

Facility: DCPP

Printed: 01/21/2005

Date Of Exam: 02/07/2005

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

Note:

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

PWR RO Examination Outline

Printed: 01/21/2005

Facility: DCPD

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

EA/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000007 Reactor Trip - Stabilization - Recovery / 1		X					EK2.03 - Reactor trip status panel	3.5	1
000008 Pressurizer Vapor Space Accident / 3					X		AA2.20 - The effect of an open PORV on code safety, based on observation of plant parameters	3.4	1
000011 Large Break LOCA / 3	X						EK1.01 - Natural circulation and cooling, including reflux boiling	4.1	1
000015/000017 RCP Malfunctions / 4				X			AA1.10 - RCP ammeter and trip alarm	2.7	1
000022 Loss of Rx Coolant Makeup / 2						X	2.1.25 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	2.8	1
000026 Loss of Component Cooling Water / 8					X		AA2.04 - The normal values and upper limits for the temperatures of the components cooled by CCW	2.5	1
000029 ATWS / 1				X			EA1.01 - Charging pumps	3.4*	1
000038 Steam Gen. Tube Rupture / 3					X		EA2.06 - Shutdown margins and required boron concentrations	3.8	1
000054 Loss of Main Feedwater / 4				X			AA1.02 - Manual startup of electric and steam-driven AFW pumps	4.4	1
000055 Station Blackout / 6			X				EK3.01 - Length of time for which battery capacity is designed	2.7	1
000056 Loss of Off-site Power / 6	X						AK1.01 - Principle of cooling by natural convection	3.7	1
000057 Loss of Vital AC Inst. Bus / 6						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
000058 Loss of DC Power / 6			X				AK3.02 - Actions contained in EOP for loss of dc power	4.0	1
000065 Loss of Instrument Air / 8						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
W/E04 LOCA Outside Containment / 3		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.5	1
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4			X				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	3.4	1

**PWR RO Examination Outline**

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ES - 401

**Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1**

Form ES-401-2

<b>W/APE # / Name / Safety Function</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>A1</b>	<b>A2</b>	<b>G</b>	<b>KA Topic</b>	<b>Imp.</b>	<b>Points</b>
W/E11 Loss of Emergency Coolant Recirc. / 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
W/E12 - Steam Line Rupture - Excessive Heat Transfer / 4	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with Uncontrolled Depressurization of all Steam Generators	3.5	1
<b>K/A Category Totals:</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>Group Point Total: 18</b>		

**PWR RO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

**Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2**

**Form ES-401-2**

<b>KA/APE # / Name / Safety Function</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>A1</b>	<b>A2</b>	<b>G</b>	<b>KA Topic</b>	<b>Imp.</b>	<b>Points</b>
000001 Continuous Rod Withdrawal / 1		X					AK2.05 - Rod motion lights	2.9*	1
000003 Dropped Control Rod / 1	X						AK1.21 - Delta flux (I)	2.7	1
000033 Loss of Intermediate Range NI / 7	X						AK1.01 - Effects of voltage changes on performance	2.7	1
000036 Fuel Handling Accident / 8			X				AK3.02 - Interlocks associated with fuel handling equipment	2.9	1
000060 Accidental Gaseous Radwaste Rel. / 9				X			AA1.02 - Ventilation system	2.9	1
000061 ARM System Alarms / 7					X		AA2.04 - Whether an alarm channel is functioning properly	3.1	1
W/E01 Rediagnosis / 3			X				EK3.3 - Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations	3.5	1
W/E03 LOCA Cooldown - Depress. / 4						X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	1
W/E16 High Containment Radiation / 9						X	2.4.19 - Knowledge of EOP layout, symbols, and icons.	2.7	1
<b>K/A Category Totals:</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>Group Point Total:</b>	<b>9</b>	

