

PVNGS License Examination  
Record of Rejected K/As

PVNGS Form ES-401-4

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/1	3.5.025	No Ice Condenser System is available at PVNGS
2/2	3.5.027	No Containment Iodine Removal System is available at PVNGS
1/2	4.2.033	No IRM System is available at PVNGS
1/1	4.1.011EK3.10	(RO) PTS limits do not apply to a large break LOCA at PVNGS
1/1	4.2.057AA1.03	(RO) The MFP speed signal power is supplied from a Non-Vital AC bus at PVNGS. This KA is not applicable.
1/2	4.2.015AK1.03	(RO) Single RCP operation is not allowed at PVNGS
2/1	3.4.059A107	(RO) No ICS system is available at PVNGS
2/1	3.8.078K1.01	(RO) No Sensor Air System is available at PVNGS

Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	K	A	A 2	G *	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3				3	3			3	18	0	0	5	1	6
	2	1	2	1				1	2			2	9	0	0	3	1	4
	Tier Totals	4	5	4				4	5			5	27	0	0	8	2	10
2. Plant Systems	1	2	2	3	3	3	2	2	3	2	3	3	28	0	0	4	1	5
	2	1	1	1	1	1	1	1	1	1	1	0	10	1	0	1	1	3
	Tier Totals	3	3	4	4	4	3	3	4	3	4	3	38	1	0	5	2	8
3. Generic Knowledge and Abilities Categories				1		2		3		4		10	1	2	3	4	7	
				3		2		2		3			2	2	1	2		
Note:	<p>1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by <math>\pm 1</math> 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.</p> <p>3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.</p> <p>4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.</p> <p>5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.</p> <p>7. * 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.</p> <p>8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) 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 table above. Use duplicate pages for RO and SRO-only exams.</p> <p>9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.</p>																	







## PWR RO Examination Outline

Printed: 05/05/2005

Facility: PVNGS

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										K2.01 - RCPS	3.1	1
004 Chemical and Volume Control						X						K6.31 - Seal injection system and limits on flow range	3.1	1
004 Chemical and Volume Control										X		A4.10 - Boric acid pumps	3.6	1
005 Residual Heat Removal					X							K5.03 - Reactivity effects of RHR fill water	2.9*	1
006 Emergency Core Cooling			X									K3.01 - RCS	4.1*	1
007 Pressurizer Relief/Quench Tank					X							K5.02 - Method of forming a steam bubble in the PZR	3.1	1
007 Pressurizer Relief/Quench Tank	X											K1.03 - RCS	3.0	1
008 Component Cooling Water	X											K1.02 - Loads cooled by CCWS	3.3	1
008 Component Cooling Water										X		A4.01 - CCW indications and controls	3.3	1
010 Pressurizer Pressure Control		X										K2.01 - PZR heaters	3.0	1
010 Pressurizer Pressure Control										X		A4.02 - PZR heaters	3.6	1
012 Reactor Protection				X								K4.09 - Separation of control and protection circuits	2.8	1
013 Engineered Safety Features Actuation					X							K5.02 - Safety system logic and reliability	2.9	1
022 Containment Cooling										X		A2.03 - Fan motor thermal overload/high-speed operation	2.6	1
026 Containment Spray				X								K4.05 - Prevention of material from clogging nozzles during recirculation	2.8	1
039 Main and Reheat Steam				X								K4.04 - Utilization of steam pressure program control when steam dumping through atmospheric relief/dump valves, including	2.9	1

