 breaker to ON.</p> <p>EXAMINER'S CUE: Ckt 13 breaker is ON</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> Verify applicable maintenance bypass bus power available light in transfer panel is on.</p> <ul style="list-style-type: none"> • L/1010-2, Maint. Bypass Bus 1B Feed to Instr. Bus 1MB <p><u>STANDARD:</u> Verify light L/1010-2 is ON at Transfer Panel 1B.</p> <p>EXAMINER'S CUE: Light L/1010-2 is ON</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> Verify the applicable sync signal breaker on the maintenance bypass bus is closed and verify the "IN SYNC" light is ON (on the applicable inverter).</p> <ul style="list-style-type: none"> • Inverter 1B: Maintenance Bypass Bus 1B Ckt 3 • Inverter 1B: "IN SYNC" light <p><u>STANDARD:</u> Verify Inverter 1B Maintenance Bypass Bus 1B Ckt 3 breaker is CLOSED, and verify "IN SYNC" light is ON.</p> <p>EXAMINER'S CUE: Ckt 3 breaker is ON; "IN SYNC" light on Invert 1B is ON</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 4:</u> Place the applicable transfer switch in the Maintenance Bypass Bus position.</p> <ul style="list-style-type: none"> • Transfer Panel 1B: Transfer switch 1MB Maintenance Bypass Bus 1B <p><u>STANDARD:</u> Position transfer switch to MAINTENANCE BYPASS BUS 1B.</p> <p>EXAMINER'S CUE: Transfer switch is in MAINTENANCE BYPASS BUS 1B position</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> Notify the Control Room the applicable instrument bus is now being powered from the Maintenance Bypass Bus.</p> <p><u>STANDARD:</u> Notify Control Room that 1MB Instrument Bus is now being powered from the 1B Maintenance Bypass Bus.</p> <p>EXAMINER'S CUE: ANPS ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6</u> Open the inverter breakers on the front of the applicable inverter in the following order:</p> <ol style="list-style-type: none"> 1. CB-6 (Inverter System Output) 2. CB-4 (Inverter Alternate Source) 3. CB-2 (Inverter Output) 4. CB-1 (DC Input) <p><u>STANDARD:</u> Position Breakers CB-6, -4, -2, and -1 on Inverter 1B to OFF (downward position) in that order.</p> <p>EXAMINER'S CUE: As candidate opens these breakers, cue that the respective breaker is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 7:</u> Open the applicable inverter supply breaker on the 125V DC bus.</p> <ul style="list-style-type: none"> • Inverter 1B: DC Bus 1B, 1-60224 <p><u>STANDARD:</u> Position DC Bus 1B Breaker 1-60224 to OFF (to the right).</p> <p>EXAMINER'S CUE: 1-60224 is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> Open the applicable sync signal breaker on the Maintenance Bypass Bus.</p> <ul style="list-style-type: none"> • Inverter 1B: Maintenance Bypass Bus 1B Ckt 3. <p><u>STANDARD:</u> Position Maintenance Bypass Bus 1B Ckt 3 breaker to OFF (to the left).</p> <p>EXAMINER'S CUE: Ckt 3 breaker is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:</u> Notify the Control Room the applicable inverter is out of service.</p> <p><u>STANDARD:</u> Notify ANPS that Inverter 1B has been removed from service.</p> <p>EXAMINER'S CUE: ANPS ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p>END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

ST. LUCIE UNIT 1
 OPERATING PROCEDURE NO. 1-0970020, REVISION 15
OPERATION OF THE 120V INSTRUMENT AC SYSTEM (CLASS 1E)

8.0 INSTRUCTIONS: (continued)

8.1 (continued)

15. Push "Inverter to Load" push button on the front of the applicable inverter. Verify the "Inverter Supplying Load" light is on.
16. Notify the control room that the instrument bus is energized from its associated inverter.

8.2 Removing an inverter from service:

CAUTION

Incorrect execution of this section can result in the actuation of Safeguards equipment and a Reactor Trip. If any discrepancies are noted during the execution of this section, notify the Control Room immediately.