PWR RO Examination Outline

Printed: 01/21/2005

Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump				X								K4.07 - Minimizing RCS leakage (mechanical seals)	3.2	1
004 Chemical and Volume Control		X										K2.01 - Boric acid makeup pumps	2.9	1
004 Chemical and Volume Control										X		A4.17 - Deborating demineralizer	2.7	1
005 Residual Heat Removal						X						K6.03 - RHR heat exchanger	2.5	1
006 Emergency Core Cooling	X											K1.02 - ESFAS	4.3	1
006 Emergency Core Cooling						X						K6.03 - Safety Injection Pumps	3.6	1
007 Pressurizer Relief/Quench Tank								X				A2.03 - Overpressurization of the PZR	3.6	1
008 Component Cooling Water			X									K3.03 - RCP	4.1	1
008 Component Cooling Water											X	2.2.13 - Knowledge of tagging and clearance procedures.	3.6	1
010 Pressurizer Pressure Control						X						K6.02 - PZR	3.2	1
012 Reactor Protection					X							K5.01 - DNB	3.3*	1
013 Engineered Safety Features Actuation					X							K5.01 - Definitions of safety train and ESF channel	2.8	1
022 Containment Cooling							X					A1.02 - Containment pressure	3.6	1
022 Containment Cooling											X	2.4.34 - Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.8	1
026 Containment Spray				X								K4.01 - Source of water for CSS, including recirculation phase after LOCA	4.2	1
039 Main and Reheat Steam							X					A1.05 - RCS T-ave	3.2*	1
039 Main and Reheat Steam										X		A4.03 - MFW pump turbines	2.8*	1
059 Main Feedwater			X									K3.04 - RCS	3.6	1
061 Auxiliary/Emergency Feedwater					X							K5.05 - Feed line voiding and water hammer	2.7	1
062 AC Electrical Distribution		X										K2.01 - Major system loads	3.3	1
063 DC Electrical Distribution			X									K3.01 - ED/G	3.7*	1
064 Emergency Diesel Generator									X			A3.10 - Function of ED/G megawatt load controller	2.8	1
064 Emergency Diesel Generator									X			A3.03 - Indicating lights, meters, and recorders	3.4	1
073 Process Radiation Monitoring	X											K1.01 - Those systems	3.6	1

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ES - 401

**Plant Systems - Tier 2 / Group 1**

**Form ES-401-2**

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic served by PRMs	Imp.	Points
073 Process Radiation Monitoring											X	A4.02 - Radiation monitoring system control panel	3.7	1
076 Service Water			X									K3.05 - RHR components, controls, sensors, indicators, and alarms, including rad monitors	3.0*	1
078 Instrument Air				X								K4.01 - Manual/automatic transfers of control	2.7	1
103 Containment								X				A2.03 - Phase A and B isolation	3.5*	1
<b>K/A Category Totals:</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>Group Point Total:</b>		<b>28</b>

PWR RO Examination Outline

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Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001 Control Rod Drive						X						K6.13 - Location and operation of RPIS	3.6	1
014 Rod Position Indication											X	A4.04 - Re-zeroing of rod position prior to startup	2.7	1
016 Non-nuclear Instrumentation			X									K3.01 - RCS	3.4*	1
028 Hydrogen Recombiner and Purge Control		X										K2.01 - Hydrogen recombiners	2.5*	1
029 Containment Purge							X					A1.03 - Containment pressure, temperature, and humidity	3.0*	1
034 Fuel Handling Equipment											X	2.4.12 - Knowledge of general operating crew responsibilities during emergency operations.	3.4	1
041 Steam Dump/Turbine Bypass Control								X				A2.02 - Steam valve stuck open	3.6	1
068 Liquid Radwaste				X								K4.01 - Safety and environmental precautions for handling hot, acidic, and radioactive liquids	3.4	1
072 Area Radiation Monitoring					X							K5.02 - Radiation intensity changes with source distance	2.5	1
075 Circulating Water	X											K1.08 - Emergency/essential SWS	3.2*	1
<b>K/A Category Totals:</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>Group Point Total:</b>	<b>10</b>	

# Generic Knowledge and Abilities Outline (Tier 3)

## PWR RO Examination Outline

Printed: 01/21/2005

Facility: DCPD

Form ES-401-3

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	2.7	1
	2.1.21	Ability to obtain and verify controlled procedure copy.	3.1	1
	2.1.29	Knowledge of how to conduct and verify valve lineups.	3.4	1
	<b>Category Total:</b>			<b>3</b>
<b>Equipment Control</b>	2.2.28	Knowledge of new and spent fuel movement procedures.	2.6	1
	2.2.33	Knowledge of control rod programming.	2.5	1
	<b>Category Total:</b>			<b>2</b>
<b>Radiation Control</b>	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1
	2.3.2	Knowledge of facility ALARA program.	2.5	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1
	<b>Category Total:</b>			<b>3</b>
<b>Emergency Procedures/Plan</b>	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	3.4	1
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3	1
	<b>Category Total:</b>			<b>2</b>
<b>Generic Total:</b>			<b>10</b>	



ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-2

E/APE # / Name / Safety Function	KA	KA Topic	Comment
000007 Reactor Trip - Stabilization - Recovery / 1	EK2.03	Reactor trip status panel	
000008 Pressurizer Vapor Space Accident / 3	AA2.20	The effect of an open PORV on code safety, based on observation of plant parameters	
000011 Large Break LOCA / 3	EK1.01	Natural circulation and cooling, including reflux boiling	
000015/000017 RCP Malfunctions / 4	AA1.10	RCP ammeter and trip alarm	
000022 Loss of Rx Coolant Makeup / 2	2.1.25	Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	
000026 Loss of Component Cooling Water / 8	AA2.04	The normal values and upper limits for the temperatures of the components cooled by CCW	
000029 ATWS / 1	EA1.01	Charging pumps	
000038 Steam Gen. Tube Rupture / 3	EA2.06	Shutdown margins and required boron concentrations	
000054 Loss of Main Feedwater / 4	AA1.02	Manual startup of electric and steam-driven AFW pumps	
000055 Station Blackout / 6	EK3.01	Length of time for which battery capacity is designed	
000056 Loss of Off-site Power / 6	AK1.01	Principle of cooling by natural convection	

**PWR RO Examina Outline**

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Facility: DCRP

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-2

E/APE # / Name / Safety Function	KA	KA Topic	Comment
000057 Loss of Vital AC Inst. Bus / 6	2.1.32	Ability to explain and apply all system limits and precautions.	
000058 Loss of DC Power / 6	AK3.02	Actions contained in EOP for loss of dc power	
000065 Loss of Instrument Air / 8	2.1.32	Ability to explain and apply all system limits and precautions.	
W/E04 LOCA Outside Containment / 3	EK2.1	Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	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	
W/E11 Loss of Emergency Coolant Recirc. / 4	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	
W/E12 - Steam Line Rupture - Excessive Heat Transfer / 4	EK1.2	Normal, abnormal and emergency operating procedures associated with Uncontrolled Depressurization of all Steam Generators	

PWR RO Examina Outline

Printed: 01/21/2004

Facility: DC, r

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-2

E/APE # / Name / Safety Function	KA	KA Topic	Comment
000001 Continuous Rod Withdrawal / 1	AK2.05	Rod motion lights	
000003 Dropped Control Rod / 1	AK1.21	Delta flux (I)	
000033 Loss of Intermediate Range NI / 7	AK1.01	Effects of voltage changes on performance	
000036 Fuel Handling Accident / 8	AK3.02	Interlocks associated with fuel handling equipment	
000060 Accidental Gaseous Radwaste Rel. / 9	AA1.02	Ventilation system	
000061 ARM System Alarms / 7	AA2.04	Whether an alarm channel is functioning properly	
W/E01 Rediagnosis / 3	EK3.3	Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations	
W/E03 LOCA Cooldown - Depress. / 4	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	
W/E16 High Containment Radiation / 9	2.4.19	Knowledge of EOP layout, symbols, and icons.	

PWR RO Examination Outline

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Facility: DCP

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
003 Reactor Coolant Pump	K4.07	Minimizing RCS leakage (mechanical seals)	
004 Chemical and Volume Control	K2.01	Boric acid makeup pumps	
004 Chemical and Volume Control	A4.17	Deborating demineralizer	
005 Residual Heat Removal	K6.03	RHR heat exchanger	
006 Emergency Core Cooling	K1.02	ESFAS	
006 Emergency Core Cooling	K6.03	Safety Injection Pumps	Resampled due to inability to tie original KA (G2.4.32) to ECCS system
007 Pressurizer Relief/Quench Tank	A2.03	Overpressurization of the PZR	
008 Component Cooling Water	K3.03	RCP	
008 Component Cooling Water	2.2.13	Knowledge of tagging and clearance procedures.	
010 Pressurizer Pressure Control	K6.02	PZR	
012 Reactor Protection	K5.01	DNB	
013 Engineered Safety Features Actuation	K5.01	Definitions of safety train and ESF channel	

PWR RO Examination Outline

Printed: 01/21/2005

Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
022 Containment Cooling	A1.02	Containment pressure	
022 Containment Cooling	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	
026 Containment Spray	K4.01	Source of water for CSS, including recirculation phase after LOCA	
039 Main and Reheat Steam	A1.05	RCS T-ave	
039 Main and Reheat Steam	A4.03	MFW pump turbines	
059 Main Feedwater	K3.04	RCS	
061 Auxiliary/Emergency Feedwater	K5.05	Feed line voiding and water hammer	
062 AC Electrical Distribution	K2.01	Major system loads	
063 DC Electrical Distribution	K3.01	ED/G	Resampled due to inadequate level of difficulty with original KA (A2.01)
064 Emergency Diesel Generator	A3.10	Function of ED/G megawatt load controller	
064 Emergency Diesel Generator	A3.03	Indicating lights, meters, and recorders	
073 Process Radiation Monitoring	K1.01	Those systems served by PRMs	

**PWRRO Examination Outline**

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Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
073 Process Radiation Monitoring	A4.02	Radiation monitoring system control panel	
076 Service Water	K3.05	RHR components, controls, sensors, indicators, and alarms, including rad monitors	
078 Instrument Air	K4.01	Manual/automatic transfers of control	
103 Containment	A2.03	Phase A and B isolation	

**PWR RO F Amination Outline**

Printed: 01/21/2005

Facility: DCP

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
001 Control Rod Drive	K6.13	Location and operation of RPIS	
014 Rod Position Indication	A4.04	Re-zeroing of rod position prior to startup	Resampled due to original KA (A4.03) not applicable to DCP
016 Non-nuclear Instrumentation	K3.01	RCS	
028 Hydrogen Recombiner and Purge Control	K2.01	Hydrogen recombiners	
029 Containment Purge	A1.03	Containment pressure, temperature, and humidity	
034 Fuel Handling Equipment	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	
041 Steam Dump/Turbine Bypass Control	A2.02	Steam valve stuck open	
068 Liquid Radwaste	K4.01	Safety and environmental precautions for handling hot, acidic, and radioactive liquids	
072 Area Radiation Monitoring	K5.02	Radiation intensity changes with source distance	
075 Circulating Water	K1.08	Emergency/essential SWS	

**Generic Knowledge . Abilities Outline (Tier 3)**

Printed: 01/21/200

**PWR RO Examination Outline**

Form ES-401-3

Facility: DCP

Generic Category	KA	KA Topic	Comment
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	
	2.1.21	Ability to obtain and verify controlled procedure copy.	
	2.1.29	Knowledge of how to conduct and verify valve lineups.	
<b>Category Total:</b>			<b>3</b>
<b>Equipment Control</b>	2.2.28	Knowledge of new and spent fuel movement procedures.	
	2.2.33	Knowledge of control rod programming.	
<b>Category Total:</b>			<b>2</b>
<b>Radiation Control</b>	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	
	2.3.2	Knowledge of facility ALARA program.	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	
<b>Category Total:</b>			<b>3</b>
<b>Emergency Procedures/Plan</b>	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	
<b>Category Total:</b>			<b>2</b>



Facility: DCPD

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

Note:

1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding the SRO sampling.
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**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

**Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1**

Form ES-401-2

K/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000011 Large Break LOCA / 3						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
000022 Loss of Rx Coolant Makeup / 2						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
000025 Loss of RHR System / 4					X		AA2.02 - Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere	3.8	1
000026 Loss of Component Cooling Water / 8					X		AA2.06 - The length of time after the loss of CCW flow to a component before that component may be damaged	3.1*	1
000054 Loss of Main Feedwater / 4					X		AA2.01 - Occurrence of reactor and/or turbine trip	4.4	1
000057 Loss of Vital AC Inst. Bus / 6					X		AA2.14 - That substitute power sources have come on line on a loss of initial ac	3.6	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>		<b>Group Point Total:</b>	<b>6</b>

**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

**Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2**

**Form ES-401-2**

<b>W/APE # / Name / Safety Function</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>A1</b>	<b>A2</b>	<b>G</b>	<b>KA Topic</b>	<b>Imp.</b>	<b>Points</b>
000061 ARM System Alarms / 7					X		AA2.05 - Need for area evacuation; check against existing limits	4.2	1
W/E02 SI Termination / 3					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.2	1
W/E09 Natural Circ. / 4					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	3.8	1
W/E13 Steam Generator Over-pressure / 4						X	2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>Group Point Total:</b>	<b>4</b>	

**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

**Plant Systems - Tier 2 / Group 1**

**Form ES-401-2**

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump								X				A2.05 - Effects of VCT pressure on RCP seal leakoff flows	2.8	1
005 Residual Heat Removal											X	2.4.45 - Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6	1
010 Pressurizer Pressure Control								X				A2.03 - PORV failures	4.2	1
022 Containment Cooling								X				A2.04 - Loss of service water	3.2	1
076 Service Water											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>Group Point Total:</b>	<b>5</b>	

**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

**Plant Systems - Tier 2 / Group 2**

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
011 Pressurizer Level Control								X				A2.05 - Loss of PZR heaters	3.7	1
014 Rod Position Indication											X	2.4.10 - Knowledge of annunciator response procedures.	3.1	1
034 Fuel Handling Equipment								X				A2.01 - Dropped fuel element	4.4	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>Group Point Total:</b>	<b>3</b>	

# Generic Knowledge and Abilities Outline (Tier 3)

## PWR SRO Examination Outline

Printed: 01/21/2005

**Facility:** DCPD

**Form ES-401-3**

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	3.9	1
	2.1.22	Ability to determine Mode of Operation.	3.3	1
	<b>Category Total:</b>			<b>2</b>
<b>Equipment Control</b>	2.2.27	Knowledge of the refueling process.	3.5	1
	<b>Category Total:</b>			<b>1</b>
<b>Radiation Control</b>	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
	<b>Category Total:</b>			<b>2</b>
<b>Emergency Procedures/Plan</b>	2.4.41	Knowledge of the emergency action level thresholds and classifications.	4.1	1
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6	1
	<b>Category Total:</b>			<b>2</b>

**Generic Total: 7**

**PWR SRO Examination Outline**

Printed: 01/21/2004

Facility: D.C.R.F.

**ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-2**

E/APE # / Name / Safety Function	KA	KA Topic	Comment
000011 Large Break LOCA / 3	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	
000022 Loss of Rx Coolant Makeup / 2	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	
000025 Loss of RHR System / 4	AA2.02	Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere	
000026 Loss of Component Cooling Water / 8	AA2.06	The length of time after the loss of CCW flow to a component before that component may be damaged	
000054 Loss of Main Feedwater / 4	AA2.01	Occurrence of reactor and/or turbine trip	
000057 Loss of Vital AC Inst. Bus / 6	AA2.14	That substitute power sources have come on line on a loss of initial ac	

**PWR SRO Examination Outline**

Printed: 01/21/2007

Facility: D.C.R.

**ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-2**

E/APE # / Name / Safety Function	KA	KA Topic	Comment
000061 ARM System Alarms / 7	AA2.05	Need for area evacuation; check against existing limits	
W/E02 SI Termination / 3	EA2.1	Facility conditions and selection of appropriate procedures during abnormal and emergency operations	
W/E09 Natural Circ. / 4	EA2.1	Facility conditions and selection of appropriate procedures during abnormal and emergency operations	
W/E13 Steam Generator Over-pressure / 4	2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies.	



**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
003 Reactor Coolant Pump	A2.05	Effects of VCT pressure on RCP seal leakoff flows	
005 Residual Heat Removal	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	
010 Pressurizer Pressure Control	A2.03	PORV failures	manually added due to program error
022 Containment Cooling	A2.04	Loss of service water	
076 Service Water	2.2.22	Knowledge of limiting conditions for operations and safety limits.	

**PWR SRO Examination Outline**

Printed: 01/21/2005

Facility: DCPD

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	KA	KA Topic	Comment
011 Pressurizer Level Control	A2.05	Loss of PZR heaters	manually added due to program error
014 Rod Position Indication	2.4.10	Knowledge of annunciator response procedures.	
034 Fuel Handling Equipment	A2.01	Dropped fuel element	

**Generic Knowledge : Abilities Outline (Tier 3)**

Printed: 01/21/200

**PWR SRO Examination Outline**

Form ES-401-3

Facility: DCP

Generic Category	KA	KA Topic	Comment
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	
	2.1.22	Ability to determine Mode of Operation.	
<b>Category Total: 2</b>			
<b>Equipment Control</b>	2.2.27	Knowledge of the refueling process.	
<b>Category Total: 1</b>			
<b>Radiation Control</b>	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	
<b>Category Total: 2</b>			
<b>Emergency Procedures/Plan</b>	2.4.41	Knowledge of the emergency action level thresholds and classifications.	
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	
<b>Category Total: 2</b>			
<b>Generic Total: 7</b>			