

OUTLINE SUBMITTAL WITH NRC COMMENTS

FOR THE KEWAUNEE INITIAL EXAMINATION - AUG/SEP 2002



Kewaunee Nuclear Power Plant
N490 Highway 42
Kewaunee, WI 54216-9511
920.388.2560

Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, WI 54241
920.755.2321

Kewaunee / Point Beach Nuclear
Operated by Nuclear Management Company, LLC

NRC-02-049

May 20, 2002

Mr. D. E. Hills, Chief
Operations Branch
U. S. Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, IL 60532-4351

Dear Mr. Hills:

Docket Number 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Initial Operator Licensing Examination Outlines

In response to your letter dated February 22, 2002, enclosed are the initial operator licensing examination outlines. As confirmed with your staff, the examinations are currently scheduled for the weeks of August 26, September 3, and September 9, 2002. NUREG 1021 physical security requirements state that the enclosed examination materials shall be withheld from public disclosure until after the examination is complete.

Please contact Mr. Chuck Sizemore at 920/388-8873 or Mr. Phillip Short at 920/388-8229 if you have questions regarding the examination outlines or require additional information.

Sincerely,

Thomas Coutu
Plant Manager

Enclosures

bcc w/oe: C. Sizemore
File

K. Davidson

G. Harrington

MAY 22 2002

Facility:		Date of Examination:		
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.	PS	QDM	MEB
	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.	PS	QDM	MEB
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	PS	QDM	MEB
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	PS	QDM	MEB
2. S I M	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument failures, and major transients.	PS	QDM	MEB
	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.	PS	QDM	MEB
	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.	PS	QDM	MEB
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.	PS	QDM	MEB
	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.	PS	QDM	MEB
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	PS	QDM	MEB
	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.	PS	QDM	MEB
	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.	PS	QDM
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	PS	QDM	MEB
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	PS	QDM	MEB
	d. Check for duplication and overlap among exam sections.	PS	QDM	MEB
	e. Check the entire exam for balance of coverage.	PS	QDM	MEB
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	PS	QDM	MEB
a. Author		Printed Name / Signature		Date
b. Facility / Reviewer (*)		Phillip A. Short / David Mielke		5/17/02
c. NRC Chief Examiner (#)		Michael E. Gjelby Jr. / Michael E. Gjelby Sr.		5-17-02
d. NRC Supervisor		David E. Bull / David E. Bull		5/22/02
Note: * Not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.				

** Will be verified/initialed after final number of applicants are determined (after cert exam) MEB 5/22/02

Facility: **KEWAUNEE NUCLEAR PLANT**
 Examination Level (circle one): **RO** / SRO

Date of Examination: **8/26/02**
 Operating Test Number: **2002301**

Administrative Topic/Subject Description		Describe method of evaluation: ONE Administrative JPM, OR TWO Administrative Questions
A.1	Conduct of Operations/ Reactor Plant Startup Requirements	JPM: Perform a Pre-Critical Checklist.
	Plant Parameter Verification	JPM: Perform an Estimated Critical Position (ECP).
A.2	Equipment Control/ Tagging & Clearances	JPM: Review a tagout for accuracy.
		N/A
A.3	Radiation Control/ Ability to perform procedures to guard against personnel exposure.	JPM: Perform a Radiation Monitor Functional Test.
		N/A
A.4	Emergency Plan/ Emergency Facility	JPM: Manually start the Control Room Post Accident Recirculation system in response to a security threat.
		N/A

Facility: **KEWAUNEE NUCLEAR PLANT**
 Examination Level (circle one): RO / **SRO**

Date of Examination: **8/26/02**
 Operating Test Number: **2002301**

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations/ Reactor Plant Startup Requirements	JPM: Perform a Pre-Critical Checklist.
	Plant Parameter Verification	JPM: Perform an Estimated Critical Position (ECP).
A.2	Equipment Control/ Tagging & Clearances	JPM: Review a tagout for accuracy.
		N/A
A.3	Radiation Control/ Knowledge of Radiation Exposure Limits	JPM: Review/Authorize an Emergency Radiation Work Permit (RWP).
		N/A
A.4	Emergency Plan/ Emergency Action Levels and Classifications	JPM: Make an Emergency Plan Classification, including Protective Action Recommendations (PARS).

Facility: KEWAUNEE NUCLEAR PLANT Exam Level (circle one): RO / SRO (I) / SRO(U)		Date of Examination: 8/26/02 Operating Test No: 2002301
B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
a. <i>Control Rod Drive System</i> / <u>Perform Actions To Stop A Continuous Rod Withdrawal.</u>	M, A, S	1
b. <i>Emergency Core Cooling System</i> / <u>With A Fire In A Dedicated Zone – Restore RCS Inventory using the SI System.</u>	D, S, L	2
c. <i>Reactor Coolant Pump System</i> / <u>Start a Reactor Coolant Pump.</u>	D, S, L	4
d. <i>Containment Spray System</i> / <u>Secure Containment Spray Pumps.</u>	N, S, L (ESF)	5
e. <i>A.C. Electrical Distribution</i> / <u>Shift Bus 5 From TAT To The RAT</u>	N, S	6
f. <i>Nuclear Instrumentation</i> / <u>Place An Excore Nuclear Instrumentation Channel Out of Service.</u>	D, S	7
g. <i>Component Cooling Water System</i> / <u>Shift Component Cooling Water Pumps (Loss of CC).</u>	M, A, S	8
B.2 Facility Walk-Through		
a. <i>Chemical and Volume Control System</i> / <u>Perform Actions Necessary For Control Room Evacuation – Establish Letdown (performed from dedicated shutdown panel).</u>	D, A, L	2
b. <i>Main Steam System</i> / <u>Locally Operate the S/G PORV.</u>	D, L, A, R (normal mode used on last NRC exam)	4
c. <i>Emergency Diesel Generators</i> / <u>Operate the Diesel Generator (locally).</u>	D, L (alternate mode used on last NRC exam)	6
* 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		

Facility: KEWAUNEE NUCLEAR PLANT Exam Level (circle one): RO / SRO (I) / SRO(U)		Date of Examination: 8/26/02 Operating Test No: 2002301
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b. Emergency Core Cooling System / <u>With A Fire In A Dedicated Zone -- Restore RCS Inventory using the SI System.</u>	D, S, L	2
c. Reactor Coolant Pump System / <u>Start a Reactor Coolant Pump.</u>	D, S, L	4
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e. A.C. Electrical Distribution / <u>Shift Bus 5 From TAT To The RAT</u>	N, S	6
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a. Chemical and Volume Control System / <u>Perform Actions Necessary For Control Room Evacuation -- Establish Letdown (performed from dedicated shutdown panel).</u>	D, A, L	2
b. Main Steam System / <u>Locally Operate the S/G PORV.</u>	D, L, A, R (normal mode used on last NRC exam)	4
c. Emergency Diesel Generators / <u>Operate the Diesel Generator (locally).</u>	D, L (alternate mode used on last NRC exam)	6
* 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		