NOTE

Re-energize the Instrument Bus from its associated inverter within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

1. Close the applicable maintenance bypass bus breaker on the maintenance bypass bus for ALTERNATE feed.

Inverter 1A:	Maintenance Bypass Bus 1A	CKT 13	/R15
Inverter 1C:	Maintenance Bypass Bus 1A	CKT 14	/R15
Inverter 1B:	Maintenance Bypass Bus 1B	CKT 13	/R15
Inverter 1D:	Maintenance Bypass Bus 1B	CKT 14	/R15

2. Verify applicable maintenance bypass bus power available light in Transfer panel is on.

Transfer Panel 1A:

L/1009-2	Maint. Bypass Bus 1A Feed to Instr. Bus 1MA	/R15
L/1009-4	Maint. Bypass Bus 1A Feed to Instr. Bus 1MC	/R15

ST. LUCIE UNIT 1
 OPERATING PROCEDURE NO. 1-0970020, REVISION 15
OPERATION OF THE 120V INSTRUMENT AC SYSTEM (CLASS 1E)

8.0 INSTRUCTIONS: (continued)

8.2 (continued)

2. (continued)

Transfer Panel 1B:

L/1010-2	Maint. Bypass Bus 1B Feed to Instr. Bus 1MB	/R15
L/1010-4	Maint. Bypass Bus 1B Feed to Instr. Bus 1MD	/R15

CAUTION

The "IN SYNC" light shall be verified to be on prior to removing the instrument inverter from service. If light is not on, stop. Do not continue. Notify E/M Department.

3. Verify the applicable sync signal breaker on the maintenance bypass bus is closed.

Inverter 1A:	Maintenance Bypass Bus 1A	CKT 3	/R15
Inverter 1C:	Maintenance Bypass Bus 1A	CKT 4	/R15
Inverter 1B:	Maintenance Bypass Bus 1B	CKT 3	/R15
Inverter 1D:	Maintenance Bypass Bus 1B	CKT 4	/R15

- A. Verify the "IN SYNC" light is on (on the applicable inverter).

SNPO

4. Place the applicable Transfer switch in the Maintenance Bypass Bus position.

Transfer Panel 1A: Transfer switch 1MA Maintenance Bypass Bus 1A
 Transfer switch 1MC Maintenance Bypass Bus 1A

Transfer Panel 1B: Transfer switch 1MB Maintenance Bypass Bus 1B
 Transfer switch 1MD Maintenance Bypass Bus 1B

5. Notify the Control Room the applicable instrument bus is being powered from the Maintenance Bypass Bus.

ST. LUCIE UNIT 1
 OPERATING PROCEDURE NO. 1-0970020, REVISION 15
OPERATION OF THE 120V INSTRUMENT AC SYSTEM (CLASS 1E)

8.0 INSTRUCTIONS: (continued)

8.2 (continued)

6. Open the inverter breakers on the front of the applicable inverter in the following order:

1. CB-6 (Inverter System Output)
2. CB-4 (Inverter Alternate Source)
3. CB-2 (Inverter Output)
4. CB-1 (DC Input)

7. Open the applicable inverter supply breaker on the 125V DC bus. /R15

Inverter 1A:	DC bus 1A	1-60122	/R15
Inverter 1B:	DC bus 1B	1-60224	/R15
Inverter 1C:	DC bus 1A	1-60113	/R15
Inverter 1D:	DC bus 1B	1-60216	/R15

8. Open the applicable sync signal breaker on the maintenance bypass bus.

Inverter 1A:	Maintenance Bypass Bus 1A	CKT 3	/R15
Inverter 1C:	Maintenance Bypass Bus 1A	CKT 4	/R15
Inverter 1B:	Maintenance Bypass Bus 1B	CKT 3	/R15
Inverter 1D:	Maintenance Bypass Bus 1B	CKT 4	/R15

9. Notify the Control Room the applicable inverter is out of service.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 1 is at 100% power and stable with each instrument bus aligned to receive power from its respective inverter.

INITIATING CUES:

You are the SNPO. The ANPS has directed you to take the 1B 120 Volt Instrument Inverter out of service for preventive maintenance IAW OP 1-0970020.

