

**EXAMINATION OUTLINE DOCUMENTS**

**FOR THE KEWAUNEE INITIAL EXAMINATION - NOVEMBER 2005**



AUG 12 2005

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Serial No. 05-484A  
KPS/LIC/GR: R0  
Docket No. 50-305  
License No. DPR-43

**DOMINION ENERGY KEWAUNEE, INC.**  
**KEWAUNEE POWER STATION**  
**RESPONSE TO REQUEST TO FURNISH EXAMINATION OUTLINES**

In response to a letter from the NRC dated July 14, 2005 regarding the administration of licensing examinations at the Kewaunee Power Station, examination outlines were hand delivered to Mr. Bruce Palagi and Mr. Hironori Peterson at Region III on August 8, 2005.

If you have any questions, please contact Frank Winks at (920) 388-8303.

Very truly yours,

A handwritten signature in black ink, appearing to read "M. Gaffney", written over the typed name.

Michael G. Gaffney  
Site Vice President

Commitments made by this letter: NONE

cc: Mr. J. L. Caldwell  
Administrator Region III  
U.S. Nuclear Regulatory Commission  
2443 Warrenville Road  
Suite 210  
Lisle, IL 60532-4352

Mr. J. F. Stang  
Project Manager  
U.S. Nuclear Regulatory Commission  
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Washington, D. C. 20555

Mr. S. C. Burton  
NRC Senior Resident Inspector  
Kewaunee Power Station

AUG 18 2005

## **Kewaunee 2005 NRC Operator License Exam**

### **Examination Outline Submittal**

#### **Contents**

1. Form ES-201-2, Exam Outline Quality Checklist – 1 page
2. Form ES-201-3, Examination Security Agreement (copies) – 4 pages
3. Form ES-310-1, Administrative Topics Outline – 2 pages – 1 RO, 1 SRO
4. Form ES-301-2, Control Room/In-Plant Systems Outline – 3 pages – 1 RO, 1 SRO-I, 1 SRO-U
5. Form ES-D-1, Scenario Outline – 9 pages – Scenario 1, 3 pages; Scenario 2, 2 pages; Scenario 3, 2 pages; Scenario 4 (Spare), 2 pages
6. Form ES-301-5, Transient and Event Checklist – 4 pages – Group 1 (RO, SRO-I, SRO-U – Scenarios 1 & 2), 1 page; Group 2 (2 SRO-I, SRO-U – Scenarios 1, 2 & 3), 1 page; Group 3 (SRO-I, SRO-U – Scenario 1 & 2), 1 page; Scenario 4, 1 page
7. Form ES-401-2, PWR Examination Outline, and Form ES-401-3, Generic Knowledge and Abilities Outline (Tier 3) – 14 pages – RO – ES-401-2, 7 pages & ES-401-3, 1 page; SRO – ES-401-2, 5 pages & ES-401-3, 1 page
8. Form ES-401-4, Record of Rejected K/As – 2 pages
9. Kewaunee Power Station (KPS) Random Generation Technique and K/A Suppression Report – 1 page
10. Additional Information: Last two NRC Exam JPM topics
  - a. 2002 NRC Examination record of Administrative Topics, and Control Room Systems and Facility Walk-Through subjects
  - b. 2004 NRC Examination record of Administrative Topics, and Control Room Systems and Facility Walk-Through subjects

Facility: Kewaunee Power Station		Date of Examination: 11/07/05		
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, in accordance with ES-401.	SM	BP	BP
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	SM	BP	BP
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	SM	BP	BP
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	SM	BP	BP
2. S I M U L A T O R	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	SM	BP	BP
	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, and ensure that 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 that scenarios will not be repeated on subsequent days.	SM	BP	BP
	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.	SM	BP	BP
3. W /	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	SM	BP	BP
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations	SM	BP	BP
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	SM	BP	BP
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 sections.	SM	BP	BP
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	SM	BP	BP
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	SM	BP	BP
	d. Check for duplication and overlap among exam sections.	SM	BP	BP
	e. Check the entire exam for balance of coverage.	SM	BP	BP
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	SM	BP	BP
a. Author	Stephen P. Johnson		Date 8/15/05	
b. Facility Reviewer (*)	Phillip A. Short		8/15/05	
c. NRC Chief Examiner (#)	BRUCE PALAKI		8/22/05	
d. NRC Supervisor	Hironori Peterson		8/25/05	
Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.				

Facility: <u>Kewaunee Power Station</u>		Date of Examination: <u>11/07/05</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>1</u>

  

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, M	RO-036-JP03A, Reactor Coolant System Leak Rate Check - SP-36-082 JPM for determining RCS leak rate using PPCS Computer and response. K/A 2.1.19 RO value 3.0
Conduct of Operations	S, M	RO-033-JP05A, Verify SI Lineup - N-SI-33-CL Att A JPM to check SI At-Power Lineup (> 100 psig RCS). Two errors - one Initial missing from 1st Operator and one valve mispositioned. K/A 2.1.29 RO value 3.4
Equipment Control	S, N	Record Individual Rod Positions with Control Rod Supervision Program (PPCS) Out of Service - A-CP-46 Data Sheet 1. Record rod positions with one exceeding Tech Spec allowed limits. K/A 2.2.12 RO value 3.0
Radiation Control	S, N	RO-018-JP03A, Perform Actions Prior To Discharge for a Containment Purge Discharge Permit - SP-32B-116 Attachment D. Record rad monitor values, perform check source, align rad monitor to vent, and get met data. K/A 2.3.9 RO value 2.5
Emergency Plan	N/A	N/A

  

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

  

\* Type Codes & Criteria:

- (C)ontrol room, (S)imulator, or Class(R)oom
- (D)irect from bank (• 3 for ROs; • 4 for SROs & RO retakes)
- (N)ew or (M)odified from bank (• 1)
- (P)revious 2 exams (• 1; randomly selected)

Facility: Kewaunee Power StationDate of Examination: 11/07/05Examination Level: RO ☐ SRO ☒Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, M	RO-036-JP03A, Reactor Coolant System Leak Rate Check - SP-36-082 JPM for determining RCS leak rate using PPCS Computer and response. K/A 2.1.19 SRO value 3.0
Conduct of Operations	R, N	Evaluate Crew Staffing for Shift Compliment with Severe Weather Conditions - Technical Specification 6.2.b. JPM for determining if plant operations can continue based on Tech Spec requirements during severe snowstorm. K/A 2.1.5 SRO value 3.4
Equipment Control	S, N	Record Individual Rod Positions with Control Rod Supervision Program (PPCS) Out of Service - A-CP-46 Data Sheet 1. Record rod positions with one exceeding Tech Spec allowed limits. K/A 2.2.12 SRO value 3.4
Radiation Control	S, N	SO-119-JP01A, Review and Authorize a Gas Decay Tank Discharge Permit - SP-32B-116 Attachment E. Total Gas activity is $>1.0E-2$ Ci/cc but only ONE Aux Bldg Fan will be running (marked). [Requires both fans] K/A 2.3.6 SRO value 3.1
Emergency Plan	R, D	SO-119-JP03K, Classify Emergency Event - Control Room Evacuation - EPIP-AD-02. Determine event Classification for given conditions. K/A 2.4.41 SRO value 4.1
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (• 3 for ROs; • 4 for SROs & RO retakes) (N)ew or (M)odified from bank (• 1) (P)revious 2 exams (• 1; randomly selected)		