Facility: KEWAUNEE NUCLEAR PLANT		Date of Examination: 8/26/02
Exam Level (circle one): RO / SRO (I) / SRO(U)		Operating Test No: 2002301
B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
b. <i>Emergency Core Cooling System</i> / <u>With A Fire In A Dedicated Zone – Restore RCS Inventory using the SI System.</u>	D, S, L	2
d. <i>Containment Spray System</i> / <u>Secure Containment Spray Pumps.</u>	N, S, L (ESF)	5
g. <i>Component Cooling Water System</i> / <u>Shift Component Cooling Water Pumps (Loss of CC).</u>	M, A, S	8
B.2 Facility Walk-Through		
b. <i>Main Steam System</i> / <u>Locally Operate the S/G PORV.</u>	D, A, L, R (normal mode used on last NRC exam)	4
c. <i>Emergency Diesel Generators</i> / <u>Operate the Diesel Generator (locally).</u>	D, L (alternate mode used on last NRC exam)	6
* 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		

Facility : KNPPScenario No.: 1OP-Test No.: **2002301**Examiners: _____

_____Operators: _____

Initial Conditions: The plant is at 50% power, MOC, equilibrium xenon conditions. Power was reduced two days ago for repairs to the 'A' Main Feedwater Pump. The pump has been repaired and the plant is ready to raise power to 100%. Today is Sunday, present clock time is real time. A normal shift complement is available.

Turnover: The following equipment is inoperable and has been properly removed from service:

- 'A' Residual Heat Removal Pump – tagged out 36 hours ago due to high bearing temperatures and vibration during a scheduled surveillance run. Maintenance is on-site and a crew is working to repair the pump.
- 'B' Motor Drive Auxiliary Feedwater Pump – tagged out last shift due to indications of a significant amount of water in the lube oil. A lube oil cooler leak is suspected. Maintenance has been notified.
- LT-472 'B' S/G Water Level Channel – tagged out due to suspected transmitter failure. A plan for transmitter replacement is being developed. A-MI-87 has been completed to remove this channel from service.

The goal for the shift is begin the power ramp to 100% per N-0-03.

Event No.	Malf. No.	Event Type*	Event Description
1		R - RO N - SRO BOP	Perform a power increase per N-0-03.
2		I - BOP SRO	LT-461 'A' S/G Water level channel fails low (controlling channel).
3		C - BOP SRO	Trip of running CW pump.
4		C - ALL	RCS leak develops on 'A' RCS loop requiring reactor trip.
5		M - ALL	RCS leak increases to a large break LOCA following reactor trip.
6		C - RO SRO	RHR Pump 'B' fails to auto-start.
7		C - RO SRO	Sump B suction valve SI-351B will not open from control room, must be opened locally.
			(Note: Time compression required to accelerate lowering level in RWST)

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

Facility : KNPPScenario No.: 2OP-Test No.: **2002301**Examiners: _____

_____Operators: _____

Initial Conditions: The plant is at 100% power, MOC, equilibrium xenon conditions. Testing of the turbine stop and governor valves is scheduled for later in the shift. Today is Sunday, present clock time is real time. A normal shift complement is available.

Turnover: The following equipment is inoperable and has been properly removed from service:

- 'A' Residual Heat Removal Pump – tagged out 36 hours ago due to high bearing temperatures and vibration during a scheduled surveillance run. A maintenance crew is on-site and working to repair the pump.
- 'B' Motor Drive Auxiliary Feedwater Pump – tagged out last shift due to indications of a significant amount of water in the lube oil. A lube oil cooler leak is suspected. Maintenance has been notified.
- LT-472 'B' S/G Water Level Channel – tagged out due to suspected transmitter failure. A plan for transmitter replacement is being developed. A-MI-87 has been completed to remove this channel from service.

The goal for the shift is reduce power to < 390 Mwe per N-0-03 for testing of the turbine stop and governor valves (SP-54-086)

Event No.	Malf. No.	Event Type*	Event Description
1		R - RO N - BOP SRO	Perform a power reduction per N-0-03
2		I - RO SRO	Controlling pressurizer pressure channel PT-431 fails high.
3		I - BOP SRO	Generator Hydrogen temperature controller drifts shut.
4		C - RO SRO	S/G 'A' tube leak develops leading to reactor trip.
5		C - BOP SRO	S/G 'A' blowdown fails to isolate.
6		M - ALL	Tube leak increases to rupture following reactor trip.
7		C - BOP SRO	Main turbine fails to auto-trip.

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

Facility : KNPPScenario No.: 3OP-Test No.: **2002301**Examiners: _____

_____Operators: _____

Initial Conditions: The plant is at 20% power, BOC, with a startup in progress. The plant tripped from 100% power 5 days ago due to failure of the 'A' Main Feedwater Regulating Valve. Today is Sunday, present clock time is real time. A normal shift complement is available.

Turnover: The following equipment is inoperable and has been properly removed from service:

- 'A' Residual Heat Removal Pump – tagged out 36 hours ago due to high bearing temperatures and vibration during a scheduled surveillance run. A maintenance crew is on-site and working to repair the pump.
- 'B' Motor Drive Auxiliary Feedwater Pump – tagged out last shift due to indications of a significant amount of water in the lube oil. A lube oil cooler leak is suspected. Maintenance has been notified.
- LT-472 'B' S/G Water Level Channel – tagged out due to suspected transmitter failure. A plan for transmitter replacement is being developed. A-MI-87 has been completed to remove this channel from service.

The goal for the shift is to continue with plant startup per N-0-02 at step 4.34 (SP-54-064 is NOT required).

Event No.	Malf. No.	Event Type*	Event Description
1		R - RO N - BOP SRO	Perform a power increase per N-0-02.
2		I - BOP SRO	Steam Generator 'A' Pressure transmitter PT-468 fails low.
3		I - RO SRO	VCT level transmitter LT-141 fails high (divert).
4		I - RO SRO	S/G 'B' level transmitter LT-473 fails low (auto trip should occur, but does not).
5		C - ALL	Both Reactor Trip Breakers fail to open.
6		M - ALL	S/G 'B' fault occurs inside containment.
7		C - BOP SRO	'A' Motor Driven Auxiliary Feedwater Pump fails to auto-start.

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

Facility: Kewaunee Nuclear Plant				Date of Exam: 8/26/02				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	3	3	5				3	1			1	16	
	2	4	4	3				4	1			1	17	
	3	0	1	0				1	1			0	3	
	Tier Totals	7	8	8				8	3			2	36	
2. Plant Systems	1	2	2	3	2	2	2	2	2	2	2	2	23	
	2	2	2	2	3	2	2	1	2	2	1	1	20	
	3	1	1	1	0	0	1	1	0	2	1	0	8	
	Tier Totals	5	5	6	5	4	5	4	4	6	4	3	51	
3. Generic Knowledge and Abilities						Cat 1		Cat 2		Cat 3		Cat 4		13
						3		4		2		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. 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 ± 1 from that specified in the table based on NRC revisions. The final exam must total 100 points.</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>														