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Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
												T-ave. limits		
059 Main Feedwater											X	2.1.1 - Knowledge of conduct of operations requirements.	3.7	1
061 Auxiliary/Emergency Feedwater							X					A1.02 - S/G pressure	3.3*	1
061 Auxiliary/Emergency Feedwater						X						K6.01 - Controllers and positioners	2.5	1
062 AC Electrical Distribution			X									K3.01 - Major system loads	3.5	1
062 AC Electrical Distribution							X					A1.01 - Significance of D/G load limits	3.4	1
063 DC Electrical Distribution								X				A2.01 - Grounds	2.5	1
064 Emergency Diesel Generator			X									K3.02 - ESFAS controlled or actuated systems	4.2	1
064 Emergency Diesel Generator											X	2.2.24 - Ability to analyze the affect of maintenance activities on LCO status.	2.6	1
073 Process Radiation Monitoring								X				A2.02 - Detector failure	2.7	1
076 Service Water									X			A3.02 - Emergency heat loads	3.7	1
078 Instrument Air											X	2.4.11 - Knowledge of abnormal condition procedures.	3.4	1
103 Containment										X		A3.01 - Containment isolation	3.9	1
<b>K/A Category Totals:</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>		<b>Group Point Total:</b>	<b>28</b>

## PWR RO Examination Outline

Printed: 05/05/2005

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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										K2.05 - M/G sets	3.1*	1
002 Reactor Coolant					X							K5.08 - Why PZR level should be kept within the programmed band	3.4	1
011 Pressurizer Level Control							X					A1.02 - Charging and letdown flows	3.3	1
015 Nuclear Instrumentation										X		A4.01 - Selection of controlling NIS channel	3.6*	1
017 In-core Temperature Monitor				X								K4.01 - Input to subcooling monitors	3.4	1
033 Spent Fuel Pool Cooling		X										K1.05 - RWST	2.7*	1
034 Fuel Handling Equipment										X		A3.01 - Travel limits	2.5*	1
056 Condensate									X			A2.04 - Loss of condensate pumps	2.6	1
071 Waste Gas Disposal			X									K3.04 - Ventilation system	2.7	1
086 Fire Protection						X						K6.04 - Fire, smoke, and heat detectors	2.6	1
<b>K/A Category Totals:</b>	<b>1</b>	<b>0</b>		<b>Group Point Total:</b>	<b>10</b>									

## Generic Knowledge and Abilities Outline (Tier 3)

### PWR RO Examination Outline

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**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>	2.1.16	Ability to operate plant phone, paging system, and two-way radio.	2.9	1
	2.1.27	Knowledge of system purpose and or function.	2.8	1
	2.1.28	Knowledge of the purpose and function of major system components and controls.	3.2	1
<b>Category Total:</b>				<b>3</b>
<b>Equipment Control</b>	2.2.11	Knowledge of the process for controlling temporary changes.	2.5	1
	2.2.27	Knowledge of the refueling process.	2.6	1
<b>Category Total:</b>				<b>2</b>
<b>Radiation Control</b>	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1
	2.3.11	Ability to control radiation releases.	2.7	1
<b>Category Total:</b>				<b>2</b>
<b>Emergency Procedures/Plan</b>	2.4.13	Knowledge of crew roles and responsibilities during EOP flowchart use.	3.3	1
	2.4.19	Knowledge of EOP layout, symbols, and icons.	2.7	1

# Generic Knowledge and Abilities Outline (Tier 3)

## PWR RO Examination Outline

Printed: 05/05/2005

Facility: PVNGS

Form ES-401-3

Generic Category

KA

KA Topic

Imp.

Points

2.4.43	Knowledge of emergency communications systems and techniques.	2.8	1
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**Category Total: 3**

**Generic Total: 10**





## PWR SRO Examination Outline

Printed: 05/05/2005

Facility: PVNGS

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	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
005 Residual Heat Removal								X				A2.04 - RHR valve malfunction	2.9	1
012 Reactor Protection								X				A2.01 - Faulty bistable operation	3.6	1
076 Service Water								X				A2.01 - Loss of SWS	3.7*	1
103 Containment								X				A2.04 - Containment evacuation (including recognition of the alarm)	3.6*	1
<b>K/A Category Totals:</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>		<b>Group Point Total:</b>	<b>5</b>						