Facility: <u>Kewaunee Power Station</u>		Date of Examination: <u>11/07/05</u>	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>1</u>	
<b>Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)</b>			
System / JPM Title	Type Code*	Safety Function	
a. Rod Control / Perform a dropped rod recovery (K/A 003A1.02 3.6)	D, S	1	
b. NIS / Loss of Intermediate Range Instrumentation with Failure of Reactor Trip (K/A 033AA2.07 3.9)	A, L, N, S	7	
c. DG / Start and Load the Diesel Generator (K/A 064A4.06 3.9)	A, D, S	6	
d. RHR/ Operate the RHR System In Split Train Mode (K/A E03EA1.3 3.7)	D, S	4	
e. SI / Stop SI Pump during Post-LOCA Cooldown and Depressurization (K/A 009EA2.34 3.6 E03EA2.2 3.5)	A, N, S	2	
f. CVCS / Respond to High Reactor Coolant Activity 076AA2.02 2.8)	N, S	9	
g. Prz Pressure / Transfer from Manual to Automatic Pressure Control (K/A 010A4.01 3.7)	D, S	3	
h. PRT / Lower PRT level (K/A 007A1.01 2.9)	N, S	5	
<b>In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)</b>			
i. ATWS / Locally Isolate Dilution Flowpaths (K/A 029A 2.4.35 3.3)	D, E, R	1	
j. AFW / Locally Control Feed Flow to Minimize RCS Cooldown with both SGs Faulted (K/A E12EA1.1 3.8)	A, N, E	4	
k. CR Evac / Perform Actions Necessary for Control Room Evacuation (Charging Flow) (K/A 068 AA1.06 4.1 068 AA1.13 4.1)	D, E	8	
@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.			
* Type Codes	Criteria for RO / SRO-I / SRO-U		
(A)lternate path	4-6 / 4-6 / 2-3		
(C)ontrol room	••9 / ••8 / ••4		
(D)irect from bank	••1 / ••1 / ••1		
(E)mergency or abnormal in-plant	••1 / ••1 / ••1		
(L)ow-Power / Shutdown	••2 / ••2 / ••1		
(N)ew or (M)odified from bank including 1(A)	••3 / ••3 / ••2 (randomly selected)		
(P)revious 2 exams	••1 / ••1 / ••1		
(R)CA	••1 / ••1 / ••1		
(S)imulator	••1 / ••1 / ••1		

Facility: Kewaunee Power Station Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Date of Examination: 11/07/05 Operating Test No.: 1	
<b>Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)</b>			
System / JPM Title	Type Code*	Safety Function	
a. Rod Control / Perform a dropped rod recovery (K/A 003A1.02 3.6)	D, S	1	
b. NIS / Loss of Intermediate Range Instrumentation with Failure of Reactor Trip (K/A 033AA2.07 4.2)	A, L, N, S	7	
c. DG / Start and Load the Diesel Generator (K/A 064A4.06 3.9)	A, D, S	6	
d. RHR/ Operate the RHR System In Split Train Mode (K/A E03EA1.3 4.1)	D, S	4	
e. SI / Stop SI Pump during Post-LOCA Cooldown and Depressurization (K/A 009EA2.34 4.2 E03EA2.2 4.1)	A, N, S	2	
f. CVCS / Respond to High Reactor Coolant Activity (K/A 076AA2.02 3.4)	N, S	9	
g. Prz Pressure / Transfer from Manual to Automatic Pressure Control (K/A 010A4.01 3.5)	D, S	3	
h.			
<b>In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)</b>			
i. ATWS / Locally Isolate Dilution Flowpaths (K/A 029A 2.4.35 3.5)	D, E, R	1	
j. AFW / Locally Control Feed Flow to Minimize RCS Cooldown with both SGs Faulted (K/A E12EA1.1 3.8)	A, N, E	4	
k. CR Evac / Perform Actions Necessary for Control Room Evacuation (Charging Flow) (K/A 068AA1.06 4.2 068A1.13 4.2)	D, E	8	
@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.			
* Type Codes	Criteria for RO / SRO-I / SRO-U		
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3  • 9 / • 8 / • 4 • 1 / • 1 / • 1 • 1 / • 1 / • 1 • 2 / • 2 / • 1 • 3 / • 3 / • 2 (randomly selected) • 1 / • 1 / • 1		



Facility: <u>Kewaunee Power Station</u>		Date of Examination: <u>11/07/05</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <u>1</u>

  

Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a.		
b. NIS / Loss of Intermediate Range Instrumentation with Failure of Reactor Trip (K/A 033AA2.07 4.2)	A, L, N, S	7
c.		
d.		
e. SI / Stop SI Pump During Post-LOCA Cooldown and Depressurization (K/A 009EA2.34 4.2 E03EA2.2 4.1)	A, N, S	2
f.		
g.		
h.		
In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. ATWS / Locally Isolate Dilution Flowpaths (K/A 029A 2.4.35 3.5)	D, E, R	1
j. AFW / Locally Control Feed Flow to Minimize RCS Cooldown with both SGs Faulted (K/A E12EA1.1 3.8)	A, N, E	4
k. CR Evac / Perform Actions Necessary for Control Room Evacuation (Charging Flow) (K/A 068AA1.06 4.2 068AA1.13 4.2)	D, E	8
@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	• 9 / • 8 / • 4	
(E)mergency or abnormal in-plant	• 1 / • 1 / • 1	
(L)ow-Power / Shutdown	• 1 / • 1 / • 1	
(N)ew or (M)odified from bank including 1(A)	• 2 / • 2 / • 1	
(P)revious 2 exams	• 3 / • 3 / • 2 (randomly selected)	
(R)CA	• 1 / • 1 / • 1	
(S)imulator		