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1						Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000005 Inoperable/Stuck Control Rod / 1	X						005.AK1.06 Knowledge of the operational implications of the bases for a power limit, for rod misalignment, as they apply to the inoperable/stuck control rod.	2.9	1
000015/17 RCP Malfunctions / 04							Topic not randomly selected.	N/A	N/A
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4		X					W/E09.EK2.2 Knowledge of the interrelations between Natural Circulation Operations and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.6	1
			X				W/E09.EK3.4 Knowledge of the reasons for 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 as applied to Natural Circulation Operations.	3.4	1
000024 Emergency Boration / 1				X			024.AA1.04 Ability to operate and/or monitor the manual boration valve as applied to an emergency boration.	3.6	1
000026 Loss of Component Cooling Water / 8							Topic not randomly selected.	N/A	N/A
000027 Pressurizer Pressure Control System Malfunction / 3		X					027.AK2.03 Knowledge of the interrelations between the PZR Pressure Control System malfunctions and controllers and positioners.	2.6	1
			X				027.AK3.03 Knowledge of the reasons for actions contained in EOP for PZR Pressure Control System malfunctions.	3.7	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture – Excessive Heat Transfer / 4				X			040.AA1.13 Ability to operate and/or monitor Steam Line isolation valve indications as they apply to Steam Line Rupture.	4.2	1
	X						W/E12.EK1.2 Knowledge of the operational implications of normal, abnormal, and emergency procedures associated with an uncontrolled depressurization of all steam generators.	3.5	1
CE/A11; W/E08 RCS Overcooling – PTS / 4	X						W/E08.EK1.2 Knowledge of the operational implications of normal, abnormal, and emergency procedures associated with PTS.	3.4	1

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (CONTINUED)						Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000051 Loss of Condenser Vacuum / 4			X				051.AK3.01 Knowledge of the reasons for loss of steam dump capability upon loss of condenser vacuum.	2.8	1
				X			051.AA1.04 Ability to operate and/or monitor rod position as applied to a loss of condenser vacuum.	2.5	1
000055 Station Blackout / 6			X				055.EK3.01 Knowledge of the reasons for the length of time for which battery capacity is designed as applied to a SBO.	2.7	1
000057 Loss of Vital AC Elec. Inst. Bus / 6					X		057.AA2.04 Ability to determine/interpret the ESF system panel alarm annunciators and channel status indicators as they apply to a Loss of AC vital electrical instrument bus.	3.7	1
000062 Loss of Nuclear Service Water / 4							Topic not randomly selected.	N/A	N/A
000067 Plant Fire On-site / 9							Topic not randomly selected.	N/A	N/A
000068 (BW/A06) Control Room Evacuation / 8							Topic not randomly selected.	N/A	N/A
000069 (W/E14) Loss of CTMT Integrity / 5						X	069 - 2.4.2 Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entry conditions.	3.9	1
000074 (W/E06&E07) Inadequate Core Cooling / 4		X					074.EK2.08 Knowledge of the interrelations between Inadequate Core Cooling and sensors and detectors.	2.5	1
			X				W/E06.EK3.4 Knowledge of the reasons for 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 as applied to Degraded Core Cooling.	3.5	1
BW/E03 Inadequate Subcooling Margin / 4							Suppressed – Not applicable to facility	N/A	N/A
000076 High Reactor Coolant Activity / 9							Topic not randomly selected.	N/A	N/A
BW/A02&A03 Loss of NNI-X/Y / 7							Suppressed – Not applicable to facility	N/A	N/A
K/A Category Totals:	3	3	5	3	1	1	Group Point Total:		16

PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2							Form ES-401-4		
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000001 Continuous Rod Withdrawal / 1				X			001.AA1.01 Ability to operate and/or monitor the Bank Select Switch as applied to a Continuous Rod Withdrawal.	3.5	1
000003 Dropped Control Rod / 1	X						003.AK1.04 Knowledge of the operational implications of the effects of power level and control position on flux as applied to a Dropped Control Rod.	3.1	1
000007 (BW/E02&E10: CE/E02) Reactor Trip – Stabilization – Recovery / 1				X			007.EA1.05 Ability to operate and monitor Nuclear Instrumentation as it applies to a reactor trip.	4.0	1
BW/A01 Plant Runback / 1							Suppressed – Not applicable to facility	N/A	N/A
BW/A04 Turbine Trip / 4							Suppressed – Not applicable to facility	N/A	N/A
000008 Pressurizer Vapor Space Accident / 3							Topic not randomly selected.	N/A	N/A
000009 Small Break LOCA / 3							Topic not randomly selected.	N/A	N/A
000011 Large Break LOCA / 3							Topic not randomly selected.	N/A	N/A
W/E04 LOCA Outside Containment / 3	X						W/E04.EK1.2 Knowledge of the operational implications of normal, abnormal, and emergency operating procedures associated with a LOCA outside containment.	3.5	1
BW/E08; W/E03 LOCA Cooldown/Depress. / 4		X					W/E03.EK2.2 Knowledge of the interrelations between the LOCA Cooldown and Depressurization and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.7	1
			X				W/E03.EK3.2 Knowledge of the reasons for normal, abnormal, and emergency operating procedures associated with a LOCA Cooldown and Depressurization.	3.4	1
W/E11 Loss of Emergency Coolant Recirc. / 4		X					W/E11.EK2.1 Knowledge of the interrelations between the Loss of Emergency Coolant Recirculation and components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.6	1
				X			W/E11.EA1.3 Ability to operate and/or monitor the desired operating results during abnormal and emergency situations as applied to a Loss of Emergency Coolant Recirculation.	3.7	1

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (CONTINUED)							Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
W/E01 & E02 Rediagnosis & SI Termination / 3		X					W/E01.EK2.2 Knowledge of the interrelations between the (Reactor Trip or Safety Injection / Re-diagnosis) and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.5	1	
000022 Loss of Reactor Coolant Makeup / 2							Topic not randomly selected.	N/A	N/A	
000025 Loss of RHR System / 4							Topic not randomly selected.	N/A	N/A	
000029 Anticipated Transient w/o Scram / 1		X			X		029.EK2.06 Knowledge of the interrelations between an ATWS and breakers, relays, and disconnects.	2.9	1	
							029.EA2.07 Ability to determine or interpret the reactor trip breaker indicating lights as applied to an ATWS.	4.2	1	
000032 Loss of Source Range NI / 7							Topic not randomly selected.	N/A	N/A	
000033 Loss of Intermediate Range NI / 7						X	2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1	
000037 Steam Generator Tube Leak / 3			X				037.AK3.04 Knowledge of the reasons for use of the "feed and bleed" process as they apply to a S/G Tube Leak.	2.5	1	
000038 Steam Generator Tube Rupture / 3				X			038.EA1.44 Ability to operate and monitor the level operating limits for S/Gs as applied to a SGTR.	3.4	1	
000054 (CE/E06) Loss of Main Feedwater / 4	X						054.AK1.01 Knowledge of the operational implications of a MFW line break depressurizing the S/G as related to a loss of main feedwater.	4.1	1	
BW/E04; W/E05 Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4							Topic not randomly selected.	N/A	N/A	
000058 Loss of DC Power / 6							Topic not randomly selected.	N/A	N/A	
000059 Accidental Liquid RadWaste Rel. / 9							Topic not randomly selected.	N/A	N/A	
000060 Accidental Gaseous Radwaste Rel. / 9							Topic not randomly selected.	N/A	N/A	
000061 ARM System Alarms / 7							Topic not randomly selected.	N/A	N/A	