## PWR SRO Examination Outline

Printed: 05/05/2005

Facility: PVNGS

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
034 Fuel Handling Equipment	X											K1.05 - Shutdown monitor	3.4*	1
056 Condensate								X				A2.05 - Condenser tube leakage	2.5*	1
072 Area Radiation Monitoring											X	2.4.29 - Knowledge of the emergency plan.	4.0	1
<b>K/A Category Totals:</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>		<b>Group Point Total:</b>	<b>3</b>

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

**PWR SRO Examination Outline**

Printed: 05/05/2005

**Facility:** PVNGS

**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>	2.1.6	Ability to supervise and assume a management role during plant transients and upset conditions.	4.3	1
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	<b>Category Total:</b>			<b>2</b>
<b>Equipment Control</b>	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	3.2*	1
	<b>Category Total:</b>			<b>2</b>
<b>Radiation Control</b>	2.3.6	Knowledge of the requirements for reviewing and approving release permits.	3.1	1
	<b>Category Total:</b>			<b>1</b>
<b>Emergency Procedures/Plan</b>	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	3.3	1
	2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
	<b>Category Total:</b>			<b>2</b>
<b>Generic Total:</b>			<b>7</b>	

Facility: <u>PVNGS</u>	Scenario No.: <u>1</u>	Op-Test No: <u>2005</u>
Examiners: _____ _____	Operators: _____ _____	

Initial Conditions: IC #16, 50% power, MOC.

Turnover: Unit 1 has been at ~50% power for the past 3 days. The Unit had previously operated at near 100% power for 8 months. Power was reduced to perform repairs on "A" MFP. The repairs have been completed and the Unit is now waiting on a chemistry hold to increase power back to 100%. AF "A" is tagged out for maintenance. LCO 3.7.5. Condition 'b' has been entered. Expected to be returned in 12 hours. HPSI 'A' tagged out for bearing replacement. LCO 3.5.3 condition 'b' was entered 4 hours ago. Expected to be returned in approximately 15 hours. Train B is protected equipment. Normal Shiftly Surveillances are complete. EOOS action level is Orange.

Event No.	Malf. No.	Event Type*	Event Description
1	ED04A	C-SRO	After turnover is complete, Startup Transformer NAN-X01 fails ( <b>Plant Event</b> ) requiring an evaluation of operability of AC offsite circuits, <u>Tech Spec 3.8.1.1</u> operability must be performed within 1 hr.
2	TCNP01A	C-CO	After the crew evaluates TS for the SUT failure, TCW pump A bearing seizes. This causes the "A" TCW Pump to trip on overcurrent. The Standby pump does not auto start. The crew should implement 41AL-1RK7A & <b>40AO-9ZZ03</b> , Loss of Cooling Water, Section 5.0 and manually start the Standby TCW Pump.
3	TR04:RCNTT 111X	I-RO/SRO	After the crew addresses the loss of cooling water, the Reactor Regulating System Hot Leg temperature transmitter 111X input fails low affecting the PZR Level Control Setpoint. The crew should implement <b>40AO-9ZZ16</b> , RRS Malfunctions, Section 3.0, and select the unaffected instrument for input.
4	AV02:CHEP V201Q	C-RO/SRO	While the crew is implementing 40AO-9ZZ16, the in-service letdown back-pressure control valve fails closed. The crew should implement <b>40AO-9ZZ05</b> , Loss of Letdown, Section 3.0.
5	TH01A .01 5:00 CV06A	C-RO/SRO	After the crew places the alternate letdown back-pressure control valve in service, an RCS leak in excess of Tech Spec limits occurs. The crew should implement 40AO-9ZZ02, Excessive RCS Leakrate, and evaluate <u>T.S. 3.4.14</u> . The normally running charging pump trips requiring the RO to start the 'E' Charging Pump.
6	RD03I RD03J RD02A RD02C TC18	C- RO/CO/SRO  M- All	After the crew addresses the RCS leak, two CEAs drop partially into the core. A reactor trip is automatically initiated. Two stuck CEAs require the RO to initiate boration. The main turbine will fail to trip requiring the CO to manually trip it. The crew should implement <b>40EP-9EO01</b> , Standard Post Trip Actions.  (Critical Task to establish reactivity control)
7	NoMSIS MMF TH01A .1	I-CO/RO  M-All	After boration is initiated and the crew has transitioned to <b>40EP-9EO03</b> , Loss of Coolant Accident. The leak degrades into a Large Break LOCA. MSIS fails to automatically actuate, requiring manual actuation. 'B' HPSI fails to auto start on the SIAS condition and requires a manual start.
End point			Crew takes action to establish a cooldown.  (Critical Task is to ensure adequate Safety Injection Actuation flow to meet Safety Function requirements within 30 minutes of entry into the LOCA procedure and after the Safety Injection Actuation setpoints are exceeded.)