Facility: Kewaunee Power Station				Date of Exam: 11/07/05				Operating Test No.: 1 (Group 1)									
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M(*)		
		1			2			3			4						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
<input checked="" type="checkbox"/> RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX			--	1								1	1	1	0	
	NOR			1	--								1	1	1	1	
	I/C			3,5	3,7								4	4	4	2	
	MAJ			6	4,5								3	2	2	1	
	TS			--	--								0	0	2	2	
<input type="checkbox"/> RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U	RX		1										1	1	1	0	
	NOR		--		1								1	1	1	1	
	I/C		4,7		2,3,6,7								6	4	4	2	
	MAJ		6		4,5								3	2	2	1	
	TS		--		2,3								2	0	2	2	
<input type="checkbox"/> RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/> SRO-U	RX	--											0	1	1	0	
	NOR	1											1	1	1	1	
	I/C	2,3,4,5,7											5	4	4	2	
	MAJ	6											1	2	2	1	
	TS	2,3											2	0	2	2	
<input type="checkbox"/> RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX													1	1	0	
	NOR													1	1	1	
	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Kewaunee Power Station			Date of Exam: 11/07/05			Operating Test No.: 1 (Group 2)											
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M (*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
RO <input type="checkbox"/>	RX				1		--						1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR				--		1						1	1	1	1	
SRO-U <input checked="" type="checkbox"/>	I/C				3,7		2,3,4,5,7						7	4	4	2	
<input type="checkbox"/>	MAJ				4,5		6						3	2	2	1	
	TS				--		2,3,4						3	0	2	2	
RO <input type="checkbox"/>	RX	1		--									1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR	--		1									1	1	1	1	
SRO-U <input checked="" type="checkbox"/>	I/C	4,7		2,3,6,7									6	4	4	2	
<input type="checkbox"/>	MAJ	6		4,5									3	2	2	1	
	TS	--		2,3									2	0	2	2	
RO <input type="checkbox"/>	RX	--											0	1	1	0	
SRO-I <input type="checkbox"/>	NOR	1											1	1	1	1	
SRO-U <input checked="" type="checkbox"/>	I/C	2,3,4,5,7											5	4	4	2	
	MAJ	6											1	2	2	1	
	TS	2,3											2	0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
SRO-U <input type="checkbox"/>	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Kewaunee Power Station			Date of Exam: 11/07/05									Operating Test No.: 1 (Group 3)					
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M <sup>(*)</sup>		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input type="checkbox"/>	RX		1		--									1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR		--		1									1	1	1	1
SRO-U <input checked="" type="checkbox"/>	I/C		4,7		2,3,6,7									6	4	4	2
	MAJ		6		4,5									3	2	2	1
	TS		--		2,3									2	0	2	2
RO <input type="checkbox"/>	RX	--												0	1	1	0
SRO-I <input type="checkbox"/>	NOR	1												1	1	1	1
SRO-U <input checked="" type="checkbox"/>	I/C	2,3,4,5,7												5	4	4	2
	MAJ	6												1	2	2	1
	TS	2,3												2	0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

**Instructions:**

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled abnormal conditions* (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Kewaunee Power Station			Date of Exam: 11/07/05			Operating Test No.: 1 (Any)											
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M (*)		
		1			2			3			4						
		C R E W  P O S I T I O N			C R E W  P O S I T I O N			C R E W  P O S I T I O N			C R E W  P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
RO <input checked="" type="checkbox"/>	RX												--		1	1	0
SRO-I <input type="checkbox"/>	NOR												0		1	1	1
SRO-U <input type="checkbox"/>	I/C												2,3,6		4	4	2
	MAJ												4		2	2	1
	TS												--		0	2	2
RO <input checked="" type="checkbox"/>	RX												3		1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR												--		1	1	1
SRO-U <input checked="" type="checkbox"/>	I/C												1,5		4	4	2
	MAJ												4		2	2	1
	TS												--		0	2	2
RO <input type="checkbox"/>	RX												--		1	1	0
SRO-I <input type="checkbox"/>	NOR												0		1	1	1
SRO-U <input checked="" type="checkbox"/>	I/C												1,2,3,5,6		4	4	2
	MAJ												4		2	2	1
	TS												1,2		0	2	2
RO <input type="checkbox"/>	RX												--		1	1	0
SRO-I <input type="checkbox"/>	NOR												0		1	1	1
SRO-U <input type="checkbox"/>	I/C												1,2,3,5,6		4	4	2
	MAJ												4		2	2	1
	TS												1,2		0	2	2

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

**Facility:** Kewaunee Nuclear Power Plant

Printed: 08/04/2005

Date Of Exam: 11/07/2005

Tier	Group	RO K/A Category Point:												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	
1. Emergency & Abnormal Plant Evolutions	1	3	1	4				3	3			4	18	0	0	0	0	0
	2	1	2	2				2	1			1	9	0	0	0	0	0
	Tier Totals	4	3	6				5	4			5	27	0	0	0	0	0
2. Plant Systems	1	3	2	4	2	2	1	2	2	3	4	3	28	0	0	0	0	0
	2	1	1	1	1	1	1	1	1	0	1	1	10	0	0	0	0	0
	Tier Totals	4	3	5	3	3	2	3	3	3	5	4	38	0	0	0	0	0
3. Generic Knowledge And Abilities Categories					1		2		3		4		10	1	2	3	4	0
					3		2		3		2			0	0	0	0	

**Note:**

1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding the SRO sampling.
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by  $\pm 1$  from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Select topics from many systems and evolutions; avoid selecting more than two 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 (G) 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the columns labeled "K" and "A". Use duplicate pages for RO and SRO-only exams.
8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000007 Reactor Trip - Stabilization - Recovery / 1	X						EK1.04 - Decrease in reactor power following reactor trip (prompt drop and subsequent decay)	3.6	1
000008 Pressurizer Vapor Space Accident / 3	X						AK1.02 - Change in leak rate with change in pressure	3.1	1
000009 Small Break LOCA / 3						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
000011 Large Break LOCA / 3					X		EA2.05 - Significance of charging pump operation	3.3	1
000015/000017 RCP Malfunctions / 4			X				AK3.03 - Sequence of events for manually tripping reactor and RCP as a result of an RCP malfunction	3.7	1
000022 Loss of Rx Coolant Makeup / 2	X						AK1.01 - Consequences of thermal shock to RCP seals	2.8	1
000025 Loss of RHR System / 4					X		AA2.05 - Limitations on LPI flow and temperature rates of change	3.1*	1
000027 Pressurizer Pressure Control System Malfunction / 3						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
000029 ATWS / 1				X			EA1.02 - Charging pump suction valves from RWST operating switch	3.6*	1
000038 Steam Gen. Tube Rupture / 3			X				EK3.04 - Automatic actions provided by each PRM	3.9	1
000054 Loss of Main Feedwater / 4			X				AK3.02 - Matching of feedwater and steam flows	3.4*	1
000055 Station Blackout / 6					X		EA2.01 - Existing valve positioning on a loss of instrument air system	3.4	1
000056 Loss of Off-site Power / 6						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	2.5	1
000058 Loss of DC Power / 6				X			AA1.02 - Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector	3.1*	1
000065 Loss of Instrument Air / 8				X			AA1.05 - RPS	3.3*	1
W/E04 LOCA Outside Containment / 3		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.5	1
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4						X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	1

# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
W/E12 - Steam Line Rupture - Excessive Heat Transfer / 4			X				EK3.4 - RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated	3.5	1
<b>K/A Category Totals:</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>Group Point Total:</b>	<b>18</b>	



# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000005 Inoperable/Stuck Control Rod / 1			X				AK3.02 - Rod insertion limits	3.6	1
000028 Pressurizer Level Malfunction / 2			X				AK3.05 - Actions contained in EOP for PZR level malfunction	3.7	1
000037 Steam Generator Tube Leak / 3				X			AA1.11 - PZR level indicator	3.4	1
000051 Loss of Condenser Vacuum / 4						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
000060 Accidental Gaseous Radwaste Rel. / 9	X						AK1.02 - Biological effects on humans of the various types of radiation, exposure levels that are acceptable for personnel in a nuclear reactor power plant; the units used for radiation intensity measurements and for radiation exposure levels	2.5	1
000061 ARM System Alarms / 7		X					AK2.01 - Detectors at each ARM system location	2.5*	1
000068 Control Room Evac. / 8		X					AK2.02 - Reactor trip system	3.7	1
W/E03 LOCA Cooldown - Depress. / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	4.0	1
W/E16 High Containment Radiation / 9					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.0	1
<b>K/A Category Totals:</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>Group Point Total: 9</b>		

# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump			X									K3.03 - Feedwater and emergency feedwater	2.8	1
003 Reactor Coolant Pump									X			A3.02 - Motor current	2.6	1
004 Chemical and Volume Control					X							K5.30 - Relationship between temperature and pressure in CVCS components during solid plant operation	3.8	1
004 Chemical and Volume Control						X						K6.24 - Controllers and positioners	2.5	1
005 Residual Heat Removal			X									K3.06 - CSS	3.1*	1
006 Emergency Core Cooling		X										K2.01 - ECCS pumps	3.6	1
006 Emergency Core Cooling									X			A3.06 - Valve lineups	3.9	1
007 Pressurizer Relief/Quench Tank							X					A1.03 - Monitoring quench tank temperature	2.6	1
007 Pressurizer Relief/Quench Tank			X									K3.01 - Containment	3.3	1
008 Component Cooling Water	X											K1.02 - Loads cooled by CCWS	3.3	1
010 Pressurizer Pressure Control										X		A4.01 - PZR spray valve	3.7	1
012 Reactor Protection							X					A1.01 - Trip setpoint adjustment	2.9*	1
013 Engineered Safety Features Actuation					X							K5.01 - Definitions of safety train and ESF channel	2.8	1
022 Containment Cooling				X								K4.05 - Containment cooling after LOCA destroys ventilation ducts	2.6*	1
026 Containment Spray								X				A2.05 - Failure of chemical addition tanks to inject	3.7	1
039 Main and Reheat Steam									X			A3.02 - Isolation of the MRSS	3.1	1
059 Main Feedwater	X											K1.02 - AFW System	3.4*	1
059 Main Feedwater											X	2.2.1 - Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7	1
061 Auxiliary/Emergency Feedwater		X										K2.02 - AFW electric driven pumps	3.7*	1
061 Auxiliary/Emergency Feedwater											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating	4.0	1

# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

## Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic procedures.	Imp.	Points
062 AC Electrical Distribution										X		A4.03 - Synchroscope, including an understanding of running and incoming voltages	2.8	1
063 DC Electrical Distribution								X				A2.01 - Grounds	2.5	1
064 Emergency Diesel Generator	X											K1.01 - AC distribution system	4.1	1
073 Process Radiation Monitoring										X		A4.02 - Radiation monitoring system control panel	3.7	1
076 Service Water											X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
076 Service Water										X		A4.04 - Emergency heat loads	3.5*	1
078 Instrument Air				X								K4.01 - Manual/automatic transfers of control	2.7	1
103 Containment			X									K3.02 - Loss of containment integrity under normal operations	3.8	1
<b>K/A Category Totals:</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>Group Point Total:</b>	<b>28</b>	

# PWR RO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001 Control Rod Drive											X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
002 Reactor Coolant						X						K6.03 - Reactor vessel level indication	3.1	1
015 Nuclear Instrumentation				X								K4.06 - Reactor trip bypasses	3.9	1
016 Non-nuclear Instrumentation								X				A2.03 - Interruption of transmitted signal	3.0	1
017 In-core Temperature Monitor							X					A1.01 - Core exit temperature	3.7	1
045 Main Turbine Generator					X							K5.01 - Possible presence of explosive mixture in generator if hydrogen purity deteriorates	2.8*	1
055 Condenser Air Removal			X									K3.01 - Main condenser	2.5	1
071 Waste Gas Disposal	X											K1.04 - Station ventilation	2.7	1
075 Circulating Water		X										K2.03 - Emergency/essential SWS pumps	2.6*	1
086 Fire Protection										X		A4.03 - Fire alarm switch	3.5	1
<b>K/A Category Totals:</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>Group Point Total:</b>	<b>10</b>	

# Generic Knowledge and Abilities Outline (Tier 3)

## PWR RO Examination Outline

Printed: 08/04/2005

**Facility:** Kewaunee Nuclear Power Plant

**Form ES-401-3**

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	2.7	1
	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	1
	2.1.31	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.	4.2	1
	<b>Category Total:</b>			<b>3</b>
<b>Equipment Control</b>	2.2.28	Knowledge of new and spent fuel movement procedures.	2.6	1
	2.2.30	Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.5	1
	<b>Category Total:</b>			<b>2</b>
<b>Radiation Control</b>	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.11	Ability to control radiation releases.	2.7	1
	<b>Category Total:</b>			<b>3</b>
<b>Emergency Procedures/Plan</b>	2.4.3	Ability to identify post-accident instrumentation.	3.5	1
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3	1
	<b>Category Total:</b>			<b>2</b>

**Generic Total: 10**

**Facility:** Kewaunee Nuclear Power Plant

Printed: 08/04/2005

Date Of Exam: 11/07/2005

Tier	Group	RO K/A Category Points:												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	
1. Emergency & Abnormal Plant Evolutions	1	0	0	0				0	0			0	0	0	0	3	3	6
	2	0	0	0				0	0			0	0	0	0	2	2	4
	Tier Totals	0	0	0				0	0			0	0	0	0	5	5	10
2. Plant Systems	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
	Tier Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8
3. Generic Knowledge And Abilities Categories					1	2	3	4	0					1	2	3	4	7
					0	0	0	0						2	2	1	2	

**Note:**

1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding the SRO sampling.
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by  $\pm 1$  from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Select topics from many systems and evolutions; avoid selecting more than two 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 (G) 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the columns labeled "K" and "A". Use duplicate pages for RO and SRO-only exams.
8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

# PWR SRO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group f

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000008 Pressurizer Vapor Space Accident / 3					X		AA2.23 - Criteria for throttling high-pressure injection after a small LOCA	4.3	1
000009 Small Break LOCA / 3						X	2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	3.6	1
000025 Loss of RHR System / 4						X	2.1.22 - Ability to determine Mode of Operation.	3.3	1
000038 Steam Gen. Tube Rupture / 3						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
000054 Loss of Main Feedwater / 4					X		AA2.01 - Occurrence of reactor and/or turbine trip	4.4	1
000058 Loss of DC Power / 6					X		AA2.03 - DC loads lost; impact on to operate and monitor plant systems	3.9	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>Group Point Total:</b>	<b>6</b>	

# PWR SRO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000005 Inoperable/Stuck Control Rod / 1					X		AA2.04 - Interpretation of computer in-core TC map for dropped rod location	3.4	1
000068 Control Room Evac. / 8					X		AA2.07 - PZR level	4.3	1
000076 High Reactor Coolant Activity / 9						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
W/E08 RCS Overcooling - PTS / 4						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>Group Point Total: 4</b>		



# PWR SRO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

## Plant Systems - Tier 2 / Group 1

Form ES-401-2

ES - 401

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
022 Containment Cooling											X	2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	3.6	1
026 Containment Spray								X				A2.09 - Radiation hazard potential of BWST	2.9*	1
059 Main Feedwater											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
061 Auxiliary/Emergency Feedwater								X				A2.06 - Back leakage of MFW	3.0	1
078 Instrument Air								X				A2.01 - Air dryer and filter malfunctions	2.9	1
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:	5	

# PWR SRO Examination Outline

Printed: 08/04/2005

Facility: Kewaunee Nuclear Power Plant

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
033 Spent Fuel Pool Cooling											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
071 Waste Gas Disposal											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
075 Circulating Water								X				A2.02 - Loss of circulating water pumps	2.7	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>Group Point Total: 3</b>		

# Generic Knowledge and Abilities Outline (Tier 3)

## PWR SRO Examination Outline

Printed: 08/04/2005

**Facility:** Kewaunee Nuclear Power Plant

**Form ES-401-3**

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
Conduct of Operations	2.1.5	Ability to locate and use procedures and directives related to shift staffing and activities.	3.4	1
	2.1.25	Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	3.1	1
	Category Total:			2
Equipment Control	2.2.7	Knowledge of the process for conducting tests or experiments not described in the safety analysis report.	3.2	1
	2.2.32	Knowledge of the effects of alterations on core configuration.	3.3	1
	Category Total:			2
Radiation Control	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	Category Total:			1
Emergency Procedures/Plan	2.4.11	Knowledge of abnormal condition procedures.	3.6	1
	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1
	Category Total:			2

**Generic Total:** 7

Facility: Kewaunee Scenario No.: 1 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_ SRO  
 \_\_\_\_\_ RO  
 \_\_\_\_\_ BOP

Initial Conditions: IC-12, 100% power, Middle of Cycle (MOC)

Motor Driven AFW A Pump is in PULLOUT.

SI Pump A is in PULLOUT.

Turnover: The plant is at 100% power. AFW Pump A has been out of service for 8 hours due to inboard bearing replacement. SI Pump A has been out of service for 4 hours after an inspection of the breaker cubicle indicated the lugs on one of the supply line connectors is loose.

At turnover, the Equipment Operator reported Steam Traps 23 and 24 on the lines from the individual steam header supplies to the TD AFW Pump, and Steam Trap 25 and 26 on the common steam line to the Turbine-Driven AFW Pump are cold. The Shift Manager has just declared the TD AFW Pump inoperable and directs the crew to remove it from service as soon as turnover is complete. (No action taken yet.)

Event No.	Malf. No.	Event Type*	Event Description
Preload	CC04B		Failure to Auto Start CC Pump B
1	—	N BOP SRO	Power backdown to less than 1673 MWt (~94% power)
		R RO	Maintain ΔI and RCS Tave using rods and boron addition.
2	RX211, 100	I BOP SRO	Controlling SG A level channel (LT461) fails high over 10 seconds.
3	SW05C, 100 DI-46528-CLOSE ON	C BOP SRO	Running Service Water Pump 1B1 trips on overcurrent. Standby Pump auto starts. SW-3A header isolation valve closes improperly.
4	CC03B, 2.0	C RO SRO	RXCP B Thermal Barrier leak resulting in automatic isolation of CC cooling from thermal barrier. This will eventually lead to a manual reactor trip directed due to RXCP parameters exceeding limits. (EOP entry)
5	AI-4301-02-R1, 0	C BOP SRO	SG B PORV Controller fails giving PORV open signal. Manual control available.
6	SG01B, 7 10:00	M BOP RO SRO	SG B tube rupture of ~ 250 gpm ramped in over 10 minutes starting 2:00 minutes after the reactor trip.
7	CC05A CC04B	C RO SRO	Component Cooling Water Pump trips on overcurrent. Component Cooling Pump B fails to auto start. Manual start available.

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

## **SCENARIO 1-1 OVERVIEW**

Event 1 - The plant is at 100% power. SI Pump A and AFW Pump A are inoperable. At turnover, the Turbine-Driven AFW Pump is determined to be inoperable due to the failure of steam traps on the steam lines to the TD AFW Pump. The CRS will direct removal from service (Placing TD AFW Pump in PULLOUT, and possible closing the Steam Supply valves from the SGs MS-10A and MS-10B). Technical Specification 3.4.b will be addressed and LCO 3.4.b.3 requires reactor power be reduced to less than or equal to 1673 MWt within 2 hours. Operations Management will inform the crew that power reduction needs to begin as soon as possible. 1673 MWt corresponds to 94.4% power. Crew will use N-O-03 and N-TB-54 to reduce load.

Event 2 - Following clearly observable plant response from the reactivity changes during the load reduction, the controlling level channel for SG A will fail high. The actual level will begin to lower due to FW-7A closing in response to the high level. The BOP will take FW-7A Controller to MANUAL and verify that SG level recovers toward program level. Procedure A-FW-5A and A-MI-87 will be used to address the failure. The failed instrument will be removed from service using A-MI-87. The SRO will address Technical Specification 3.5.b to ensure continued plant operation is allowed with the failed channel.

Event 3 - After the operator actions are completed for removal of the failed SG Level channel from service, the running Service Water Pump 1B1 will trip on overcurrent. This will result in automatic start of the standby SW Pump 1B2 when SW header pressure drops below 72 psig. Train B Header Isolation valve SW-3A will inadvertently close. It normally closes on SI signal or on sensed low pressure in the associated header. Train A pressure will remain above the closure setpoint. The crew will respond by taking actions directed in A-SW-02, and re-open SW-3A when SW Header A Operating is checked. The SRO will address Technical Specification 3.3.e.2 for actions associated with the loss of the SW Pump. Also by direction of N-SW-02 Precaution and Limitation 2.2, the SRO will determine in accordance with this item that with SI Pump B also inoperable, Technical Specification 3.0.c is applicable requiring plant shutdown.

Event 4 - Once the requirement for plant shutdown is reviewed, a leak will develop in RXCP B Thermal Barrier. This will result in leakage of RCS water into the Component Cooling System. CC radiation levels will rise and be detected on process monitor R17, Component Cooling Surge Tank level will rise and CC-610B, RXCP B Thermal Barr Comp Cooling Return, will close on high flow. The crew will address the problem by entering A-RM-45, A-CC-31 and/or A-RC-36C. RXCP conditions will deteriorate for bearing temperature and will require the RXCP be stopped. The CRS should then direct a manual reactor trip and stopping of RXCP B when the immediate operator actions of E-0, Reactor Trip Or Safety Injection, are complete.

Event 5 - At the time of the reactor trip (based on NI power) SG B PORV Controller will fail so that SD-2B, SG B PORV fully opens. Manual control is available and when the open SG PORV is identified by the BOP, the Controller will be placed to MAN.

Event 6 & 7 - Associated with the transient placed on SG B, a SG tube rupture will occur in SG B. The rate will increase to a value of 250 gpm over a ten-minute period. The crew will recognize conditions requiring a Safety Injection and manually initiate SI (if required). Five minutes following SI actuation, Component Cooling Pump A trips. Component Cooling Pump B fails to automatically start and should be manually started after verification that SI sequencer completes its sequence. The scenario ends following cooldown and depressurization of the RCS, and if possible, equalization of RCS and ruptured SG pressure, OR at the discretion of the Chief Examiner.

### **Critical Tasks**

1. E-0 K – Manually start at least one CCW pump required to provide adequate component cooling for the operating safeguards trains before transition out of E-0. [Event 7]
2. E-3 A – Isolate feedwater flow into and steam flow from the ruptured SG before a transition to ECA-3.1 occurs [Event 6]

### **SCENARIO 1-1 OVERVIEW**

3. E-3 B – Establish/maintain an RCS temperature so that transition from E-3 does not occur because the RCS temperature is in either of the following conditions: [Event 6]
  - Too high to maintain 50°F [85°F for adverse Containment] subcoolingOR
  - Below 270°F.
4. E-3 C – Depressurize RCS until either 1) PRZR level is > 74%, 2) RCS subcooling based on CETs is < 30°F [65°F for adverse containment], or 3) RCS pressure is < S/G pressure and PRZR level is > 5% [30% for adverse containment] before 96% level is exceeded in the ruptured S/G. [Event 6]

Facility: Kewaunee Scenario No.: 2 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: SRO  
 \_\_\_\_\_ RO  
 \_\_\_\_\_ BOP

Initial Conditions: IC-10; 49% power, Beginning of cycle (BOC)  
 Ready to start Feedwater Pump B and continue power increase.  
 Motor Driven AFW A Pump is in PULLOUT.  
 SI Pump A is in PULLOUT.

Turnover: The plant is at 49% power. Currently at step 4.1.9.d of N-O-03, Plant Operation Greater Than 35% Power and step 8.b (4.1.4.i) of N-FW-05A, Feedwater System Normal Operation. The EO is standing by at Feedwater Pump B, ready for pump starting. Once FW Pump B is started, the crew is directed to continue power increase to 100% power. All fuel pre-conditioning requirements for normal power increase have been met. AFW Pump A has been out of service for 5 hours due to inboard bearing vibration. SI Pump A has been out of service for 2 hours due to failing to develop the minimum dP during IST surveillance.

Event No.	Malf. No.	Event Type*	Event Description
Preload	RD11 RP03		Reactor Trip Breakers Fail to Open on TRIP Signal AMSAC Actuation Override
Preload	DI-46624-CLOSE ON DI-46624-TRIP & PTL OFF		Bkr 13301 Bus 33 Supply fails to trip. (CRD MG Set A power source)
Preload	DI-46621-CLOSE ON DI-46621-TRIP & PTL OFF		Bkr 1-308 Bus 33 Supply fails to trip. (CRD MG Set A power source)
Preload	SI05B		SI Pump B fails to automatically start. Manual start is available.
Preload	DI-40015-CLOSE ON DI-40016-CLOSE ON		RBV-150C and RBV-150D fail to open on high containment pressure.
1	—	N BOP SRO	Start FW Pump B and resume power increase.
		R RO	Follow turbine load increase using rods and/or dilution.
2	RX217 100	I BOP SRO	SG B controlling steam flow channel fails high.
3	NI05D 100	I RO SRO	Power Range Nuclear Instrument channel fails high.
4	DI-46155-TRIP ON	M BOP RO SRO	Turbine trips without reactor trip. Operation of (Rod Drive MG Set) supply breakers to Bus 33 fails.
5	MS02A 75	M RO BOP SRO	SG A steam line rupture inside containment. Delayed for 3 minutes following opening of the reactor trip breakers, and ramped over 5 minutes.
6	DI-10015-CLOSE ON DI-10016-CLOSE ON	C BOP SRO	Train B Containment Fan Coil Units Emergency Dampers fail to auto open. Manual control is available.
7	SI05B	C RO SRO	SI Pump B fails to auto start. Manual start available. (Only SI Pump)

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

## **SCENARIO 1-2 OVERVIEW**

**Event 1** - The plant is at 49% power during a startup. Feedwater Pump B is to be started using N-FW-05A, Feedwater System Normal Operation. The Equipment Operator (EO) is standing by following turnover and as completed local checks of the pump. Once the FW Pump is started the crew should resume the normal power increase to 100% at the rate of ¼ %/minute, as allowed by fuel pre-conditioning.

**Event 2** - Following clearly observable plant response from the reactivity changes, the controlling channel for SG B steam flow will fail high. The BOP will take manual control of FW-7B, Main Feed Control Valve, and ensure SG level restores to normal. The channel will be removed from service using A-MI-87. The CRS will address Technical Specification requirements for steam flow channels (TS 3.5.b) in Table TS 3.5-2 and Table TS 3.5-4

**Event 3** - Following completion of the removal of service and Technical Specification review for the failed steam flow channel, Power Range NI channel N-44 will fail high. This will cause control rods to insert in AUTO, and will generate a rod withdrawal rod stop. The RO will respond, after identifying the failed channel, by taking rod control to MANUAL. A-NI-48 will be used to identify and respond to the failure, and A-MI-87 will be entered to remove the failed NI channel from service. The CRS will address Technical Specification requirement for the failed channel (TS 3.5.b) in Table TS 3.5-2.

**Event 4** - Following completion of the removal of service and Technical Specification review for the failed NI channel, an inadvertent turbine trip signal will be generated. The turbine will trip; however, the reactor will not trip. The crew will enter E-0 and during the immediate operator actions take actions to manually trip the reactor and deenergize the buses supply the rod drive MG sets. Neither action will be successful and the CRS will direct transition to FR-S.1. The immediate actions will be performed including dispatching the Auxiliary Operator (AO to locally trip the reactor trip breakers. Following the completion of step 2 (Verify Turbine Trip) and no sooner than 2 minutes after being notified, the AO will locally trip the reactor trip breakers and stop both MG sets. The AO will then inform the Control Room of actions completed. The crew will continue with actions of FR-S.1, including establishing charging flow and boration flow path. The crew should transition to E-0 at step 19 of FR-S.1.

**Event 5, 6 & 7** – Four minutes following the opening of the reactor trip breakers, a steam line break on SG A will initiate and worsen over the next 5 minutes. The crew should recognize the conditions for Safety Injection and manually actuate SI, if it has not automatically occurred. The BOP will report that RBV-150C and RBV-150D, Containment Fan Coil Unit Emergency Dampers (Train B), have not opened when Containment pressure has risen above 4 psig. The SRO will direct the dampers be opened manually (Control Room switch). The RO will recognize that no SI Pumps are running, and after SI sequencing is complete, start SI Pump B. The crew will recognize the conditions indicating SG A is faulted inside containment. (NOTE: Depending on the maximum value for containment pressure and transition time from E-0, entry may be made into FR-Z.1 Response to Containment High Pressure, on an ORANGE path for Containment CSF.) Transition will be made to E-2 to isolate the faulted SG. Following isolation and check of secondary radiation indication, transition will be made to E-1. The scenario terminates following transition to E-1 if SG A has completed blowdown, or after evaluation of SI termination criteria in step 12 of E-1, OR at the discretion of the Chief Examiner.