ES-401							PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (CONTINUED)				Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points			
W/E16 High Containment Radiation / 9	X		X				<u>W/16.EK1.3</u> Knowledge of the operational implications of annunciators and conditions indicating signals, and remedial actions associated with High Containment Radiation.	3.0	1			
							<u>W/16.EK3.3</u> Knowledge of the reasons for manipulation of controls required to obtain the desired operating results during abnormal and emergency situations.	3.0	1			
CE/E09 Functional Recovery							Suppressed – Not applicable to facility	N/A	N/A			
K/A Category Totals:	4	4	3	4	1	1	Group Point Total:	N/A	17			

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 3							For ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000028 Pressurizer Level Malfunction / 2		X					<u>028.AK2.02</u> Knowledge of the interrelations between Pressurizer Level Control Malfunctions and sensors and detectors.	2.6	1	
					X		<u>028.AA2.11</u> Ability to determine and interpret a leak in the PZR as applied to a pressurizer level control malfunction	3.2	1	
000036 (BW/A08) Fuel Handling Accident / 8							Topic not randomly selected.	N/A	N/A	
000056 Loss of Off-site Power / 6				X			<u>056.AA1.04</u> Ability to operate and/or monitor the adjustment of speed of EDG to maintain frequency and voltage levels.	3.2	1	
000065 Loss of Instrument Air / 8							Topic not randomly selected.	N/A	N/A	
BW/E13&14 EOP Rules and Enclosures							Suppressed – Not applicable to facility	N/A	N/A	
BW/A05 Emergency Diesel Actuation / 6							Suppressed – Not applicable to facility	N/A	N/A	
BW/A07 Flooding / 8							Suppressed – Not applicable to facility	N/A	N/A	
CE/A16 Excess RCS Leakage / 2							Suppressed – Not applicable to facility	N/A	N/A	
W/E13 Steam Generator Over-pressure / 4							Topic not randomly selected.	N/A	N/A	
W/E15 Containment Flooding / 5							Topic not randomly selected.	N/A	N/A	
K/A Category Totals:	0	1	0	1	1	0	Group Point Total:		3	

ES-401		PWR RO Examination Outline Plant Systems – Tier 2/Group 1											For ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
001 Control Rod Drive					X					X		<u>001.K5.04</u> Knowledge of rod insertion limits as they apply to the Control Rod Drive System.	4.3	1
												<u>001.A4.15</u> Ability to manually operate and/or monitor in the control room, stopping boration/dilution or other means of reactivity change, while adjusting either rod position or Tave.	3.1	1
003 Reactor Coolant Pump	X					X						<u>003.K1.01</u> Knowledge of the physical connections and/or cause-effect relationships between the RCPS and RCP lube oil.	2.6	1
												<u>003.K6.04</u> Knowledge of the effect of a loss or malfunction of the containment isolation valves affecting RCP operation will have on the RCPS.	2.8	1
004 Chemical and Volume Control				X						X		<u>004.K4.01</u> Knowledge of CVCS design feature(s) and/or interlock(s) which provide for oxygen control in the RCS.	2.8	1
												<u>004.A4.19</u> Ability to manually operate and/or monitor in the control room the CVCS letdown orifice isolation valve and valve control switches.	3.1	1
013 Engineering Safety Features Actuation			X									<u>013.K3.02</u> Knowledge of the effect that a loss or malfunction of the ESFAS will have on the RCS.	4.3	1
		X										<u>013.K2.01</u> Knowledge of bus power supplies to ESFAS/safeguards equipment control.	3.6	1
015 Nuclear Instrumentation		X										<u>015.K2.01</u> Knowledge of bus power supplies to NIS channels, components, and interconnections.	3.3	1
	X											<u>015.K1.03</u> Knowledge of the physical connections and/or cause-effect relationships between the NIS and CRDS.	3.1	1

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PWR RO Examination Outline
Plant Systems – Tier 2/Group 1
(CONTINUED)

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
017 In-core Temperature Monitor								X				<u>017.A2.02</u> Ability to predict the impacts of core damage on the ITM system, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	3.6	1
					X							<u>017.K5.02</u> Knowledge of the operational implications of saturation and subcooling of water as applied to the ITM.	3.7	1
022 Containment Cooling			X									<u>022.K3.01</u> Knowledge of the effect that a loss or malfunction of the Containment Cooling System will have on containment equipment subject to damage by high or low temperature, humidity, and pressure.	2.9	1
											X	<u>2.1.23</u> Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	1
025 Ice Condenser												Suppressed – Not applicable to facility	N/A	N/A
056 Condensate								X				<u>056.A2.04</u> Ability to predict the impacts of a loss of condensate pumps on the condensate system, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	2.6	1
059 Main Feedwater							X					<u>059.A1.03</u> Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including power level restrictions for operation of MFW pumps and valves.	2.7	1
061 Auxiliary/Emergency Feedwater						X						<u>061.K6.02</u> Knowledge of the effect of a loss or malfunction of pumps will have on the AFW components.	2.6	1
									X			<u>061.A3.01</u> Ability to monitor automatic operation of the AFW, including AFW startup and flows.	4.2	1

ES-401

PWR RO Examination Outline
Plant Systems – Tier 2/Group 1
(CONTINUED)

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
068 Liquid Radwaste									X			<u>068.A3.02</u> Ability to monitor automatic operation of the Liquid Radwaste System including automatic isolation.	3.6	1
											X	<u>2.1.14</u> Knowledge of system status criteria which require the notification of plant personnel.	2.5	1
071 Waste Gas Disposal				X								<u>071.K4.06</u> Knowledge of design feature(s) and/or interlock(s) which provide for the sampling and monitoring of waste gas release tanks.	2.7	1
072 Area Radiation Monitoring							X					<u>072.A1.01</u> Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ARM system controls including radiation levels.	3.4	1
			X									<u>072.K3.02</u> Knowledge of the effect that a loss or malfunction of the ARM system will have on fuel handling operations.	3.1	1
K/A Category Totals:	2	2	3	2	2	2	2	2	2	2	2	Group Point Total:		23

ES-401	PWR RO Examination Outline Plant Systems – Tier 2/Group 2												For ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
002 Reactor Coolant						X						002.K6.12 Knowledge of the effect of a loss or malfunction of the RCS Code Safety valves.	3.0	1
006 Emergency Core Cooling												Topic not randomly selected.	N/A	N/A
010 Pressurizer Pressure Control												Topic not randomly selected.	N/A	N/A
011 Pressurizer Level Control				X								011.K4.04 Knowledge of PZR LCS design feature(s) and/or interlock(s) which provide for PZR level inputs.	3.0	1
012 Reactor Protection	X											012.K1.04 Knowledge of the physical connections and/or cause effect relationships between the RPS and RPIS.	3.2	1
014 Rod Position Indication												Topic not randomly selected.	N/A	N/A
016 Non-Nuclear Instrumentation					X							016.K5.01 Knowledge of the operational implication of the separation of control and protection circuits.	2.7	1
			X									016.K3.04 Knowledge of the effect that a loss or malfunction of the NNIS will have on the MFW system.	2.6	1
026 Containment Spray	X											026.K1.01 Knowledge of the physical connections and/or cause effect relationships between the CSS and ECCS.	4.2	1
								X				026.A2.04 Ability to predict the impacts of a failure of a spray pump on the CSS, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	3.9	1
029 Containment Purge												Topic not randomly selected.	N/A	N/A
033 Spent Fuel Pool Cooling												Topic not randomly selected.	N/A	N/A