TOPIC:

DATE:

FILE UNDER:

PAGE:

ADMIN OUTLINE

- GENERAL K/A DESIGNATORS SHOULD BE 'G,' NOT 'K' (RO/SRO)
- RO- G.2.1.7 DOESN'T REF 55.41 (A.1.b)
- A2- NOT CLEAR HOW MONITORING FOR WATER HAMMER WILL BE AN ADMIN TASK - BE CAREFUL
- A.3- G.2.3.10 DOESN'T REF 41 (RO)
- RO - INCLUDE COMMENT ON WHY THIS IS IMPORTANT (IF REQ'D BY STANDARD) A.4
- - NOT IN 50.41
- ~~A4 SRO NOT REF'G 50.41 SHOW LESSOR PLAN~~

Facility: St. Lucie		Date of Examination: 5/14/01
Examination Level (circle one): RO SRO		Operating Test Number: 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Ability to interpret graphs monographs and tables which contain performance data K2.1.25 2.8/3.1	Question 1: Determine HUT level change from draining RCS while on SDC Unit 2
		Question 2: Determine SDC flow rate during Mid-Loop Operations Unit 2
	Plant parameter Verification K2.1.7 3.7/4.4	JPM: Perform SDM Calculation Unit 2
A.2	Knowledge of Surveillance Procedures K2.2.12 3.0/3.4	JPM: Monitor AFW Header for Water Hammer Conditions
A.3	Ability to perform procedures to reduce levels of radiation and exposure K2.3.10 2.9/3.3	Question 1: Respond to rapidly lowering refueling cavity with refueling operations in progress.
		Question 2: Respond to a dropped new fuel element in the Fuel Handling Building
A.4	Knowledge of emergency action level thresholds and classifications K2.4.41 2.3/4.0	JPM: Determine RCS leak rate and evaluate leak rate to determine if the E-Plan should be implemented.

Facility: St. Lucie

Date of Examination: 5/14/01

Examination Level (circle one): RO (SRO)

Operating Test Number: 1

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
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A.3	Ability to perform procedures to reduce levels of radiation and exposure K2.3.10 2.9/3.3	Question 1: Respond to rapidly lowering refueling cavity with refueling operations in progress.
		Question 2: Respond to a dropped new fuel element in the Fuel Handling Building
A.4	Knowledge of the SRO responsibility in the Emergency plan K2.4.40 2.3/4.0 (SRO)	Question 1: Determine the assembly area during a General Emergency with a release occurring
		Question 2: Identify the responsibilities that the EC cannot delegate during implementation of the E-Plan

Facility: St. Lucie
Exam Level (circle one): RO / SRO(I) / SRO(U)

Date of Examination: 5/14/01
Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. ECCS 006: Align Hot and Cold Leg Injection SRO(U)	M, S, A, L	02
b. ECCS 006: Establish Once Through Cooling	D, S, A, L	02
c. CSS 026: Verify Containment Spray	N, S, A, L	05
d. SWS 076: Loss of ICW header SRO(U)	N, S, A, L	04
e. A.C. Electrical 062: Energize 1B3 4.16 K.V. Bus from Unit 2 During Station Blackout. SRO(U)	D, C, L	06
f. Main Feedwater 059: Transfer 1A S/G Level Control From FCV- 9011 to LCV-9005. Unit 1	N, C	04
g. Pressurizer Pressure 010: Respond to Abnormal Pressurizer Pressure Condition Unit 1	M, C	03

B.2 Facility Walk-Through

a. CRDS 001: CEA ONOP Perform Manipulations outside Control Room Unit 1 SRO(U)	D	01
b. A.C. Electrical 062: Perform Actions of SNPO for Control Room Inaccessibility Unit 1	D, R, L	06
c. Inst. Air 078: Align Emergency Cooling Water to the Instrument air system during a LOOP Unit 1 SRO (U)	D, L	08
d. (Alternate) CDRDS 001: Place CEA Subgroup on the hold bus Unit 2	D	01
e. (Alternate) A.C. Electrical 062: Disconnect 1B Instrument Inverter for Preventive Maintenance Unit 1	D	06

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA