

OUTLINE SUBMITTAL WITH NRC COMMENTS

FOR THE D. C. COOK EXAMINATION - NOV/DEC 2002

Outline Submittal (do not write in this package)

Contains the following:

Outline Submittal Letter

ES-201-2	Examination Outline Quality Checklist
ES-301-1	Administrative Topics Outline (RO)
ES-301-1	Administrative Topics Outline (SRO(I))
ES-301-1	Administrative Topics Outline (SRO(U))
ES-301-2	Control Room and Facility Walk-Through Test Outline (RO)
ES-301-2	Control Room and Facility Walk-Through Test Outline (SRO(I))
ES-301-2	Control Room and Facility Walk-Through Test Outline (SRO(U))
ES-301-4	Simulator Scenario Quality Checklist (Set 1)
ES-301-5	Transient and Event Checklist (Set 1)
ES-301-6	Competencies Checklist (Set 1a)
ES-301-6	Competencies Checklist (Set 1b)
ES-301-4	Simulator Scenario Quality Checklist (Set 2)
ES-301-5	Transient and Event Checklist (Set 2)
ES-301-6	Competencies Checklist (Set 2)
D-1	Dynamic Simulator Scenario Outline for 5 scenarios (Sets 1 & 2)
ES-401-3	BWR SRO Examination Outline
ES-401-4	BWR RO Examination Outline
Admin	NRC Comments and Resolution on licensee submitted test outline
ES-401-10	RECORD OF REJECTED KAS. (RO/SRO)

August 1, 2002

TO: Dell McNeil, NRC Region III Examiner

SUBJECT: DC Cook 2002 NRC Exam Outline Submittal

Enclosed you will find a copy of the Initial License Examination Outline for the planned November/December 2002 Examination at DC Cook Nuclear Station.

The following items are enclosed in the sealed envelope:

- 1) Form ES-201-2 Examination Outline Quality Checklist
- 2) DC Cook 2002 NRC Operating Examination Overview.doc
- 3) WRITTEN EXAM SAMPLE METHODOLOGY.doc
- 4) Probabilistic Risk Assessment Input.doc
- 5) Scenario Outlines Form ES-D-1
 - a) COOK02-01.doc
 - b) COOK02-02.doc
 - c) COOK02-03.doc
 - d) COOK02-04.doc
 - e) COOK02-05.doc
 - f) COOK02-06.doc
- 6) ES-301-4 Simulator Checklist Set 1.doc
- 7) ES-301-4 Simulator Checklist Set 2.doc
- 8) ES-301-5 Transient and Event Checklist Set 1.doc
- 9) ES-301-5 Transient and Event Checklist Set 2.doc
- 10) ES-301-6 Competencies Checklist Set 1a.doc
- 11) ES-301-6 Competencies Checklist Set 1b.doc
- 12) ES-301-6 Competencies Checklist Set 2.doc
- 13) ES-301-2 System JPM Outlines
 - a) RO JPM Outline.doc
 - b) SRO(I) JPM Outline.doc
 - c) SRO(U) JPM Outline.doc
- 14) ES-301-1 Admin JPM Outlines
 - a) RO1 Admin Outline.doc
 - b) SRO(I) Admin Outline.doc
 - c) SRO(U) Admin Outline.doc
- 15) Written Exam SRO Outline, Form ES-401-3
- 16) Generic K/A Outline, Form ES-401-5 (SRO)
- 17) ES401-10 Submittal (SRO)
- 18) Written Exam RO Outline, Form ES-401-4
- 19) Generic K/A Outline, Form ES-401-5 (RO)
- 20) ES401-10 Submittal (RO)

A hard copy of all the examination materials is provided for your review. An electronic copy of documents without initials or signatures or other handwritten notations for the Public Document Room (ADAMS) has also been provided.

None of these materials are to go to the Public Document Room (ADAMS) until after the examination has been completed.

If you have any comments or concerns, please contact Steve Pettinger at (269) 466-3364 or myself at (269) 466-3407.

Sincerely,

A handwritten signature in cursive script that reads "Ronald 'Mick' Brown". The signature is written in black ink on a white background.

Ronald (Mick) Brown
Operations Training Manager
AEP, DC Cook Nuclear Station

Facility: DC Cook Nuclear Station		Date of Examination: 11/18/2002		
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.	SMB	RGB	SM
	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.	SMB	RGB	SM
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	SMB	RGB	SM
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	SMB	RGB	SM
2. S I M	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	SMB	RGB	SM
	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.	SMB	RGB	SM
	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.	SMB	RGB	SM
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.	SMB	RGB	SM
	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.	SMB	RGB	SM (A)
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	SMB	RGB	SM
	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.	SMB	RGB	SM
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.	SMB	RGB	SM
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	SMB	RGB	SM
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	SMB	RGB	SM
	d. Check for duplication and overlap among exam sections.	SMB	RGB	SM
	e. Check the entire exam for balance of coverage.	SMB	RGB	SM
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	SMB	RGB	SM
a. Author		Printed Name / Signature		Date
b. Facility Reviewer (*)		Steven W. Pettinger / <i>Steven W. Pettinger</i>		8/5/2002
c. NRC Chief Examiner (#)		Ronald G. Brown / <i>Ronald G. Brown</i>		8/15/02
d. NRC Supervisor		Dell R. McNeal / <i>Dell R. McNeal</i>		8/14/02
		Michael E. Bielby Sr / <i>Michael E. Bielby Sr</i>		8/14/02
Note: * Not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.				

(A) As-submitted contained 50% alternate path.

Facility: <u>DC COOK</u>		Date of Examination: <u>11/18/2002</u>
Examination Level (circle one): (RO) SRO		Operating Test Number: <u>2002-301</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Parameter Verification KA 2.1.7 (3.7)	N02-A1a Determine Ultimate Heat Sink Temperature
		Simulator
	Fuel Handling KA 2.2.30 (3.5)	N02-A1b Setup SR & Audio Count Rate for Fuel Movement
		Simulator
A.2	Use of P&IDs KA 2.1.24 (2.8)	N02-A2 Determine Requirements for Isolating a PAC Cooler NESW Leak
		Classroom / Simulator
A.3	Control of Radiation Releases KA 2.3.11 (2.7)	N02-A3 Terminate a Liquid Release
		In-Plant
A.4	Emergency Communication KA 2.4.39 (3.3)	N02-A4 Complete EMD-32a Nuclear Plant Event Notification Form
		Classroom / Simulator

Facility: <u>DC COOK</u>		Date of Examination: <u>11/18/2002</u>
Examination Level (circle one): RO <u>SRO(I)</u>		Operating Test Number: <u>2002-301</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification KA 2.1.7 (4.4)	N02-A7a Calculate QPTR with an Inoperable Power Range Instrument
		Simulator
	Fuel Handling KA 2.2.26 (3.7)	N02-A7b Determine Actions to Reposition Containment Integrity Valves During Refueling
		Classroom / Simulator
A.2	Tagging & Clearances KA 2.2.13 (3.8)	N02-A8 Review Clearance Order for Essential Service Water Pump (Alternate Path)
		Classroom / Simulator
A.3	Control of Radiation Releases KA 2.3.6 (3.1)	N02-A9 Review Liquid Release (Alternate Path)
		Classroom / Simulator
A.4	EALs & Classifications KA 2.4.44 (4.0)	N02-A10 Classify Event and Determine Protective Action Recommendations
		Classroom / Simulator

Facility: <u>DC COOK</u>		Date of Examination: <u>11/18/2002</u>
Examination Level (circle one): RO SRO(U)		Operating Test Number: <u>2002-301</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Parameter Verification KA 2.1.7 (4.4)	N02-A5a Verify Ultimate Heat Sink Temperature Determination
		Similar to RO except SRO review Simulator
	Fuel Handling KA 2.2.29 (3.8)	N02-A5b Perform Control Room Actions for A Fuel Handling Accident in Containment
		Simulator
A.2	Use of P&IDs KA 2.1.24 (3.1)	N02-A2 Determine Requirements for Isolating a PAC Cooler NESW Leak
		Same as RO - Classroom / Simulator
A.3	Control of Radiation Releases KA 2.3.11(3.2)	N02-A3 Terminate a Liquid Release
		Same as RO - In-Plant
A.4	EALs/ Emergency Classification KA 2.4.38 (4.0)	N02-A6 Perform Off-Site Dose Assessment
		Classroom

Facility: <u>DC COOK</u> Exam Level (circle one): <u>(RO)</u> SRO(I) / SRO(U)		Date of Examination: <u>11/18/2002</u> Operating Test No.: <u>2002-30</u>	
B.1 Control Room Systems			
System / JPM Title		Type Code*	Safety Function
a. [N02-01] Perform RCCA Operability Check per OHP-4030.STP.015 Attachment 1 KA 014 A4.02 3.4/3.2		N,S	I
b. [N02-02] Raise SI Accumulator Level per OHP- 4021.008.004 Attachment 3 (with loss of pressure relief) {Similar to 2001 exam except faulted} KA 006 A4.07 4.4/4.4		M,A,S	II
c. [N02-03] Swap In-service Component Cooling Water Pumps per OHP-4021.028.004 KA 008 A4.01 3.3/3.1		N,S	VIII
d. [N02-04] Feed and Bleed of the Pressure Relief Tank to reduce Temperature per OHP-4021.002.006 Attachments 3 & 4 KA 007 A2.01 3.9/4.2		N,S	V
e. [N02-05] Synchronize a DG to a Bus and Load to >5500KW per OHP-4040.STP.027AB (Fails to load) KA 064 A4.06 3.9/3.9		D,A,S	VI
f. [N02-06] Control Room Ventilation Alignment for Unit 1 Safety Injection per OHP-4021.028.014 Attachment 13 and OHP-4024.201 Drop 59 (Charcoal filter fire after fan start) KA 072 A3.01 2.9/3.1		N,A,S	VII
g. [N02-09] Restore Reactor Coolant Pump Cooling per OHP-4023.ES-1.2 and Supplement 007 KA 003 A4.08 3.2/2.9		N,S,L	IV-P
B.2 Facility Walk-Through			
a. [N02-10] Perform an Authorized Gaseous Release per 4021.023.002 KA 071 A4.26 3.1/3.9		D,R	IX
b. [N02-11] Restore "N" Train Battery Charger per OHP 4021.082.015 and OHP 4024.115 Drop 57 (In-Service Charger fails, align Standby) KA APE 058 AA1.01 3.4/3.5		M,A,R	VI
c. [N02-12] Establish ESW Cooling to Control Room Air Conditioning Unit per OHP 4021.028.014 Attachment 6 KA 076 A4.04 3.5/3.5		N	IV-S
* 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: <u>DC COOK</u> Exam Level (circle one): RO / <u>SRO(I)</u> / SRO(U)		Date of Examination: 11/18/2002 Operating Test No.: <u>2002-301</u>
B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
a. [N02-01] Perform RCCA Operability Check per OHP-4030.STP.015 Attachment 1 KA 014 A4.02 3.4/3.2	N,S	I
b. [N02-07] Energize SR Detectors and Audio Count Rate following a Trip per OHP-4023.ES-1.2 and OHP-4021.013.005 (IR Range Under Compensated) KA 015 A2.02 3.1/3.5	M,S,L	VII
c. [N02-03] Swap In-service Component Cooling Water Pumps per OHP-4021.028.004 KA 008 A4.01 3.3/3.1	N,S	VIII
d. [N02-04] Feed and Bleed of the Pressure Relief Tank to reduce Temperature per OHP-4021.002.006 Attachments 3 & 4 KA 007 A2.01 3.9/4.2	N,S	V
e. [N02-05] Synchronize a DG to a Bus and Load to >5500KW per OHP-4040.STP.027AB (Fails to load) KA 064 A4.06 3.9/3.9	D,A,S	VI
f. [N02-08] Isolate Safety Injection Accumulators per OHP-4023.ES-1.2 (2 Failed Accumulator Discharge Valves) KA 006 A4.02 4.0/3.8	M,A,S,L	II
g. [N02-09] Restore Reactor Coolant Pump Cooling per OHP-4023.ES-1.2 and Supplement 007 KA 003 A4.08 3.2/2.9	N,S,L	IV-P
B.2 Facility Walk-Through		
a. [N02-13] Perform a Local Diesel Generator Trip and Isolation per OHP-4025.LTI-3 (DG Fails to Trip with Pushbutton) KA APE 068 AA1.31 3.9/4.0	N,A	VI
b. [N02-14] Modify, Relatch and Start the Turbine Driven Auxiliary Feedwater Pump (Overspeed Trip reset required) [N02-14] KA APE 068 AA1.02 4.3/4.5	M,A	IV-S
c. [N02-15] Establish Local Control of RHR Valve for RCS Cooldown per OHP-4025.LS-7 KA 005 A2.04 2.9/2.9	M,R	IV-P
* 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		

ES-301 Control Room Systems and Facility Walk-Through Test Outline Form ES-301-2

Facility: DC COOK

Date of Examination: 11/18/2002

Exam Level (circle one): RO / SRO(I) / **SRO(U)**

Operating Test No.: 2002-301

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. [N02-07] Energize SR Detectors and Audio Count Rate following a Trip per OHP-4023.ES-1.2 and OHP-4021.013.005 (IR Range Under Compensated) KA 015 A2.02 3.1/3.5	M,S,L	VII
b. [N02-08] Isolate Safety Injection Accumulators per OHP-4023.ES-1.2 (2 Failed Accumulator Discharge Valves) KA 006 A4.02 4.0/3.8	M,A,S,L	II
c. [N02-09] Restore Reactor Coolant Pump Cooling per OHP-4023.ES-1.2 and Supplement 007 KA 003 A4.08 3.2/2.9	N,S,L	IV-P

B.2 Facility Walk-Through

a. [N02-10] Perform an Authorized Gaseous Release per 4021.023.002 KA 071 A4.26 3.1/3.9	D,R	IX
b. [N02-11] Restore "N" Train Battery Charger per OHP 4021.082.015 and OHP 4024.115 Drop 57 (In-Service Charger fails, align Standby) KA APE 058 AA1.01 3.4/3.5	M,A,R	VI