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PWR RO Examination Outline
Plant Systems – Tier 2/Group 2
(CONTINUED)

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
035 Steam Generator						X						<u>035.K6.01</u> Knowledge of the effect of a loss or malfunction of the MSIVs will have on the S/G system.	3.2	1
							X					<u>035.A1.01</u> Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/G system controls including S/G wide and narrow range level during startup, shutdown, and normal operations.	3.6	1
039 Main and Reheat Steam										X		<u>039.A4.04</u> Ability to manually operate and/or monitor in the control room emergency feedwater pump turbines.	3.8	1
055 Condenser Air Removal									X			<u>055.A3.03</u> Ability to monitor automatic operation of the CARS, including automatic diversion of the CARS exhaust.	2.5	1
062 AC Electrical Distribution			X									<u>062.K3.03</u> Knowledge of the effect of a loss or malfunction of the AC Distribution system will have on the DC system.	3.7	1
		X										<u>062.K2.01</u> Knowledge of bus power supplies to major system loads.	3.3	1
063 DC Electrical Distribution				X								<u>063.K4.02</u> Knowledge of DC electrical system design feature(s) and/or interlock(s) which provide for breaker interlocks, permissives, bypasses, and cross-ties.	2.9	1
									X			<u>063.A3.01</u> Ability to monitor automatic operation of the DC electrical system including meters, annunciators, dials, recorders, and indicating lights.	2.7	1
064 Emergency Diesel Generator		X										<u>064.K2.01</u> Knowledge of bus power supplies to the EDG air compressor.	2.7	1

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PWR RO Examination Outline
Plant Systems – Tier 2/Group 2
(CONTINUED)

Form ES-401-4

E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
073 Process Radiation Monitoring				X								<u>073.K4.01</u> Knowledge of PRM system design feature(s) and/or interlock(s) which provide for release termination when radiation exceeds setpoint.	4.0	1
075 Circulating Water								X				<u>075.A2.02</u> Ability to predict the impacts of a loss of circulating water pumps on the CW system, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	2.5	1
079 Station Air												Topic not randomly selected.	N/A	N/A
086 Fire Protection											X	<u>2.4.48</u> Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.	3.5	1
					X							<u>086.K5.03</u> Knowledge of the operational implication of the effect of water spray on electrical components as applied to the Fire Protection System.	3.1	1
K/A Category Totals:	2	2	2	3	2	2	1	2	2	1	1	Group Point Total:		20

ES-401		PWR RO Examination Outline Plant Systems – Tier 2/Group 3										For ES-401-4		
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal						X						005.K6.03 Knowledge of the effect of a loss or malfunction of the RHR heat exchanger will have on the RIHR system.	2.5	1
007 Pressurizer Relief/Quench Tank												Topic not randomly selected.	N/A	N/A
008 Component Cooling Water										X		008.A4.10 Ability to manually operate and/or monitor in the control room conditions that require the operation of two CCW coolers.	3.1	1
027 Containment Iodine Removal												Suppressed – Not applicable to facility	N/A	N/A
028 Hydrogen Recombiner and Purge Control												Topic not randomly selected.	N/A	N/A
034 Fuel Handling Equipment									X			034.A3.01 Ability to monitor automatic operation of the fuel handling system, including travel limits.	2.5	1
041 Steam Dump/Turbine Bypass Control												Topic not randomly selected.	N/A	N/A
045 Main Turbine Generator			X									045.K3.01 Knowledge of the effect that a loss or malfunction of the main turbine generator will have on the remainder of the plant.	2.9	1
076 Service Water												Topic not randomly selected.	N/A	N/A
078 Instrument Air		X										078.K2.01 Knowledge of bus power supplies to the instrument air compressors.	2.7	1
									X			078.A3.01 Ability to monitor automatic operation of the instrument air system, including air pressure.	3.1	1

ES-401		PWR RO Examination Outline Plant Systems – Tier 2/Group 3 (CONTINUED)										For ES-401-4			
103 Containment	X						X					<u>103.K1.01</u> Knowledge of the physical connections and/or cause effect relationships between the containment system and the containment cooling system.	3.6	1	
												<u>103.A1.01</u> Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including containment pressure, temperature, and humidity.	3.7	1	
K/A Category Totals:		1	1	1	0	0	1	1	0	2	1	0	Group Point Total		8

Plant-Specific Priorities			
System / Topic	Recommended Replacement for...	Reason	Points
NONE			
Plant-Specific Priority Total: (limit 10)			

Facility: KNP		Date of Exam: 8/26/02	Exam Level: RO	
Category	K/A #	Topic	Imp.	Points
Conduct of Operations	<u>2.1.9</u>	Ability to direct personnel activities inside the control room.	2.5	1
	<u>2.1.10</u>	Knowledge of conditions and limitations in the facility license.	2.7	1
	<u>2.1.22</u>	Ability to determine Mode of Operation	2.8	1
	Total			3
Equipment Control	<u>2.2.1</u>	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7	1
	<u>2.2.12</u>	Knowledge of surveillance procedures.	3.0	1
	<u>2.2.13</u>	Knowledge of tagging and clearance procedures.	3.6	1
	<u>2.2.27</u>	Knowledge of the refueling process.	2.6	1
	Total			4
Radiation Control	<u>2.3.1</u>	Knowledge of 10 CFR 20 and related facility radiation control requirements.	2.6	1
	<u>2.3.9</u>	Knowledge of the process for performing a containment purge.	2.5	1
	Total			2
Emergency Procedures/ Plan	<u>2.4.6</u>	Knowledge of symptom based EOP mitigation strategies.	3.1	1
	<u>2.4.14</u>	Knowledge of generic guidelines for EOP flowchart use.	3.0	1
	<u>2.4.25</u>	Knowledge of fire protection procedures.	2.9	1
	<u>2.4.49</u>	Ability to perform without reference those actions that require immediate operation of system components and controls.	4.0	1
	Total			4
Tier 3 Point Total (RO)				13