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

			(Critical Task is to stop the RCP's on loss of subcooling.)
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Facility: <u>PVNGS</u>	Scenario No.: <u>2</u>	Op-Test No.: <u>2005</u>
Examiners: _____ _____	Operators: _____ _____	
Initial Conditions: IC #20, 100% power, MOC.		
Turnover: Unit 1 has been at 100% power for the last 8 months. AF "A" is tagged out for maintenance. LCO 3.7.5. Condition 'b' has been entered. Expected to be returned in 12 hours. HPSI 'A' tagged out for bearing replacement. LCO 3.5.3 condition 'b' was entered 4 hours ago. Expected to return in approximately 15 hours. Normal Shiftly Surveillances are complete. Train B is protected equipment. EOOS action level is Orange.		

Event No.	Malf. No.	Event Type*	Event Description
1	IOR ZDSBAC01HLO G OFF	I-SRO	After the crew assumes the shift, the crew receives a High Log Power Trip on Channel 'A' along with the High Log Power Permissive alarm. The crew should recognize that the log power channel has not failed, but the permissive is no longer bypassed. The CRS should address <u>Tech Specs. LCO 3.3.1</u> condition 'c' applies due to the bypass removal being inoperable and bypass or trip the channel within 1 hr.
2	BK05:NANS02G	R-RO N-CO/SRO	After the crew takes the LCO action, a loss of NAN-S02G will occur causing a loss of one tower of cooling tower fans. ( <b>Plant Event</b> ) The CRS should enter <b>40AO-9ZZ12</b> , Degraded Electrical and <b>40AO-9ZZ07</b> , Degraded Vacuum. The crew determines a downpower is needed to stabilize vacuum.
			After the crew completes the initial downpower, vacuum stabilizes.
3	TR01:RCNPT100 X 2500	I-RO	After recovering from the loss of vacuum, a high failure of pressurizer pressure instrument RCN-PT-100X occurs. This will require the crew to address the alarm response procedure and select Channel Y on RCN-HS-100, PZR Pressure Control Selector, to ensure closer of the PZR spray valve.
4	CC01A CP05:NCNP01B CC01B	C-CO/SRO	After completing the actions for the PZR instrument failure, NCW Pump 'A' will trip due to a ground fault. The Standby NCW pump will not start automatically or manually. This will require the operators to crosstie EW to NC IAW <b>40AO-9ZZ03</b> , Loss of Cooling Water, Section 4.0. The CRS should address <u>Tech Spec 3.7.7.</u> (Cascading T.S.)
		C-RO/SRO	The RO should respond to the loss of letdown and refer to <b>40AO-9ZZ05</b> . The CRS should take action to keep PZR level below the <u>Tech. Spec. limit of 56%.</u>
5	RD04 ATWS	M-All C-RO/CO	After the CRS has addressed Tech Specs, FWPT 'B' alarms are received and the operator locally confirms high vibrations on the pump. The CO takes action to trip the 'B' MFW pump. Reactor Power Cutback automatically initiates but two of the CEAs fail to insert. The reactor fails to trip automatically or by manual pushbuttons. The crew will open L-03 & L-10 breakers to initiate the

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

			Rx Trip. All rods go in on the Reactor Trip. The crew should implement SPTAs. (Critical Task to trip the Reactor)
			The CRS should transition to the Rx Trip EOP.
6	ED02 CP06:SPBP01	C-CO M-All	During implementation of Rx Trip, a loss of offsite power occurs. The CRS should transition to the LOOP/LOFC EOP. Once the crew enters the LOOP/LOFC procedure a loss of PBB-S04 will occur because the "B" Spray Pond trips requiring the operator to secure the "B" DG. The CO will need to swap the S/G feed source from AF "B" to AFN-P01.
7	CP06:AFNP01		After the CO transitions to the "N" AF Pump, AFN-P01 will trip on an 86 Lockout. This will result in a loss of all feedwater.
8		C- SRO/RO/CO M-All	The CRS should transition to the FRP procedure and restore power to PBB-S04 using the 'A' DG. The crew can then feed the SGs with AF 'B'. <b>(PRA Significant)</b> (Critical Task to ensure the required 4KV bus is energized to meet Safety Function requirements prior to the completion of the Maintenance of Vital Auxiliaries success path) (Critical Task to establish feedwater to the unaffected SG)
End point			Crew stabilizes plant with AF "B" feeding at least one SG.

Facility: <u>PVNGS</u>	Scenario No.: <u>3</u>	Op-Test No.: <u>2005</u>	
Examiners: _____ _____	Operators: _____ _____		
Initial Conditions: IC #20, 100% power, MOC.			
Turnover: Unit 1 has been at 100% power for the last 8 months. AF "A" is tagged out for maintenance. LCO 3.7.5. Condition 'b' has been entered. Expected to be returned in 12 hours. HPSI 'A' tagged out for bearing replacement. LCO 3.5.3 condition 'b' was entered 4 hours ago. Expected to return in approximately 15 hours. Normal Shiftly Surveillances are complete. Train B is protected equipment. EOOS action level is Orange.			
Event No.	Malf. No.	Event Type*	Event Description
1	RCCPT101C	I-SRO	After the crew assumes the shift, the crew receives a high failure of "C" Channel Narrow Range Pressurizer Pressure Instrument. The crew should recognize the failure and respond with 41AL-1RK5A and <u>T.S. 3.3.1.A</u> . The crew takes action to bypass the affected parameters.
2	TH06A	C-SRO	After the crew takes the LCO action, a 30 gpd tube leak will start on #1 S/G. The crew should respond with <b>40AO-9ZZ02</b> , Excessive RCS Leakrate, and notify chemistry. This Leakrate requires continued monitoring.
3	ED12B	C-RO/CO/SRO	After the crew completes the applicable portions of 40AO-9ZZ02, PNB-D26 will be lost. The CRS should implement <b>40AO-9ZZ13</b> , Loss of Class Instrument or Control Power, and select the appropriate control instrument for PZR level control, stop one charging pump, and goes to <b>40AO-9ZZ05</b> , Loss of Letdown. CO starts 40ST-9EC03 within one hour and set CEAC INOP flag in all operable CPCs. CRS refers to <u>T.S. 3.8.9 and 3.4.9</u> .
4	NI02C 0 NI02D 0	I-RO/CO/SRO	After carrying out the actions for the loss of PNB-D26, Control Channel #2 will fail low. The crew should address the alarm response for the AMI received and respond IAW <b>40AO-9ZZ16</b> , RRS Malfunction. The RO should take CEDMCS out of Auto Sequential and the CO should select the unaffected channel on RRS panel and place CEDMCS back to Auto Sequential. The CO will then take Control Channel #2 FWCS input to maintenance and remove the ATUN lockout.
5	TH06A	N-RO/CO/CRS	After completing the actions for the loss of Control Channel #2, the S/G tube leak will degrade to 200 gpd. This will require the CRS to commence a plant Shutdown IAW 40OP-9ZZ05. <u>T.S. 3.4.14</u> .
6	TR01:RCNTT111Y 650	I-CO M-All	During the shutdown the leak rate will degrade requiring a Unit Trip. The crew should enter the SPTAs, <b>40EP-9EO01</b> . Upon entering the SPTAs, the Tave input to the FWCS will fail high causing the ruptured SG to be overfed. The CO will need to take action to minimize feed to the SG.
7	RP07B	C-RO/SRO	Train "B" BOP ESFAS Sequencer failure will occur on the trip. The RO should respond by manually starting "B" Train Safety Injection

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

			and Support Equipment. (Critical Task is to start "B" HPSI pump.)
		M-All	After completing the SPTAs, the CRS should transition to the SGTR EOP, 40EP-9EO04 and proceeds to cooldown and isolate the ruptured S/G. (Critical Task is to ensure the crew prevents a release of steam to atmosphere from the ruptured S/G during the RCS cooldown.)  (Critical Task is to ensure the crew isolates the most affected S/G within 30 minutes of entry into the SGTR procedure.)
End point			Crew isolates the affected SG. (Critical Task is to ensure the crew takes action to prevent the Main Steam Safety Valves on the most affected S/G from opening after the most affected S/G has been isolated.)

PVNGS License Examination  
Administrative Topics Outline

PVNGS Form ES-301-1

Facility: <b><i>Palo Verde</i></b> Examination Level: <b>RO</b>		Date of Examination: <b><u>7/29/05 – 8/5/05</u></b> Operating Test Number: <b><u>PVNGS RO</u></b>	
<b>Administrative Topic (see Note)</b>	<b>Type Code*</b>	<b>Describe activity to be performed:</b>	<b>K/A # IMP</b>
Conduct of Operations	C, N	Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data. (Candidate will be required to calculate the required SDM using procedures and given plant parameters) <i>Scheduled as Admin Task RA1-1. (NEW)</i>	2.1.25 2.8
Conduct of Operations	C, D	Ability to use plant computer to obtain and evaluate parametric information on system or component status. (Candidate will be required to calculate NKBDELTA). <i>Scheduled as Admin Task RA1-2. (AD010)</i>	2.1.19 3.0
Equipment Control	C, N	Knowledge of tagging and clearance procedures. (Candidate will determine tagging boundaries for a permit) <i>Schedule as Admin JPM RA2. (NEW)</i>	2.2.13 3.6
Radiation Control	C, M	Verify administrative and radiological entry requirements per the RWP (Candidate will be required to demonstrate the proper method for verifying qualifications and identify the proper REP, task, and dose settings/limits for the particular job assignment.) <i>Scheduled as Admin JPM RA3.</i>	2.3.1 2.6
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.			
*Type Codes & Criteria: (C)ontrol room (D)irect from bank ( $\leq 3$ for ROs: $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected) (S)imulator			

Facility: <u><i>Palo Verde</i></u> Examination Level: <b>SRO</b>		Date of Examination: <u><b>7/29/05 – 8/5/05</b></u> Operating Test Number: <u><b>PVNGS SRO</b></u>	
<b>Administrative Topic (see Note)</b>	Type Code*	<b>Describe activity to be performed:</b>	<b>K/A # IMP</b>
Conduct of Operations	C, M	Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data. (Candidate will be required to review a SDM surveillance Test, indentify 3 errors and any required action) <i>Scheduled as Admin Task SAI-1.</i>	2.1.25 3.1
Conduct of Operations	C, N	Ability to locate and use procedures and directives related to shift staffing and activities. (Candidate will be required to determine that operator is to not able to stand watch and that the operator will need a working hour limit deviation form to permit helping with surveillance) <i>Scheduled as Admin Task SAI-2. (NEW)</i>	2.1.5 3.4
Equipment Control	C, D	Knowledge of tagging and clearance procedures. (Tech Review a Permit and determine three errors) <i>Schedule as Admin JPM SA2.</i>	2.2.13 3.8
Radiation Control	C, D	Verify administrative and radiological entry requirements per the RWP (Candidate will be required to demonstrate the proper method for verifying qualifications and identify the proper REP, task, and dose settings/limits for the particular job assignment.) <i>Scheduled as Admin JPM SA3.</i>	2.3.1 3.0
Emergency Plan	S, M	Ability to take action called for in the Emergency Plan, including acting as Emergency Coordinator. (Candidate will classify event and perform initial Emergency Coordinator duties.) <i>Scheduled as Admin JPM SA4.</i>	2.4.38 4.0
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.			
*Type Codes & Criteria: (C)ontrol room (D)irect from bank (≤ 3 for ROs: ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected) (S)imulator			