* 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

SAMPLE PLAN SUBMITAL

ES-301

Simulator Scenario Quality Checklist

Form ES-301-4

Facility: DC Cook Nuclear Station Date of Exam: 11/18/2002 Scenario Numbers: 02 / 03/ Operating Test No.: Set 1							
QUALITATIVE ATTRIBUTES					Initials		
					a	b*	c#
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	Suf	Rof	Dm			
2.	The scenarios consist mostly of related events.	Suf	Rof	Dm			
3.	Each event description consists of · the point in the scenario when it is to be initiated · the malfunction(s) that are entered to initiate the event · the symptoms/cues that will be visible to the crew · the expected operator actions (by shift position) · the event termination point (if applicable)			Dm	10/10/02		
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	Suf	Rof	Dm			
5.	The events are valid with regard to physics and thermodynamics.	Suf	Rof	Dm			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	Suf	Rof	Dm			
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	N/A	N/A	N/A			
8.	The simulator modeling is not altered.	Suf	Rof	Dm			
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			Dm	10/10/02		
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	Suf	Rof	Dm			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	Suf	Rof	Dm			
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	Suf	Rof	Dm			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	Suf	Rof	Dm			
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)		Actual Attributes	--	--	--		
1.	Total malfunctions (5-8)	6 / 8 /	Suf	Rof	Dm		
2.	Malfunctions after EOP entry (1-2)	2 / 3 /	Suf	Rof	Dm		
3.	Abnormal events (2-4)	3 / 4 /	Suf	Rof	Dm		
4.	Major transients (1-2)	1 / 1 /	Suf	Rof	Dm		
5.	EOPs entered/requiring substantive actions (1-2)	2 / 2 /	Suf	Rof	Dm		
6.	EOP contingencies requiring substantive actions (0-2)	2 / 0 /	Suf	Rof	Dm		
7.	Critical tasks (2-3)	3 / 2 /	Suf	Rof	Dm		

OPERATING TEST NO.: DC Cook 2002 Set 1

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			Cook 02-02	Cook 02-03	-	-
RO	Reactivity	1	1	1		
	Normal	1	1	1		
	Instrument / Component	4	5	7		
	Major	1	1	1		

As RO	Reactivity	1	1	1		
	Normal	0				
	Instrument / Component	2	2	3		
	Major	1	1	1		
SRO-I	Reactivity	0	1	1		
	Normal	1	1	1		
	Instrument / Component	2	5	7		
	Major	1	1	1		

SRO-U	Reactivity	0	1	1		
	Normal	1	1	1		
	Instrument / Component	2	5	7		
	Major	1	1	1		

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

Author:

NRC Reviewer:

Steven M. Pettigrew
Scott R. McNeil

DC Cook 2002 Simulator Exams Set 1(a)

Crews 1,2,3 Competencies Position Scenario Cook02-	Applicant #1 SRO-U				Applicant #2 RO				Applicant #3 RO			
	SCENARIO				SCENARIO				SCENARIO			
	SRO 02	SRO 03			RO 02	BOP 03			BOP 02	RO 03		
Understand and Interpret Annunciators and Alarms	1,2,3	4,5,7			1,3	3,5,7			2,3	4,6,7		
Diagnose Events and Conditions	1,2,6	4,5,7,8			1,3,8	3,5,7,8			2,3,7	4,6,7,9		
Understand Plant and System Response	3,6	3,4,6,7,8			1,3,6,8	3,5,7,8			2,3,6,7	2,4,6,7,9		
Comply With and Use Procedures (1)	1,2,6	4,5,7			1,3,4	1,3,5			2,3,5	2,4,6		
Operate Control Boards (2)					1,4,6,8	1,3,5,7,8			2,3,6,7	2,4,6,7,9		
Communicate and Interact With the Crew	3,6	3,4,6,7,8			1,4,6,8	3,5,7,8			2,3,6,7	2,4,7,9		
Demonstrate Supervisory Ability (3)	3,6,8	6,7,8										
Comply With and Use Tech. Specs. (3)	1,2	3,4,5,6										
<p>Notes:</p> <p>(1) Includes Technical Specification compliance for an RO.</p> <p>(2) Optional for an SRO-U.</p> <p>(3) Only applicable to SROs.</p>												

Instructions:

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

Author:

Steven W. Galt

NRC Reviewer:

Luc R. M. H. J.

DC Cook 2002 Simulator Exams Set 1(b)

Crews 8,9 Competencies Position Scenario Cook02-	Applicant #1 SRO-I				Applicant #2 SRO-I				Applicant #3			
	SCENARIO				SCENARIO				SCENARIO			
	SRO 02	RO 03			RO 02	SRO 03						
Understand and Interpret Annunciators and Alarms	1,2,3	4,6,7			1,3	4,5,7						
Diagnose Events and Conditions	1,2,6	4,6,7 ,9			1,3,8	4,5,7 ,8						
Understand Plant and System Response	3,6	2,4,6 ,7,9			1,3,6 ,8	3,4,6 ,7,8						
Comply With and Use Procedures (1)	1,2,6	2,4,6			1,3,4	4,5,7						
Operate Control Boards (2)		2,4,6 ,7,9			1,4,6 ,8							
Communicate and Interact With the Crew	3,6	2,4,7 ,9			1,4,6 ,8	3,4,6 ,7,8						
Demonstrate Supervisory Ability (3)	3,6,8					6,7,8						
Comply With and Use Tech. Specs. (3)	1,2					3,4,5 ,6						
<p>Notes:</p> <p>(1) Includes Technical Specification compliance for an RO.</p> <p>(2) Optional for an SRO-U.</p> <p>(3) Only applicable to SROs.</p>												

Instructions:

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

Author:

Steven W. Jettison

NRC Reviewer:

Scott R. McLeod

SAMPLE PLAN SUBMITTAL

ES-301

Simulator Scenario Quality Checklist

Form ES-301-4

Facility: DC Cook Nuclear Station		Date of Exam: 11/18/2002	Scenario Numbers: 04 / 05/ 06			Operating Test No.: Set 2
QUALITATIVE ATTRIBUTES		Initials				
		a	b*	c#		
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	SMB	RGB	DM		
2.	The scenarios consist mostly of related events.	SMB	RGB	DM		
3.	Each event description consists of . the point in the scenario when it is to be initiated . the malfunction(s) that are entered to initiate the event . the symptoms/cues that will be visible to the crew . the expected operator actions (by shift position) . the event termination point (if applicable)				DM	12/10/02
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	SMB	RGB	DM		
5.	The events are valid with regard to physics and thermodynamics.	SMB	RGB	DM		
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	SMB	RGB	DM		
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	N/A			N/A	DM
8.	The simulator modeling is not altered.	SMB	RGB	DM		
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.				DM	12/10/02
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	SMB	RGB	DM		
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	SMB	RGB	DM		
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	SMB	RGB	DM		
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	SMB	RGB	DM		
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)		Actual Attributes				
1.	Total malfunctions (5-8)	8 / 7 / 8	SMB	RGB	DM	
2.	Malfunctions after EOP entry (1-2)	2 / 2 / 4	SMB	RGB	DM	
3.	Abnormal events (2-4)	4 / 4 / 3	SMB	RGB	DM	
4.	Major transients (1-2)	1 / 1 / 1	SMB	RGB	DM	
5.	EOPs entered/requiring substantive actions (1-2)	1 / 2 / 1	SMB	RGB	DM	
6.	EOP contingencies requiring substantive actions (0-2)	0 / 0 / 1	SMB	RGB	DM	
7.	Critical tasks (2-3)	3 / 2 / 2	SMB	RGB	DM	

OPERATING TEST NO.:DC Cook 2002 Set 2

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			Cook 02-04	Cook 02-05	Cook 02-06	-
RO	Reactivity	1	1	1	1	
	Normal	1	1	1	1	
	Instrument / Component	4	7	6	7	
	Major	1	1	1	1	

As RO	Reactivity	1	1	1	1	
	Normal	0	0	0	0	
	Instrument / Component	2	3	3	3	
	Major	1	1	1	1	
SRO-I	Reactivity	0	1	1	1	
	Normal	1	1	1	1	
	Instrument / Component	2	7	6	7	
	Major	1	1	1	1	

SRO-U	Reactivity	0	1	1	1	
	Normal	1	1	1	1	
	Instrument / Component	2	7	6	7	
	Major	1	1	1	1	

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

Author:

NRC Reviewer:

Stanley G. Baker
Richard M. Hill

DC Cook 2002 Simulator Exams Set 2

Crews 4,5,6,7 Competencies Position Scenario Cook02-	Applicant #1 SRO-I			Applicant #2 SRO-I			Applicant #3 RO		
	SCENARIO			SCENARIO			SCENARIO		
	SRO 04	RO 05	SRO 06	BOP 04	SRO 05	RO 06	RO 04	BOP 05	BOP 06
Understand and Interpret Annunciators and Alarms	4,6,7 ,9	5,6, 7	3,4, 5,6, 10	5,6,7 ,9	3,4,6 ,7	3,4, 6, 10	3,4 ,7, 9	3,4,7 ,9	5,9, 10
Diagnose Events and Conditions	4,6,7 ,9	5,6, 7,8	3,4, 5,6, 10	5,6,7 ,10	3,4,6 ,7,8	3,4, 6, 10	3,4 ,7, 8	3,4,7 ,9	5,6,8 ,9,10
Understand Plant and System Response	3,4,5 ,6,7, 9	5,6, 7,8	3,4, 5,6, 10	5,6,7 ,9,10	3,6,7 ,8	3,4, 6,7 10	3,4 ,7, 8,9	3,4,7	5,8,9 ,10
Comply With and Use Procedures (1)	3,5,9	5,6, 7	3,4, 7,8, 10	1,5,6 ,9,10	4,5,6 ,7	3,4, 7, 10	2,3 ,4, 8,9	3,4,7	5,8, 10
Operate Control Boards (2)		2,5, 6,7, 8		5,6,9 ,10		2,3, 4,7, 10	3,4 ,8, 9	3,4,7 ,9	5,8, 10
Communicate and Interact With the Crew	3,4,5 ,6,9	2,5, 6,7, 8	3,4, 6,7, 8,10	5,6,9 ,10	3,4,5 ,6,7, 8	3,4, 7, 10	3,4 ,8, 9	1,3,4 ,7,9	5,8,9 ,10
Demonstrate Supervisory Ability (3)	6,7,8 ,9		3,4, 5,10		3,4,5 ,6,7, 8				
Comply With and Use Tech. Specs. (3)	3,4,5 ,6		3		4,5,6				

Notes:

- (1) Includes Technical Specification compliance for an RO.
- (2) Optional for an SRO-U.
- (3) Only applicable to SROs.

Instructions:

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

Author: Steve K. Bottygin

NRC Reviewer: Scott M. Hall

Facility: Cook Plant Unit 1 & Unit 2Scenario No.: COOK02-02Op-Test No.: Set 1Examiners: _____

_____Operators: _____

Initial Conditions: IC 32, 81% power Xenon Equilibrium, Tave 567°F, 790ppm Boron, 8GWD

Turnover: 2CD DG is tagged out for governor replacement. NRV-152 PZR PORV is isolated for leakage.

Event No.	Malf. No.	Event Type*	Event Description
1	CV16A 100%	I-RO	QLC-451 VCT Level Transmitter fails high
2	RX17J to 0%	I-BOP	SG Pressure Channel MPP-240 Fails Low
3a	FW38 to 45%	C- BOP	Loss of condenser vacuum Ramp in over 15 minutes to 45%
4		R	Power reduction
5		N	Reduce Turbine Load
3b	FW38 to 100%		Condenser vacuum degrades requiring a Reactor Trip. Ramp in over 5 minutes to 100%
6	ED01 ED25	Major	Loss of all AC power (345kv & 765kv lines) causing entry into ECA-0.0
6a	EG08A - Preload		2 AB DG Speed Governor failure; DG will not reach rated speed resulting in Incomplete Sequence.
7	FW48C - Preload	C- BOP	Turbine Driven AFW pump Fails to Auto Start
8	RC17A to 50%	C-RO	Pressurizer PORV (NRV-151 will stick open @ 50% upon reactor trip.)

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

Facility: Cook Plant Unit 1 & Unit 2Scenario No.: COOK02-03Op-Test No.: Set 1Examiners: _____

_____Operators: _____

_____Initial Conditions: IC 33, 49% power, 3GWD burnup, Xenon Building, 558°F, 1572 ppm Boron
2E MDAFW OOSTurnover: The 2W TDFP has just been returned following work on its condenser. Increase
Power to 80% for next hold point.

Event No.	Malf. No.	Event Type*	Event Description
1		N	Raise Turbine Power
2		R	Raise Reactor Power
3	CC01A, CC02B - Preload	C-BOP	2E CCW pump Trips (2W CCW [Standby] Fails to Auto Start)
4	RX02B to 650°F	I-RO	Loop 2 Hot Leg NTP-121 Temperature Transmitter Fails High
5	RX20A to 100%	I-BOP	MFC-110 Main Steam Flow Transmitter Fails High on 21 SG
6	CV13A	C-RO	2E Charging Pump Trip
7	CV10D to 60%	Major	Loop 4 Cold Leg Primary Coolant System 600gpm Leak inside Containment over 5 minutes
8	RP13A, RP13B - Preload	C- BOP	Failure of Automatic Phase A Actuation
9	RP19G, RP20G - Preload	C-RO	Slave Relay failures: High Head Charging SI valves fail to align
10	RP20B - Preload	C- BOP	Slave Relay failure: DG 2AB fails to auto start (& High Head Charging Valve)

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

Facility: Cook Plant Unit 1 & Unit 2Scenario No.: COOK02-04Op-Test No.: Set 2Examiners: _____

_____Operators: _____

Initial Conditions: IC 31, 100% power, 8GWD, 1194ppm Boron, Equilibrium Xenon, 2E MDAFW OOS, Pressurizer Pressure Channel NPP-151 is out for card repair. Bistables are tripped.

Turnover: Plant is at 100% reducing power to remove 2E TDFP from service due to oil leak.

Event No.	Malif. No.	Event Type*	Event Description
1		N	Reduce Turbine Load
2		R	Reduce Reactor Power
3	RX05A to 100%	I-RO	PZR Level Channel NLP-151 Fails High (fail to 100% over 5 minutes)
4	ED07B	C-RO	PZR HTR Transformer Fails (21PHC fails)
5	RX21C to 4E+6	I-BOP	SG 22 FW Flow Transmitter FFC-220 Fails High
6	ED0827	C-BOP	Loss of 600 V MCC 2-EZC-C (Containment Cooling Failure)
7	ED10A	C-BOP	Loss of Instrument Bus CRID I (Disable Train A SSPS)
8	RP01A RP01B	C-RO	Failure of Reactor to Automatically Trip
9	FW01B at 20%	Major	SG 22 FW Line Rupture Inside Containment (ramp to 20% over 5 minutes – 4M lbm/hr)
10	RP16B preload	C-BOP	Containment Spray Failure to Auto Actuate

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

Facility: Cook Plant Unit 1 & Unit 2Scenario No.: COOK02-05Op-Test No.: Set 2Examiners: _____

_____Operators: _____

Initial Conditions: IC 31, 100% power, 8GWD, 1194 ppm Boron, Equilibrium Xenon, 2W MDAFW OOS

Turnover: Plant is at 100% Decreasing to remove 2W TDFP from service due to a clogging waterbox.

Event No.	Malif. No.	Event Type*	Event Description
1		N	Reduce Turbine Load
2		R	Reduce Reactor Power
3	SW08A[B] to 75%	C- BOP	2E Essential Service Water Pump Strainer Clogged (fails to auto backwash) {ZDI101S2E to Manual}
4	RX17C to 100%	I-BOP	S/G 21 Pressure Transmitter MPP-212 Fails High
5	RX04A to 100%	I-RO	Pressurizer Pressure Channel NPP-151 Fails High
6	RC17C to 50%	C-RO	Pressurizer PORV NRV-153 Fails Open.
7	RC01A at 50%	Major	Large Break Loss of Coolant Accident on Loop 1
8	RP19D - Preload	C-RO	Slave Relay Failure: 2E RHR and SI Pumps Fail to Auto Start
9	RH01B	C- BOP	2W RHR Pump Trips 15 minutes after SI

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

Facility: Cook Plant Unit 1 & Unit 2Scenario No.: COOK02-06Op-Test No.: Set 2Examiners: _____

_____Operators: _____

Initial Conditions: IC32, 81% power, 8GWD, Xenon Equilibrium, Tave 567°F, 2W MDAFW OOS

Turnover: Increase Power to 100%. 2W MDAFW pump tagged out for discharge flow orifice replacement.

Event No.	Malf. No.	Event Type*	Event Description
0	CV013B		2W Centrifugal Charging Pump Trip (fail to start)
1		N	Raise Turbine Load
2		R	Raise Reactor Power
3	RX04A to 1700	I-RO	Pressurizer Pressure Channel NPP-151 Fails Low
4	CV04C	C-RO	75 gpm Letdown Orifice Isolation Valve QRV-162 Fails Closed
5	RX18 to 0	I-BOP	Feedwater Differential Pressure UPC-101 Fails Low
6	RX04C to 1700	Major	PZR Pressure Channel NPP-153 Fails Low, (generating Reactor Trip and SI Signals)
7	RP01A, RP01B, Preload	C-RO	Reactor Fails to Automatically Trip
8	TC03 - Preload	C-BOP	Turbine Fails to Automatically Trip
9	ED05H	C-BOP	Loss of 4KV Bus T21D (Loss of E CCP and E MDAFP) on the Reactor Trip
10	FW46C	C-BOP	Turbine Driven AFW pump Trips on Reactor Trip - Loss of Heat Sink criteria established

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

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	4				4	4			4	24
	2	3	3	2				3	3			2	16
	3	1	0	0				0	1			1	3
	Tier Totals	8	7	6				7	8			7	43
2. Plant Systems	1	2	2	2	2	1	1	2	2	2	2	1	19
	2	1	1	2	1	2	2	1	2	1	2	2	17
	3	1	0	0	1	0	0	1	0	0	0	1	4
	Tier Totals	4	3	4	4	3	3	4	4	3	4	4	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					4		4		5		4		17

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

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1					X		AA2.03 - Proper actions to be taken if automatic safety functions have not taken place	4.8	1
005	Inoperable/Stuck Control Rod / 1		X					AK2.02 - Breakers, relays, disconnects, and control room switches	2.6	1
015	Reactor Coolant Pump (RCP) Malfunctions / 4					X		AA2.02 - Abnormalities in RCP air vent flow paths and/or oil cooling system	3.0	1
024	Emergency Boration / 1	X						AK1.01 - Relationship between boron addition and change in T-ave	3.8	1
026	Loss of Component Cooling Water (CCW) / 8				X			AA1.07 - Flow rates to the components and systems that are serviced by the CCWS; interactions among the components	3.0	1
029	Anticipated Transient Without Scram (ATWS) / 1			X				EK3.10 - Manual rod insertion	4.1	1
029	Anticipated Transient Without Scram (ATWS) / 1				X			EA1.13 - Manual trip of main turbine	3.9	1
040	Steam Line Rupture / 4						X	2.4.18 - Knowledge of the specific bases for EOPs.	3.6	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6	X						EK1.02 - Natural circulation cooling	4.4	1

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
059	Accidental Liquid Radwaste Release / 9			X				AK3.01 - Termination of a release of radioactive liquid	3.9	1
062	Loss of Nuclear Service Water / 4						X	2.4.24 - Knowledge of loss of cooling water procedures.	3.7	1
067	Plant Fire on Site / 9				X			AA1.09 - Plant fire zone panel (including detector location)	3.3	1
067	Plant Fire on Site / 9					X		AA2.07 - Whether malfunction is due to common-mode electrical failures	3.1*	1
069	Loss of Containment Integrity / 5	X						AK1.01 - Effect of pressure on leak rate	3.1	1
069	Loss of Containment Integrity / 5		X					AK2.03 - Personnel access hatch and emergency access hatch	2.9	1
074	Inadequate Core Cooling / 4					X		EA2.05 - Trends in water levels of PZR and makeup storage tank caused by various sized leaks in the RCS	4.2	1
074	Inadequate Core Cooling / 4						X	2.4.29 - Knowledge of the emergency plan.	4.0	1

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E02	SI Termination / 3		X					EK2.2 - 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
E02	SI Termination / 3				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.9	1
E06	Degraded Core Cooling / 4	X						EK1.1 - Components, capacity, and function of emergency systems	4.0	1
E09	Natural Circulation Operations / 4			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with Natural Circulation Operations	3.6	1
E10	Natural Circulation with Steam Void in Vessel with/without RVLIS / 4		X					EK2.2 - 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
E14	High Containment Pressure / 5			X				EK3.1 - Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics	3.6	1
E14	High Containment Pressure / 5						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1

K/A Category Totals: 4 4 4 4 4 4

Group Point Total: 24

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
007	Reactor Trip / 1				X			EA1.09 - CVCS	3.3	1
007	Reactor Trip / 1						X	2.4.48 - 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.	3.8	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3		X					AK2.03 - Controllers and positioners	2.8	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3			X				AK3.01 - Isolation of PZR spray following loss of PZR heaters	3.8	1
032	Loss of Source Range Nuclear Instrumentation / 7		X					AK2.01 - Power supplies, including proper switch positions	3.1	1
037	Steam Generator (S/G) Tube Leak / 3	X						AK1.02 - Leak rate vs. pressure drop	3.9	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.02 - Reset and check of Condensate air ejector exhaust monitor	3.5	1
038	Steam Generator Tube Rupture (SGTR) / 3	X						EK1.03 - Natural circulation	4.2	1
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.16 - S/G atmospheric relief valve and secondary PORV controllers and indicators	4.3	1
054	Loss of Main Feedwater (MFW) / 4				X			AA1.02 - Manual startup of electric and steam-driven AFW pumps	4.4	1

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
060	Accidental Gaseous Radwaste Release / 9	X						AK1.04 - Calculation of offsite doses due to a release from the power plant	3.7*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7					X		AA2.03 - Setpoints for alert and high alarms	3.3	1
065	Loss of Instrument Air / 8					X		AA2.03 - Location and isolation of leaks	2.9	1
065	Loss of Instrument Air / 8						X	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
E11	Loss of Emergency Coolant Recirculation / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	4.2	1
E16	High Containment Radiation / 9		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.3	1

K/A Category Totals: 3 3 2 3 3 2

Group Point Total: 16

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
028	Pressurizer (PZR) Level Control Malfunction / 2						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
056	Loss of Offsite Power / 6	X						AK1.03 - Definition of subcooling: use of steam tables to determine it	3.4*	1
E15	Containment Flooding / 5					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.3	1

K/A Category Totals: 1 0 0 0 1 1

Group Point Total: 3

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1								X				A2.19 - Axial flux distribution	4.0	1
003	Reactor Coolant Pump System (RCPS) / 4		X										K2.02 - CCW pumps	2.6*	1
003	Reactor Coolant Pump System (RCPS) / 4			X									K3.04 - RPS	4.2	1
004	Chemical and Volume Control System (CVCS) / 1							X					A1.04 - PZR pressure and level	4.1	1
013	Engineered Safety Features Actuation System (ESFAS) / 2		X										K2.01 - ESFAS/safeguards equipment control	3.8	1
013	Engineered Safety Features Actuation System (ESFAS) / 2								X				A2.04 - Loss of instrument bus	4.2	1
014	Rod Position Indication System (RPIS) / 1										X		A4.01 - Rod selection control	3.1	1
015	Nuclear Instrumentation System / 7										X		A4.03 - Trip bypasses	3.9	1
017	In-Core Temperature Monitor (ITM) System / 7				X								K4.02 - Sensing and determination of location core hot spots	3.6	1
025	Ice Condenser System / 5				X								K4.02 - System control	3.0*	1

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
026	Containment Spray System (CSS) / 5							X					A1.05 - Chemical additive tank level and concentration	3.4	1
026	Containment Spray System (CSS) / 5									X			A3.01 - Pump starts and correct MOV positioning	4.5	1
056	Condensate System / 4	X											K1.03 - MFW	2.6	1
059	Main Feedwater (MFW) System / 4									X			A3.03 - Feedwater pump suction flow pressure	2.6*	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4					X							K5.01 - Relationship between AFW flow and RCS heat transfer	3.9	1
063	D.C. Electrical Distribution System / 6	X											K1.02 - AC electrical system	3.2	1
068	Liquid Radwaste System (LRS) / 9						X						K6.10 - Radiation monitors	2.9	1
072	Area Radiation Monitoring (ARM) System / 7			X									K3.02 - Fuel handling operations	3.5	1

K/A Category Totals: 2 2 2 2 1 1 2 2 2 2 1

Group Point Total: 19

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
006	Emergency Core Cooling System (ECCS) / 2			X									K3.01 - RCS	4.2	1
006	Emergency Core Cooling System (ECCS) / 2					X							K5.05 - Effects of pressure on a solid system	3.8	1
010	Pressurizer Pressure Control System (PZR PCS) / 3								X				A2.02 - Spray valve failures	3.9	1
011	Pressurizer Level Control System (PZR LCS) / 2		X										K2.02 - PZR heaters	3.2	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.05 - Function of PZR level gauges as postaccident monitors	3.7	1
016	Non-Nuclear Instrumentation System (NNIS) / 7					X							K5.01 - Separation of control and protection circuits	2.8*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5								X				A2.03 - The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment	4.0	1
029	Containment Purge System (CPS) / 8											X	2.2.29 - Knowledge of SRO fuel handling responsibilities.	3.8	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8									X			A3.01 - Temperature control valves	2.7*	1
035	Steam Generator System (S/GS) / 4				X								K4.01 - S/G level control	3.8	1

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
035	Steam Generator System (S/GS) / 4											X	A4.06 - S/G isolation on steam leak or tube rupture/leak	4.6	1
039	Main and Reheat Steam System (MRSS) / 4			X									K3.04 - MFW pumps	2.6*	1
039	Main and Reheat Steam System (MRSS) / 4							X					A1.03 - Primary system temperature indications, and required values, during main steam system warm-up	2.7	1
064	Emergency Diesel Generator (ED/G) System / 6	X											K1.02 - ED/G cooling water system	3.6*	1
064	Emergency Diesel Generator (ED/G) System / 6						X						K6.07 - Air receivers	2.9	1
079	Station Air System (SAS) / 8											X	2.4.34 - Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.6	1
103	Containment System / 5											X	A4.04 - Phase A and phase B resets	3.5*	1

K/A Category Totals: 1 1 2 1 2 2 1 2 1 2 2

Group Point Total: 17

PWR SRO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5							X					A1.01 - Maintaining quench tank water level within limits	3.1	1
045	Main Turbine Generator (MT/G) System / 4	X											K1.06 - RCS, during steam valve test	2.6	1
045	Main Turbine Generator (MT/G) System / 4											X	2.2.24 - Ability to analyze the affect of maintenance activities on LCO status.	3.8	1
078	Instrument Air System (IAS) / 8				X								K4.02 - Cross-over to other air systems	3.5	1

K/A Category Totals: 1 0 0 1 0 0 1 0 0 0 1

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 07/31/2002

PWR SRO Examination Outline

Form ES-401-5

Facility: DC Cook Nuclear Station

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
	2.1.10	Knowledge of conditions and limitations in the facility license.	3.9	1
	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.0	1
	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits.	2.9	1
Category Total:			4	
Equipment Control	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.3	1
	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
	2.2.12	Knowledge of surveillance procedures.	3.4	1
	2.2.19	Knowledge of maintenance work order requirements.	3.1	1
Category Total:			4	
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
	2.3.9	Knowledge of the process for performing a containment purge.	3.4	1
Category Total:			5	

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 07/31/2002

PWR SRO Examination Outline

Form ES-401-5

Facility: DC Cook Nuclear Station

Generic Category	KA	KA Topic	Imp.	Points
Emergency Procedures/Plan	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.6	1
	2.4.10	Knowledge of annunciator response procedures.	3.1	1
	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	3.3	1
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1

Category Total: 4

Generic Total: 17

Tier/Group	Randomly Selected K/A	Reason For Rejection
1 / 1	000040 2.4.28	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000040 2.4.18.
1 / 1	000062 2.3.10	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000062 2.4.24 which is also on the RO exam.
1 / 1	00WE14 2.2.7	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 00WE14 2.4.4.
1 / 1	000001 AA2.01	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000001 AA2.03.
1 / 2	000060 AK1.02	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000060 AK1.04 which is also on the RO exam.
2 / 1	001000 A2.04	Axial Shaping Rods not used at DC Cook. Replaced with KA 001000 A2.19 which is also on the RO exam.
2 / 1	015000 A3.05	Replaced to reduce overlap with operating exam. Replaced with KA 015000 A4.03 which is also on the RO exam.
2 / 1	056000 2.1.22	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 056000 K1.03 which is also on the RO exam.
2 / 1	068000 K5.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 059000 A3.03 which is also on the RO exam.
2 / 1	072000 K1.01	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 063000 K1.02.
2 / 2	029000 2.2.9	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 029000 2.2.29.
2 / 2	027000 A4.03	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 103000 A4.04 which is also on the RO exam.
2 / 3	045000 2.2.18	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 045000 2.2.24.
3 / 1	Generic 2.1.27	Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.23 which is also on the RO exam.

Facility: DC Cook Nuclear Station

Form ES-401-4

Exam Date: 12/07/2002

Exam Level: RO

Tier	Group	K/A Category Points										Point Total	
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4		G
1. Emergency & Abnormal Plant Evolutions	1	4	4	3				3	1			1	16
	2	3	3	3				5	2			1	17
	3	1	1	0				1	0			0	3
	Totals Tier	8	8	6				9	3			2	36
2. Plant Systems	1	2	2	2	2	1	2	2	2	2	3	3	23
	2	1	2	2	2	2	2	2	2	2	2	1	20
	3	1	0	1	1	0	0	1	2	1	1	0	8
	Tier Totals	4	4	5	5	3	4	5	6	5	6	4	51
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					3		3		3		4		13

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

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
005	Inoperable/Stuck Control Rod / 1		X					AK2.02 - Breakers, relays, disconnects, and control room switches	2.5	1
024	Emergency Boration / 1	X						AK1.01 - Relationship between boron addition and change in T-ave	3.4	1
026	Loss of Component Cooling Water (CCW) / 8				X			AA1.07 - Flow rates to the components and systems that are serviced by the CCWS; interactions among the components	2.9	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3		X					AK2.03 - Controllers and positioners	2.6	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3			X				AK3.01 - Isolation of PZR spray following loss of PZR heaters	3.5*	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6	X						EK1.02 - Natural circulation cooling	4.1	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6					X		EA2.05 - When battery is approaching fully discharged	3.4	1
062	Loss of Nuclear Service Water / 4						X	2.4.24 - Knowledge of loss of cooling water procedures.	3.3	1
067	Plant Fire on Site / 9				X			AA1.09 - Plant fire zone panel (including detector location)	3.0	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
069	Loss of Containment Integrity / 5	X						AK1.01 - Effect of pressure on leak rate	2.6	1
069	Loss of Containment Integrity / 5		X					AK2.03 - Personnel access hatch and emergency access hatch	2.8*	1
E06	Degraded Core Cooling / 4	X						EK1.1 - Components, capacity, and function of emergency systems	3.6	1
E09	Natural Circulation Operations / 4			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with Natural Circulation Operations	3.2	1
E09	Natural Circulation Operations / 4				X			EA1.3 - Desired operating results during abnormal and emergency situations	3.5	1
E10	Natural Circulation with Steam Void in Vessel with/without RVLIS / 4		X					EK2.2 - 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
E14	High Containment Pressure / 5			X				EK3.1 - Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics	3.2	1

K/A Category Totals: 4 4 3 3 1 1

Group Point Total: 16

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
007	Reactor Trip / 1				X			EA1.09 - CVCS	3.2	1
029	Anticipated Transient Without Scram (ATWS) / 1			X				EK3.10 - Manual rod insertion	4.1	1
029	Anticipated Transient Without Scram (ATWS) / 1				X			EA1.13 - Manual trip of main turbine	4.1	1
032	Loss of Source Range Nuclear Instrumentation / 7		X					AK2.01 - Power supplies, including proper switch positions	2.7*	1
037	Steam Generator (S/G) Tube Leak / 3	X						AK1.02 - Leak rate vs. pressure drop	3.5	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.02 - Reset and check of Condensate air ejector exhaust monitor	3.2	1
038	Steam Generator Tube Rupture (SGTR) / 3	X						EK1.03 - Natural circulation	3.9	1
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.16 - S/G atmospheric relief valve and secondary PORV controllers and indicators	4.4	1
054	Loss of Main Feedwater (MFW) / 4				X			AA1.02 - Manual startup of electric and steam-driven AFW pumps	4.4	1
059	Accidental Liquid Radwaste Release / 9			X				AK3.01 - Termination of a release of radioactive liquid	3.5	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
060	Accidental Gaseous Radwaste Release / 9	X						AK1.04 - Calculation of offsite doses due to a release from the power plant	2.5*	1
060	Accidental Gaseous Radwaste Release / 9						X	2.3.10 - Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
E02	SI Termination / 3		X					EK2.2 - 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
E02	SI Termination / 3				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
E11	Loss of Emergency Coolant Recirculation / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.4	1
E16	High Containment Radiation / 9		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.0	1
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

K/A Category Totals: 3 3 3 5 2 1

Group Point Total: 17

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
056	Loss of Offsite Power / 6	X						AK1.03 - Definition of subcooling: use of steam tables to determine it	3.1*	1
056	Loss of Offsite Power / 6				X			AA1.37 - Instrument air	3.4	1
E15	Containment Flooding / 5		X					EK2.2 - 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	2.7	1

K/A Category Totals: 1 1 0 1 0 0

Group Point Total: 3

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1								X				A2.19 - Axial flux distribution	3.6	1
001	Control Rod Drive System / 1										X		A4.05 - Determination of the amount of boron needed to back the rods out of the core, including xenon effects if equilibrium is not yet achieved	3.7	1
003	Reactor Coolant Pump System (RCPS) / 4		X										K2.02 - CCW pumps	2.5*	1
003	Reactor Coolant Pump System (RCPS) / 4			X									K3.04 - RPS	3.9	1
004	Chemical and Volume Control System (CVCS) / 1							X					A1.04 - PZR pressure and level	3.9	1
004	Chemical and Volume Control System (CVCS) / 1						X						K6.13 - Purpose and function of the boration/dilution batch controller	3.1	1
013	Engineered Safety Features Actuation System (ESFAS) / 2								X				A2.04 - Loss of instrument bus	3.6	1
013	Engineered Safety Features Actuation System (ESFAS) / 2		X										K2.01 - ESFAS/safeguards equipment control	3.6*	1
015	Nuclear Instrumentation System / 7											X	2.1.18 - Ability to make accurate, clear and concise logs, records, status boards, and reports.	2.9	1
015	Nuclear Instrumentation System / 7										X		A4.03 - Trip bypasses	3.8	1
017	In-Core Temperature Monitor (ITM) System / 7										X		A4.01 - Actual in-core temperatures	3.8	1

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
017	In-Core Temperature Monitor (ITM) System / 7				X								K4.02 - Sensing and determination of location core hot spots	3.1	1
022	Containment Cooling System (CCS) / 5											X	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
025	Ice Condenser System / 5									X			A3.01 - Refrigerant system	3.0*	1
025	Ice Condenser System / 5				X								K4.02 - System control	2.8*	1
056	Condensate System / 4	X											K1.03 - MFW	2.6*	1
059	Main Feedwater (MFW) System / 4							X					A1.03 - Power level restrictions for operation of MFW pumps and valves	2.7*	1
059	Main Feedwater (MFW) System / 4									X			A3.03 - Feedwater pump suction flow pressure	2.5	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4	X											K1.01 - S/G system	4.1	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4					X							K5.01 - Relationship between AFW flow and RCS heat transfer	3.6	1
068	Liquid Radwaste System (LRS) / 9						X						K6.10 - Radiation monitors	2.5	1

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
071	Waste Gas Disposal System (WGDS) / 9											X	2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	3.5	1
072	Area Radiation Monitoring (ARM) System / 7			X									K3.02 - Fuel handling operations	3.1	1

K/A Category Totals: 2 2 2 2 1 2 2 2 2 3 3

Group Point Total: 23

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
006	Emergency Core Cooling System (ECCS) / 2			X									K3.01 - RCS	4.1*	1
006	Emergency Core Cooling System (ECCS) / 2					X							K5.05 - Effects of pressure on a solid system	3.4	1
010	Pressurizer Pressure Control System (PZR PCS) / 3								X				A2.02 - Spray valve failures	3.9	1
011	Pressurizer Level Control System (PZR LCS) / 2		X										K2.02 - PZR heaters	3.1	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.05 - Function of PZR level gauges as postaccident monitors	3.1	1
014	Rod Position Indication System (RPIS) / 1										X		A4.01 - Rod selection control	3.3	1
016	Non-Nuclear Instrumentation System (NNIS) / 7					X							K5.01 - Separation of control and protection circuits	2.7*	1
016	Non-Nuclear Instrumentation System (NNIS) / 7								X				A2.01 - Detector failure	3.0*	1
026	Containment Spray System (CSS) / 5							X					A1.05 - Chemical additive tank level and concentration	3.1	1
026	Containment Spray System (CSS) / 5									X			A3.01 - Pump starts and correct MOV positioning	4.3	1