Facility: Kewaunee Nuclear Plant				Date of Exam: 8/26/02				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	4	4	4				5	4			3	24
	2	2	3	4				3	1			3	16
	3	0	1	0				0	1			1	3
	Tier Totals	6	8	8				8	6			7	43
2. Plant Systems	1	2	1	2	2	1	2	2	2	2	1	2	19
	2	2	1	1	2	2	2	2	1	2	1	1	17
	3	0	1	0	0	0	1	0	0	1	0	1	4
	Tier Totals	4	3	3	4	3	5	4	3	5	2	4	40
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		17
					4		4		4		5		
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. 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 ±1 from that specified in the table based on NRC revisions. The final exam must total 100 points.													
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 SRO 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		PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1							Form ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)		Imp.	Points
000001 Continuous Rod Withdrawal / 1				X			<u>001.AA1.01</u> Ability to operate and/or monitor the Bank Select Switch as applied to a Continuous Rod Withdrawal.		3.2	1
000003 Dropped Control Rod / 1	X						<u>003.AK1.04</u> Knowledge of the operational implications of the effects of power level and control position on flux as applied to a Dropped Control Rod.		3.7	1
000005 Inoperable/Stuck Control Rod / 1					X		<u>005.AA2.03</u> Ability to determine and interpret the required actions if more than one rod is stuck or inoperable as applied to the Inoperable/Stuck Control Rod.		4.4	1
000011 Large Break LOCA / 3							Topic not randomly selected.		N/A	N/A
W/E04 LOCA Outside Containment / 3	X						<u>W/E04.EK1.2</u> Knowledge of the operational implications of normal, abnormal, and emergency operating procedures associated with a LOCA outside containment.		4.2	1
W/E01 & E02 Re-diagnosis & SI Termination / 3		X				X	<u>E01 - 2.2.22</u> Knowledge of limiting conditions for operations and safety limits.		4.1	1
							<u>W/E01.EK2.2</u> Knowledge of the interrelations between the (Reactor Trip or Safety Injection / Re-diagnosis) and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.		3.8	1
000015/17 RCP Malfunctions / 4					X		<u>015/017.AA2.08</u> Ability to determine and interpret when to secure RCPs on high bearing temperature as applied to a RCP malfunction.		3.5	1
						X	<u>2.1.12</u> Ability to apply Technical Specifications for a system.		4.0	1
BW/E09; CE/A13: W/E09 & E10 Natural Circ. / 4		X					<u>W/E09.EK2.2</u> Knowledge of the interrelations between Natural Circulation Operations and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.		3.9	1
			X				<u>W/E09.EK3.4</u> Knowledge of the reasons for 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 as applied to Natural Circulation Operations.		3.6	1

<div>ES-401</div> <div>PWR SRO Examination Outline</div> <div>Emergency and Abnormal Plant Evolutions – Tier 1/Group 1</div> <div>(CONTINUED)</div> <div>Form ES-401-3</div>										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000024 Emergency Boration / 1				X			024.AA1.04 Ability to operate and/or monitor the manual boration valve as applied to an emergency boration.	3.7	1	
000026 Loss of Component Cooling Water / 8							Topic not randomly selected.	N/A	N/A	
000029 Anticipated Transient w/o Scram / 1		X					029.EK2.06 Knowledge of the interrelations between an ATWS and breakers, relays, and disconnects.	3.1	1	
000040 (BW/E05, CE/E05; W/E12) Steam Line Rupture – Excessive Heat Transfer / 4	X			X			040.AA1.13 Ability to operate and/or monitor Steam Line isolation valve indications as they apply to Steam Line Rupture.	4.2	1	
							W/E12.EK1.2 Knowledge of the operational implications of normal, abnormal, and emergency procedures associated with an uncontrolled depressurization of all steam generators.	3.8	1	
CE/A11; W/E08 RCS Overcooling – PTS /4	X						W/E08.EK1.2 Knowledge of the operational implications of normal, abnormal, and emergency procedures associated with PTS.	4.0	1	
000051 Loss of Condenser Vacuum / 4			X				051.AK3.01 Knowledge of the reasons for loss of steam dump capability upon loss of condenser vacuum.	3.1	1	
							051.AA1.04 Ability to operate and/or monitor rod position as applied to a loss of condenser vacuum.	2.5	1	
000055 Station Blackout / 6			X				055.EK3.01 Knowledge of the reasons for the length of time for which battery capacity is designed as applied to a SBO.	3.4	1	
000057 Loss of Vital AC Elec. Inst. Bus / 6							Topic not randomly selected.	N/A	N/A	
000059 Accidental Liquid RadWaste Release / 9							Topic not randomly selected.	N/A	N/A	
000062 Loss of Nuclear Service Water / 4							Topic not randomly selected.	N/A	N/A	
000067 Plant Fire On-site / 9					X		067.AA2.15 Ability to determine and interpret the requirements for establishing a fire watch as applied to the plant fire on site.	3.9	1	
000068 (BW/A06) Control Room Evacuation / 8				X			068.AA1.31 Ability to operate and/or monitor the ED/G as they apply to the Control Room Evacuation.	4.0	1	
000069 (W/E14) Loss of CTMT Integrity / 5					X		069.AA2.01 Ability to determine and interpret a loss of containment integrity.	4.3	1	

ES-401		PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (CONTINUED)							Form ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000074 (W/E06&E07) Inadequate Core Cooling / 4		X					074.EK2.08 Knowledge of the interrelations between Inadequate Core Cooling and sensors and detectors.	2.5	1	
			X				W/E06.EK3.4 Knowledge of the reasons for 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 as applied to Degraded Core Cooling	3.7	1	
BW/E03 Inadequate Subcooling Margin / 4							Suppressed – Not applicable to facility	N/A	N/A	
000076 High Reactor Coolant Activity / 9						X	2.2.22 Knowledge of limiting conditions for operations and safety limits.	4.1	1	
BW/A02&A03 Loss of NNI-XY / 7							Suppressed – Not applicable to facility	N/A	N/A	
K/A Category Totals:	4	4	4	5	4	3	Group Point Total:		24	

ES-401	PWR SRO Examination Outline							Form ES-401-3	
Emergency and Abnormal Plant Evolutions – Tier 1/Group 2									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000007 (BW/E02&E10; CE/E02) Reactor Trip – Stabilization – Recovery / 1				X			007.EA1.05 Ability to operate and monitor the Nuclear Instrumentation as they apply to a reactor trip.	4.1	1
BW/A01 Plant Runback / 1							Suppressed – Not applicable to facility	N/A	N/A
BW/A04 Turbine Trip / 4							Suppressed – Not applicable to facility	N/A	N/A
000008 Pressurizer Vapor Space Accident / 3							Topic not randomly selected.	N/A	N/A
000009 Small Break LOCA / 3			X				009.EK3.21 Knowledge of the reasons for actions contained in the EOP for small break LOCA/leak.	4.5	N/A
BW/E08; W/E03 LOCA Cooldown – Depress. / 4		X					W/E03.EK2.2 Knowledge of the interrelations between the LOCA Cooldown and Depressurization and the facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	4.0	1
W/E11 Loss of Emergency Coolant Recirc. / 4		X					W/E11.EK2.1 Knowledge of the interrelations between the Loss of Emergency Coolant Recirculation and components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.9	1
				X			W/E11.EA1.3 Ability to operate and/or monitor the desired operating results during abnormal and emergency situations as applied to a Loss of Emergency Coolant Recirculation.	4.2	1
000022 Loss of Reactor Coolant Makeup / 2							Topic not randomly selected.	N/A	N/A
000025 Loss of RHR System / 4							Topic not randomly selected.	N/A	N/A
000027 Pressurizer Pressure Control System Malfunction / 3		X					027.AK2.03 Knowledge of the interrelations between the PZR Pressure Control System malfunctions and controllers and positioners.	2.8	1
			X				027.AK3.03 Knowledge of the reasons for actions contained in EOP for PZR Pressure Control System malfunctions.	4.1	1
000032 Loss of Source Range NI / 7							Topic not randomly selected.	N/A	N/A

ES-401

PWR SRO Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1/Group 2
(CONTINUED)