### **Critical Tasks**

1. FR-S.1 C – Insert negative reactivity into the core by at least one of the following methods before completing the immediate-action steps of FR-S.1: [Event 4]
  - Open the Bus 33 and Bus 43 supply breakers to de-energize the Rod Drive MG sets
  - Manually insert Control Rods
2. E-0 I – Establish flow from at least one SI pump before transition out of E-0. [Event 7]
3. E-2 A – Isolate the faulted SG before transition out of E-2. [Event 5]



Facility: Kewaunee Scenario No.: 3 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: SRO  
 \_\_\_\_\_ RO  
 \_\_\_\_\_ BOP

Initial Conditions: IC-14; 85% power, Beginning of Cycle (BOC)

Motor Driven AFW A Pump is in PULLOUT.

Turbine First Stage Pressure channel PT-486 has failed high. Steam Dump Control is in STM PRESS mode.

Turnover: The plant is at 85% power, returning to 100% power following successful completion of SP-54-086, Turbine Stop and Governor Valve Operability Test. Turbine First Stage Pressure PT-486 failed high about 1-hour ago. The actions for A-TB-54, Abnormal Turbine Generator Operation Section 4.12 are complete. Steam Dumps are in STEAM PRESSURE mode. Continue load increase to 100% at ¼% per minute load rate. AFW Pump A has been out of service for 25 hours due to inboard bearing vibration.

Event No.	Malf. No.	Event Type*	Event Description
Preload	CS03A		Failure to Auto Start ICS Pump A (Containment Spray)
Preload	RX223, 600		Turbine Impulse Pressure Channel PT-486 fails high. (OOS)
1	—	N BOP SRO	Resume power increase.
		R RO	Follow turbine load increase using rods and/or dilution.
2	RX213, 1400	I BOP SRO	SG A Pressure Controlling channel PT-468 fails high. Affects feed flow and SG A PORV opens.
3	RC10B, 2	C RO SRO	Pressurizer PORV PR-2B fails off its seat.
4	DI-46663-CLOSE OFF DI-46663-TRIP ON	C RO BOP SRO	ESF 480V Bus 61 Supply Breaker 16101 trips open and fails.
5	SER0680, SER0456 SER0409, SER658 SER0392, SER528 DI-46507-STOP ON DI-46057-START OFF SER0398, SER0604	C BOP SRO	Circulating Water condenser bellows failure flooding Turbine Building Basement. Circulating Water Pump fails to auto trip. (Also requires reactor trip.)
6	RD04A 100	M RO BOP SRO	Cold Leg A LOCA increasing to loop shear over 10 minutes. (Delayed 4 minutes following reactor trip.)
7	CS03A	C RO SRO	Failure to Auto Start ICS Pump A. Must be manually started.

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

## **SCENARIO 1-3 OVERVIEW**

**Event 1** – The plant is at 85% power. Load increase is in progress to 100% power. Crew will resume load increase following turnover.

**Event 2** – Following clearly observable plant response from the reactivity changes, the SG A controlling pressure channel will fail high. This will affect the controlling steam flow channel (density compensation) for the SG, increasing level as the Feed Control valve FW-7A stokes open. Also the SG A PORV SD-3A will open in automatic. The BOP will take manual control of FW-7A and stabilize level. The BOP will also take manual control of SD-3A and observe that the valve shuts. A-MI-87 will be entered to remove the failed channel from service and place control to an operable steam flow channel. Once this is completed, the BOP may place FW-7A in AUTO. The CRS will address Technical Specification requirement for the failed channel (TS 3.5.b) in Table TS 3.5-2, Table TS 3.5-3 and Table TS 3.5-4.

**Event 3** – After the SG pressure and steam flow channel has been addressed, Pressurizer PORV PR-2B fails 2% open giving dual light indication. The RO will close the associated PORV Block valve PR-1B. A-RC-36D will be entered to address the RCS leakage. The CRS will address Technical Specification 3.1.a.5 for PORV operability.

**Event 4** – After the SG pressure and steam flow channel has been addressed, Bus 61 Supply Breaker will fail and trip open, resulting in a loss of power to the bus. ESF equipment affected include Component Cooling Pump B (standby), Containment Fan Coil Unit C, Containment Fan Coil Unit D and ICS (Containment Spray) Pump B. The crew will respond with actions of A-ELV-40, placing the opening the feeder breakers to the affected equipment (place their control switches in PULLOUT). The CRS will address the affected equipment in Technical Specifications 3.3.c.1.A.3 (ICS Pump and CFCUs), and 3.3.d.2 (CC Pump). The most limiting LCO is 72-hours.

**Event 5** – Once the electrical bus issues have been addressed, a failure of one of the bellows from Circulating Water (CW) to the Condenser will occur. This will result in flooding in the Turbine Building basement and should trip any running CW Pumps. The BOP is expected to check the Alarm Response procedures, and manually trip CW Pump B to minimize flooding. The crew is directed to verify both CW Pumps tripped and to manually trip the reactor. They are to stabilize the plant per E-0 and continue with actions of the ARP. These actions include isolating SW to turbine building, placing the secondary pumps in PULLOUT. Further actions are directed in A-MDS-30.

**Event 6 & 7** – Four minutes after the reactor trip, a LOCA will occur in RCS Cold Leg A. The LOCA will progress to a loop shear over ten minutes. The crew should return to Step 1 of E-0 and verify Safety Injection actuation. Following completion of sequencing of the ESF equipment, and with containment pressure rising above 23 psig, the RO will report the failure of ICS Pump A to start and will manually start the pump. Transition from E-0 is made to E-1. The operators should stop the RXCPs when SI flow and RCS subcooling conditions are met. The operators should establish charging flow, evaluate conditions for SI termination, and verify recirculation capability. At step 19, the crew will be directed back to step 17 to check conditions for recirculation capability, until RWST level lowers to 37%. If RWST level lowers to 37%, transition is made to ES-1.3, Transfer To Containment Sump Recirculation, and recirculation is established with Train B RHR. The scenario is terminated following verification of Train B RHR Recirculation flow, Step 12 of ES-1.3, or at the completion of the second evaluation of the recirculation capability in E-1 if RWST does not lower to 37%, OR at the discretion of the Chief Examiner.

### **Critical Tasks**

1. RCS A – Close the block MOV upstream of the stuck-open PZR PORV prior to reaching reactor trip conditions.
2. E-0 N – Establish at least one Train of Containment Spray before transition out of E-0.

If transition to ES-1.3 occurs

3. ES-1.3 A – Transfer to containment sump recirculation and establish recirculation flow with at least one train prior to reaching 4% RWST level.

Facility: Kewaunee Scenario No.: 4 (SPARE) Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_ SRO  
 \_\_\_\_\_ RO  
 \_\_\_\_\_ BOP

Initial Conditions: IC-12; 100% power, middle of cycle (MOC).  
 Motor Driven AFW A Pump is in PULLOUT.

Turnover: The plant is at 100% power. Continue normal operation.