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
029	Containment Purge System (CPS) / 8											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8									X			A3.01 - Temperature control valves	2.5*	1
035	Steam Generator System (S/GS) / 4										X		A4.06 - S/G isolation on steam leak or tube rupture/leak	4.5	1
035	Steam Generator System (S/GS) / 4				X								K4.01 - S/G level control	3.6	1
039	Main and Reheat Steam System (MRSS) / 4							X					A1.03 - Primary system temperature indications, and required values, during main steam system warm-up	2.6	1
039	Main and Reheat Steam System (MRSS) / 4			X									K3.04 - MFW pumps	2.5*	1
062	A.C. Electrical Distribution System / 6		X										K2.01 - Major system loads	3.3	1
062	A.C. Electrical Distribution System / 6				X								K4.03 - Interlocks between automatic bus transfer and breakers	2.8*	1
064	Emergency Diesel Generator (ED/G) System / 6	X											K1.02 - ED/G cooling water system	3.1	1
064	Emergency Diesel Generator (ED/G) System / 6						X						K6.07 - Air receivers	2.7	1

K/A Category Totals: 1 2 2 2 2 2 2 2 2 2 2 1

Group Point Total: 20

PWR RO Examination Outline

Printed: 07/31/2002

Facility: DC Cook Nuclear Station

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5							X					A1.01 - Maintaining quench tank water level within limits	2.9	1
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5								X				A2.03 - Overpressurization of the PZR	3.6	1
008	Component Cooling Water System (CCWS) / 8									X			A3.01 - Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS	3.2*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5								X				A2.03 - The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment	3.4	1
045	Main Turbine Generator (MT/G) System / 4	X											K1.06 - RCS, during steam valve test	2.6	1
078	Instrument Air System (IAS) / 8			X									K3.01 - Containment air system	3.1*	1
078	Instrument Air System (IAS) / 8				X								K4.02 - Cross-over to other air systems	3.2	1
103	Containment System / 5										X		A4.04 - Phase A and phase B resets	3.5*	1

K/A Category Totals: 1 0 1 1 0 0 1 2 1 1 0

Group Point Total: 8

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 07/31/2002

PWR RO Examination Outline

Form ES-401-5

Facility: DC Cook Nuclear Station

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.3	Knowledge of shift turnover practices.	3.0	1
	2.1.16	Ability to operate plant phone, paging system, and two-way radio.	2.9	1
	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	1
Category Total:			3	3
Equipment Control	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.1	1
	2.2.12	Knowledge of surveillance procedures.	3.0	1
	2.2.26	Knowledge of refueling administrative requirements.	2.5	1
Category Total:			3	3
Radiation Control	2.3.2	Knowledge of facility ALARA program.	2.5	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
Category Total:			3	3
Emergency Procedures/Plan	2.4.9	Knowledge of low power /shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	1
	2.4.10	Knowledge of annunciator response procedures.	3.0	1
	2.4.19	Knowledge of EOP layout, symbols, and icons.	2.7	1
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
Category Total:			4	4

Generic Total: 13

Tier/Group	Randomly Selected K/A	Reason For Rejection
1 / 1	000062 2.4.2	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000062 2.4.24 which is also on the SRO exam.
1 / 2	000060 2.4.32	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000060 2.3.10.
1 / 2	000060 AK1.02	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000060 AK1.04 which is also on the SRO exam.
2 / 1	001000 A2.04	Axial Shaping Rods not used at DC Cook. Replaced with KA 001000 A2.19 which is also on the SRO exam.
2 / 1	001000 A4.07	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 001000 A4.05.
2 / 1	015000 A3.05	Replaced to reduce overlap with operating exam. Replaced with KA 015000 A4.03 which is also on the SRO exam.
2 / 1	061000 K1.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 061000 K1.01.
2 / 1	068000 K5.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 059000 A3.03 which is also on the SRO exam.
2 / 1	071000 2.1.31	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 022000 2.1.31.
2 / 1	071000 2.4.39	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 071000 2.4.46.
2 / 1	072000 K1.01	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 056000 K1.03 which is also on the SRO exam.
2 / 2	016000 2.1.31	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 016000 A2.01.
2 / 3	027000 A4.03	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 103000 A4.04 which is also on the SRO exam.
2 / 3	027000 K2.01	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 008000 A3.01.
2 / 3	007000 A2.06	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 007000 A2.03.
3 / 1	Generic 2.1.27	Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.23 which is also on the SRO exam.
3 / 1	Generic 2.1.28	Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.3.

DC Cook Outline Submittal Comments

There were no comments on the DC Cook Exam Outline.

Tier/Group	Randomly Selected K/A	Reason For Rejection
1 / 1	000040 2.4.28	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000040 2.4.18.
1 / 1	000062 2.3.10	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000062 2.4.24 which is also on the RO exam.
1 / 1	00WE14 2.2.7	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 00WE14 2.4.4.
1 / 1	000001 AA2.01	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000001 AA2.03.
1 / 2	000060 AK1.02	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000060 AK1.04 which is also on the RO exam.
2 / 1	001000 A2.04	Axial Shaping Rods not used at DC Cook. Replaced with KA 001000 A2.19 which is also on the RO exam.
2 / 1	015000 A3.05	Replaced to reduce overlap with operating exam. Replaced with KA 015000 A4.03 which is also on the RO exam.
2 / 1	056000 2.1.22	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 056000 K1.03 which is also on the RO exam.
2 / 1	068000 K5.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 059000 A3.03 which is also on the RO exam.
2 / 1	072000 K1.01	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 063000 K1.02.
2 / 2	029000 2.2.9	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 029000 2.2.29.
2 / 2	027000 A4.03	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 103000 A4.04 which is also on the RO exam.
2 / 3	045000 2.2.18	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 045000 2.2.24.
3 / 1	Generic 2.1.27	Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.23 which is also on the RO exam.

		Reason For Rejection
1/2	000060 2.4.32	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000062 2.4.24 which is also on the SRO exam.
	000060 AK1.02	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 000060 2.3.10.
2/1	001000 A2.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 000060 AK1.04 which is also on the SRO exam.
2/1	001000 A4.07	Axial Shaping Rods not used at DC Cook. Replaced with KA 001000 A2.19 which is also on the SRO exam.
2/1	015000 A3.05	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 001000 A4.05.
2/1	061000 K1.04	Replaced to reduce overlap with operating exam. Replaced with KA 015000 A4.03 which is also on the SRO exam.
2/1	068000 K5.04	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 061000 K1.01.
2/1	071000 2.1.31	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 059000 A3.03 which is also on the SRO exam.
2/1	071000 2.4.39	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 022000 2.1.31.
2/1	072000 K1.01	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 071000 2.4.46.
2/2	016000 2.1.31	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 056000 K1.03 which is also on the SRO exam.
2/3	027000 A4.03	Generic KA that is not applicable to the selected system/evolution. Replaced with KA 071000 2.4.46.
2/3	027000 K2.01	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 103000 A4.04 which is also on the SRO exam.
2/3	007000 A2.06	Iodine Removal Fans not applicable to DC Cook. Replaced with KA 016000 A2.01.
3/1	Generic 2.1.27	Unable to develop a question with plausible distractors of sufficient difficulty (>2). Replaced with KA 007000 A2.03.
3/1	Generic 2.1.28	Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.23 which is also on the SRO exam.
		Generic KA that is only applicable to a system. Replaced with KA Generic 2.1.3.