Form ES-401-3

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000033 Loss of Intermediate Range NI / 7					X		<u>033.AA2.08</u> Ability to determine and interpret intermediate range channel operability as applied to a loss of intermediate range nuclear instrumentation.	3.4	1
						X	<u>2.4.49</u> Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
000037 Steam Generator Tube Leak / 3			X			X	<u>2.1.12</u> Ability to apply Technical Specifications for a system.	4.0	1
							<u>037.AK3.04</u> Knowledge of the reasons for use of the “feed and bleed” process as they apply to a S/G Tube Leak.	2.9	1
000038 Steam Generator Tube Rupture / 3				X			<u>038.EA1.44</u> Ability to operate and monitor the level operating limits for S/Gs as applied to a SGTR.	3.4	1
000054 (CE/E06) Loss of Main Feedwater / 4	X						<u>054.AK1.01</u> Knowledge of the operational implications of a MFW line break depressurizing the S/G as related to a loss of main feedwater.	4.3	1
BW/E04; W/E05 Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4							Topic not randomly selected.	N/A	N/A
000058 Loss of DC Power / 6							Topic not randomly selected.	N/A	N/A
000060 Accidental Gaseous Radwaste Release. / 9							Topic not randomly selected.	N/A	N/A
000061 ARM System Alarms / 7						X	<u>2.1.32</u> Ability to explain and apply all system limits and precautions.	3.8	1

ES-401

PWR SRO Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1/Group 2
(CONTINUED)

Form ES-401-3

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
W/E16 High Containment Radiation / 9	X		X				<u>W/16.EK1.3</u> Knowledge of the operational implications of annunciators and conditions indicating signals, and remedial actions associated with High Containment Radiation.	3.3	1
							<u>W/16.EK3.3</u> Knowledge of the reasons for manipulation of controls required to obtain the desired operating results during abnormal and emergency situations involving high Containment Radiation.	3.0	1
000065 Loss of Instrument Air / 8							Topic not randomly selected.	N/A	N/A
CE/E09 Functional Recovery							Suppressed – Not applicable to facility	N/A	N/A
K/A Category Totals:	2	3	4	3	1	3	Group Point Total:		16

ES-401		PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 3							For ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points	
000028 Pressurizer Level Malfunction / 2		X					028.AK2.02 Knowledge of the interrelations between Pressurizer Level Control Malfunctions and sensors and detectors.	2.7	1	
					X		028.AA2.11 Ability to determine and interpret a leak in the PZR as applied to a pressurizer level control malfunction	3.6	1	
000036 (BW/A08) Fuel Handling Accident / 8							Topic not randomly selected.	N/A	N/A	
000056 Loss of Off-Site Power / 6							Topic not randomly selected.	N/A	N/A	
BW/E13&14 EOP Rules and Enclosures							Suppressed – Not applicable to facility	N/A	N/A	
BW/A05 Emergency Diesel Actuation / 6							Suppressed – Not applicable to facility	N/A	N/A	
BW/A07 Flooding / 8							Suppressed – Not applicable to facility	N/A	N/A	
CE/A16 Excess RCS Leakage / 2							Suppressed – Not applicable to facility	N/A	N/A	
W/E13 Steam Generator Over-pressure / 4						X	2.4.18 Knowledge of the specific bases for EOPs.	3.6	1	
W/E15 Containment Flooding / 5							Topic not randomly selected.	N/A	N/A	
K/A Category Totals:	0	1	0	0	1	1	Group Point Total:		3	

ES-401		PWR SRO Examination Outline Plant Systems – Tier 2/Group 1											For ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
001 Control Rod Drive					X					X		<u>001.K5.04</u> Knowledge of rod insertion limits as they apply to the Control Rod Drive System.	4.7	1
												<u>001.A4.15</u> Ability to manually operate and/or monitor in the control room stopping boration/dilution or other means of reactivity change while adjusting either rod position or Tave.	3.1	1
003 Reactor Coolant Pump	X					X						<u>003.K1.01</u> Knowledge of the physical connections and/or cause-effect relationships between the RCPS and RCP lube oil.	2.8	1
												<u>003.K6.04</u> Knowledge of the effect of a loss or malfunction of the containment isolation valves affecting RCP operation will have on the RCPS.	3.1	1
004 Chemical and Volume Control				X								<u>004.K4.01</u> Knowledge of CVCS design feature(s) and/or interlock(s) which provide for oxygen control in the RCS.	3.3	1
013 Engineering Safety Features Actuation			X									<u>013.K3.02</u> Knowledge of the effect that a loss or malfunction of the ESFAS will have on the RCS.	4.5	1
014 Rod Position Indication												Topic not randomly selected.	N/A	N/A
015 Nuclear Instrumentation		X									X	<u>2.4.11</u> Knowledge of abnormal condition procedures.	3.6	1
												<u>015.K2.01</u> Knowledge of bus power supplies to NIS channels, components, and interconnections	3.7	1

ES-401		PWR SRO Examination Outline Plant Systems – Tier 2/Group 1 (CONTINUED)										Form ES-401-3		
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
017 In-core Temperature Monitor								X				017.A2.02 Ability to predict the impacts of core damage on the ITM system, and based on those predictions, use procedures to correct, control, or mitigate the consequences	4.1	1
022 Containment Cooling			X									022.K3.01 Knowledge of the effect that a loss or malfunction of the Containment Cooling System will have on containment equipment subject to damage by high or low temperature, humidity, and pressure.	3.2	1
025 Ice Condenser												Suppressed – Not applicable to facility	N/A	N/A
026 Containment Spray	X							X				026.K1.01 Knowledge of the physical connections and/or cause effect relationships between the CSS and ECCS. 026.A2.04 Ability to predict the impacts of a failure of a spray pump on the CSS, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	4.2 4.2	1 1
056 Condensate												Topic not randomly selected.	N/A	N/A
059 Main Feedwater							X					059.A1.03 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including power level restrictions for operation of MFW pumps and valves.	2.9	1
061 Auxiliary/Emergency Feedwater						X					X	061.K6.02 Knowledge of the effect of a loss or malfunction of pumps will have on the AFW components. 061.A3.01 Ability to monitor automatic operation of the AFW, including AFW startup and flows.	2.7 4.2	1 1

ES-401		PWR SRO Examination Outline Plant Systems – Tier 2/Group 2										For ES-401-3		
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
002 Reactor Coolant						X						002.K6.12 Knowledge of the effect of a loss or malfunction of the RCS Code Safety valves.	3.5	1
006 Emergency Core Cooling												Topic not randomly selected.	N/A	N/A
010 Pressurizer Pressure Control												Topic not randomly selected.	N/A	N/A
011 Pressurizer Level Control				X								011.K4.04 Knowledge of PZR LCS design feature(s) and/or interlock(s) which provide for PZR level inputs.	3.3	1
012 Reactor Protection	X											012.K1.04 Knowledge of the physical connections and/or cause effect relationships between the RPS and RPIS.	3.3	1
016 Non-Nuclear Instrumentation					X							016.K5.01 Knowledge of the operational implication of the separation of control and protection circuits.	2.8	1
027 Containment Iodine Removal												Suppressed – Not applicable to facility	N/A	N/A
028 Hydrogen Recombiner and Purge Control					X							028.K5.04 Knowledge of the operational implications of the selective removal of hydrogen as applied to the HIRPS.	3.2	1
029 Containment Purge												Topic not randomly selected.	N/A	N/A
033 Spent Fuel Pool Cooling												Topic not randomly selected.	N/A	N/A
034 Fuel Handling Equipment									X			034.A3.01 Ability to monitor automatic operation of the fuel handling system, including travel limits.	3.1	1
035 Steam Generator						X						035.K6.01 Knowledge of the effect of a loss or malfunction of the MSIVs will have on the S/G system.	3.6	1
							X					035.A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/G system controls including S/G wide and narrow range level during startup, shutdown, and normal operations.	3.8	1
039 Main and Reheat Steam										X		039.A4.04 Ability to manually operate and/or monitor in the control room emergency feedwater pump turbines.	3.9	1