Event No.	Malf. No.	Event Type*	Event Description
Preload	DI-46983-NA-STOP OFF DI-46983-STOP ON DI-46980-TRIP ON DI-46980-NA-TRIP OFF		Bus 46 lockout condition for TSC DG and Supply breaker 14604.
1	RM01A, 100	I RO SRO	R-11 Containment Air Particulate Radiation Monitor fails high.
2	DI-46978-TRIP ON DI-46978-NA-CLOSE OFF SER0823 CRYWOLF SER1282 BLOCK	C BOP SRO	Bus 46 overcurrent lockout. Breaker 14601 opens. (Loss of TSC/SBO capability)
3	FW17B, 2	C BOP SRO	Feedwater Pump B bearing failure (vibrations) leading to pump trip. Rapid power reduction
		R RO	Follow rapid power reduction with auto rods and boration.
4	FW17A, 100	M BOP RO SRO	Feedwater Pump A trips resulting in turbine trip/reactor trip.
5	RC10A, 100	C RO	PORV PR-2A fails open on reactor trip.
6	MS07 FW15B, 100	C BOP SRO	Steam supply piping to turbine driven AFW fails. AFW Pump B subsequently trips on overcurrent.

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

## **SCENARIO 1-4 (SPARE) OVERVIEW**

**Event 1** – Containment Air Particulate radiation monitor R-11 fails high resulting in a Containment Ventilation Isolation signal. The crew will respond using A-RM-45, Abnormal Radiation Monitoring System. The crew will verify automatic actions have occurred and determine the channel has failed. The channel will then be removed from service using N-RM-45. The CRS will address Technical Specification 3.1.d.5 to ensure adequate containment leak detection channels remain operable.

**Event 2** – Following the addressing of Technical Specification requirements for RCS leak detection systems, Bus 46 will lockout. This will lock out the breakers supplying the bus and prevent the load restoration sequence for the TSC DG from actuating. The crew will address the actions of A-ELV-40, 480V AC Supply Distribution System Abnormal, and place the TSC DG control switch to PULLOUT. The CRS will address the actions of the Technical Requirements Manual (TRM) 3.7.1, and apply the Administrative LCO (ALCO) actions of 3.7.1.b.

**Event 3** – After the ALCOs for loss of Bus 46 are addressed, Feedwater Pump B bearing will begin to fail. This will be show by increasing fluctuations in pump amps and by high vibration alarms. The crew will respond using A-FW-05A, Abnormal Feedwater System Operation. Based on pump conditions and filed reports, the crew should initiate a rapid power reduction to approximately 56% power to remove the feedwater pump from service. The crew should use A-O-03, Rapid Power Reduction, to perform the power reduction. If the power is reduced to the above value before the pump trips (approximately 18 minutes), the crew will stop Feedwater Pump B. If the pump trips during the power reduction, the crew will determine if it can reduce power and stabilize plant conditions or if a reactor trip is required. (NOTE: If the plant trips or the crew determines a reactor trip is required when Feedwater Pump B trips, the following Feedwater Pump A trip will be initiated upon the trip).

**Event 4 & 5** – After the plant is stabilized (or tripped), Feedwater Pump A will trip on overcurrent. This will generate a turbine trip/reactor trip signal. When the reactor trips, PORV PR-2A will fail open lowering Pressurizer pressure, with SI likely unless the RO recognizes and closes PR-1A prior to reaching the auto SI actuation setpoint.

**Event 6** – Ten minutes following the trip, the steam line supplying the turbine driven AFW pump will break resulting in high Steam Exclusion Area actuation. The crew should isolate the steam supply to the TDAFW Pump (MS-100A and MS-110B). Subsequently, AFW Pump B will trip resulting in a loss of all feed to the SGs. If a Safety Injection has occurred due the failure of the turbine trip, the crew will transition to FR-H.1, Response to Loss of Secondary Heat Sink, at step 14 of E-0, or if SI has not occurred, FR-H.1 will be entered upon transition from E-0 to ES-0.1, Reactor Trip Recovery, on a RED PATH condition with less than total flow of 205 gpm to the SGs and level less than 4% in both SGs. The crew will perform the action of FR-H.1 to attempt to restore feed flow using a Condensate Pump. The scenario will end upon the establishment of feed flow to at least one SG, OR at the discretion of the Chief Examiner.

### **Critical Tasks**

E-0 M – Close the block MOV upstream of the stuck-open PZR PORV by completion of the first step in the ERG network that directs the crew to close the block MOV. (This is expected to occur in E-0 at step 20.)

FR-H.1 A – Establish feedwater flow into at least one SG before either S/G wide range level is < 15% and before RCS pressure increases to > 2335 psig due to Loss of Secondary Heat Sink

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	056A 2.1.33	Replaced due to duplication of KA within Tier 1 of RO Outline.
		027A 2.1.33 (Prz Pressure Control System Malfunction)
		maintained. Replaced with randomly selected KA 056A 2.1.33.
1 / 2	060A 2.2.22	Could not write an RO level question for Waste Gas since item is
		not include in KPS Technical Specifications (LCO). ODCM/REMM
		does contain such statement in the ODC, but items in the ODCM
		have been the responsibility of SRO-licensed individuals. Due to
		limited selection in Generic 2.2 and after reviewing the overall
		outline, A KA was randomly selected from the K1 category
		(previously none selected in 2/1). Replacement KA is 060AK1.02.
2 / 1	004K6.15	Could not write a question with greater than level of difficulty 1 for
		the KA. Plant task does not support RO level question. Replaced
		with randomly selected KA 004K6.24.
2 / 1	022K4.02	Facility fans do not have changeable speeds. Could not write
		a question with greater than level of difficulty 1 for the KA.
		Replaced with randomly selected KA 022K4.05.
2 / 1	061 2.4.50	Replaced due to duplication of KA within Tier 2 of the RO Outline.
		001 2.4.50 (Control Rod Drive System) maintained. Replaced
		with randomly selected KA 061 2.4.4.
2 / 2	071K1.05	Could not write a question with greater than level of difficulty 1 for
		the KA. Plant task does not support RO level question. Replaced
		with randomly selected KA 071K1.04.
2 / 2 (SRO)	W/E08 2.1.32	Replaced due to duplication of KA within the RO Outline. In Tier 1,
		009E 2.1.32 (Small Break LOCA) and in Tier 2, 076 2.1.32 (Service
		Water System) maintained. Replaced with randomly selected KA
		W/E08 2.1.14.



## **Kewaunee Power Station**

### **Random Generation Technique and K/A Suppression**

#### **Random Generation Technique**

The written examination outline was generated in conjunction with the individual initiating the Point Beach written examination outline. The techniques used was similar to that described in NUREG-1021, Rev. 9, ES-401 Attachment 1. The token used were number (poker) chips that correspond to the topics and K/A available, as appropriate. One individual selected the chip, unseen from a basket, after scrambling of the chips was performed.

#### **K/A Suppression**

A review was made of applicable systems and system 025, Ice Condenser since Kewaunee Power Station does not have this system. Additionally, following system and EPE/APE selection, K/A with a value less than 2.0 were reviewed and rejected (not placed in the basket for selection), if it was determined that no plant specific priority existed for the item. The K/As that are identified in NUREG-1021, Rev 9, ES-401 Attachment 2 section 1, "The remaining Section 2 K/As may be excluded from the random selection process and/or rejected without explanation or justification," were also excluded from the selection process.

There were no NRC comments on the as submitted outlines