ES-401		PWR SRO Examination Outline Plant Systems – Tier 2/Group 2 (CONTINUED)										Form ES-401-3		
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
055 Condenser Air Removal									X			<u>055.A3.03</u> Ability to monitor automatic operation of the CARS, including automatic diversion of the CARS exhaust.	2.7	1
062 AC Electrical Distribution			X									<u>062.K3.03</u> Knowledge of the effect of a loss or malfunction of the AC Distribution system will have on the DC system.	3.9	1
064 Emergency Diesel Generator		X										<u>064.K2.01</u> Knowledge of bus power supplies to the EDG air compressor.	3.1	1
073 Process Radiation Monitoring				X								<u>073.K4.01</u> Knowledge of PRM system design feature(s) and/or interlock(s) which provide for release termination when radiation exceeds setpoint.	4.3	1
075 Circulating Water								X				<u>075.A2.02</u> Ability to predict the impacts of a loss of circulating water pumps on the CW system, and based on those predictions, use procedures to correct, control, or mitigate the consequences.	2.7	1
079 Station Air												Topic not randomly selected.	N/A	N/A
086 Fire Protection											X	<u>2.4.30</u> Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
103 Containment	X											<u>103.K1.01</u> Knowledge of the physical connections and/or cause effect relationships between the containment system and the containment cooling system.	3.9	1
							X					<u>103.A1.01</u> Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including containment pressure, temperature, and humidity.	4.1	1
K/A Category Totals:	2	1	1	2	2	2	2	1	2	1	1	Group Point Total:		17

ES-401		PWR SRO Examination Outline Plant Systems – Tier 2/Group 3											For ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal						X						<u>005.K6.03</u> Knowledge of the effect of a loss or malfunction of the RHR heat exchanger will have on the RHR system.	2.6	1
007 Pressurizer Relief/Quench Tank												Topic not randomly selected.	N/A	N/A
008 Component Cooling Water												Topic not randomly selected.	N/A	N/A
041 Steam Dump/Turbine Bypass Control												Topic not randomly selected.	N/A	N/A
045 Main Turbine Generator												Topic not randomly selected.	N/A	N/A
076 Service Water											X	<u>2.4.24</u> Knowledge of loss of cooling water procedures.	3.7	1
078 Instrument Air		X										<u>078.K2.01</u> Knowledge of bus power supplies to the instrument air compressors.	2.9	1
									X			<u>078.A3.01</u> Ability to monitor automatic operation of the instrument air system, including air pressure.	3.2	1
K/A Category Totals:	0	1	0	0	0	1	0	0	1	0	1	Group Point Total		4

Facility: KNP		Date of Exam: 8/26/02		Exam Level: SRO	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	<u>2.1.7</u>	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1	
	<u>2.1.9</u>	Ability to direct personnel activities inside the control room.	4.0	1	
	<u>2.1.12</u>	Ability to apply Technical Specifications for a system.	4.0	1	
	<u>2.1.22</u>	Ability to determine Mode of Operation.	3.3	1	
	Total			4	
Equipment Control	<u>2.2.1</u>	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.6	1	
	<u>2.2.13</u>	Knowledge of tagging and clearance procedures.	3.8	1	
	<u>2.2.22</u>	Knowledge of limiting conditions for operations and safety limits.	4.1	1	
	<u>2.2.34</u>	Knowledge of the process for determining the internal and external effects on core reactivity.	3.2	1	
	Total			4	
Radiation Control	<u>2.3.1</u>	Knowledge of 10 CFR 20 and related facility radiation control requirements.	3.0	1	
	<u>2.3.2</u>	Knowledge of facility ALARA program.	2.9	1	
	<u>2.3.6</u>	Knowledge of the requirements for reviewing and approving release permits.	3.1	1	
	<u>2.3.9</u>	Knowledge of the process for performing a containment purge.	3.4	1	
	Total			4	
Emergency Procedures/ Plan	<u>2.4.6</u>	Knowledge of symptom based EOP mitigation strategies.	4.0	1	
	<u>2.4.14</u>	Knowledge of general guidelines for EOP flowchart use.	3.9	1	
	<u>2.4.25</u>	Knowledge of fire protection procedures.	3.4	1	
	<u>2.4.36</u>	Knowledge of Chemistry / Health Physics tasks during emergency operations.	2.8	1	
	<u>2.4.49</u>	Ability to perform without reference those actions that require immediate operation of system components and controls.	4.0	1	
	Total			5	
Tier 3 Point Total (SRO)				17	

Plant-Specific Priorities			
System / Topic	Recommended Replacement for...	Reason	Points
NONE			
Plant-Specific Priority Total: (limit 10)			

Kewaunee
Outline Review NRC Comments/ LIC Response
5/22/02

WRITTEN:

1. NRC: What computer program do you use to randomly select KAs?

LIC: WD Associates. Description in package.

2. NRC: Were any KAs suppressed/rejected?

LIC: Yes. Suppressed KA list submitted with package.

(Not applicable questions: Were justification statements prepared? Were KAs suppressed/rejected/justified on a case-by-case basis? Which ones? Why? How many? We need to review the suppressed/rejected/justified KA information.)

ADMIN JPMs:

1. Make sure the admin JPMs have significant, verifiable consequences such that if they are performed incorrectly, the task cannot be successfully completed.

2. Make sure JPM meets the KA.

3. Make sure the JPM is significant enough to make a pass/fail license decision.

OPERATING JPMs:

General: Want alternate path JPMS to follow guidance in Appendix C, ie, procedurally driven (ARPs or ABNs are good), completes the task or mitigates the problem without reliance on actions by other control room operators...

1. I need to review a list of audit exam JPMs (to verify none of those JPMs are repeated on the NRC exam).

2. Make sure none of JPMs are performed in the scenarios. What about B.1.c (perform emergency boration) and B.1.d (place excess letdown in service)?

SCENARIOS:

1. Verify each scenario has Tech Specs

2. Verify each scenario has 2-3 critical tasks.

3. Verify 1-2 malfunctions after EOP entry.

Kewaunee
Outline Review NRC Comments/ LIC Response
5/22/02

4. Scenario 1:

Event 7, Sump B suction valve SI-351B will not open from control room, must be opened locally.

If opened locally, no measurable feedback for the applicant and cannot count this as a "C" failure for RO/SRO.

5. Scenario 2:

6. Scenario 3:

Event 1, Perform a power increase per N-0-02.

Does the power increase include rods and boron?