Facility: <b><u>PVNGS</u></b>	Date of Examination: <b><u>8/1/05</u></b>
Exam Level: <b><u>RO</u></b>	Operating Test No.: <b><u>RO</u></b>

Control Room Systems<sup>@</sup> (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

JPM #	System/JPM Title	Type Code*	Safety Function
<b>JS1</b>	Respond to a SIT Low Lvl alarm & Refill	S A M 3.2.006.A4.02 4.0/3.8	2
<b>JS2</b>	Transfer 13.8KV bus S01 From 13.8KV Bus S03 to the Unit Auxiliary Transformer MAN-X02	S A D 3.6.062.A4.07 3.1/3.1	6
<b>JS3</b>	Perform BDAS Alarm Check (Appendix 8) w/i one hour (Time Critical)	S L N 3.7.015.A3.03 3.9/3.9	7
<b>JS4</b>	Vent off the high pressure in the reactor vessel head to the RDT. (RC001)	S A D L 3.2.002.K4.05 3.8/4.2	3
<b>JS5</b>	Perform a Boration of the RCS (CH002 <i>Modify, BAMP Dish Press Lo Alarm received</i> ) Plant Event	S A M 3.1.004.A4.01 3.8/3.9	1
<b>JS6</b>	Reconnect and reset the Steam Bypass Control System (SF006)	S D 3.4.041.A4.08 3.0/3.1	4 (Secondary)
<b>JS7</b>	Respond to Containment Sump Trouble Excessive Runtime Alarm 41AL-1RK7B	S N 3.5.103.A4.01 3.2/3.3	5
<b>JS8</b>	Vent the Containment (CP001)	S D 3.8.029.A103 3.0/3.3	8

In-Plant Systems<sup>@</sup> (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

<b>JP1</b>	Return a Battery Charger to Service (Attachment 97-A)	A E M 3.6.063.A4.02 2.8*/2.9 3.6.063.K1.03 2.9/3.5	6
<b>JP2</b>	Line up a Borated Water Source during Control Room Fire (PRA Significant) (AO017)	D E R 4.2.068.AA1.11 4.0/4.3	1
<b>JP3</b>	Restore local air to the SFP gate seals and place the Nitrogen bottles on standby (Plant Modification)	E M P R 3.8.078.A3.01 3.1/3.2 3.8.078.K4.02 3.2/3.5	8

@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal <b>in-plant</b>	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: <b><u>PVNGS</u></b>	Date of Examination: <b><u>8/1/05</u></b>
Exam Level: <b><u>SRO</u></b>	Operating Test No.: <b><u>SROU</u></b>

Control Room Systems <sup>@</sup> (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)				
JPM #	System/JPM Title	Type Code*		Safety Function
<b>JS1</b>	Respond to a SIT Low Lvl alarm & Refill	S A M 3.2.006.A4.02      4.0/3.8		2
<b>JS2</b>	Transfer 13.8KV bus S01 From 13.8KV Bus S03 to the Unit Auxiliary Transformer MAN-X02	S A D 3.6.062.A4.07      3.1/3.1		6
<b>JS3</b>	Perform BDAS Alarm Check (Appendix 8) w/i one hour (Time Critical)	S L N 3.7.015.A3.03      3.9/3.9		7

In-Plant Systems <sup>@</sup> (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)				
<b>JP1</b>	Return a Battery Charger to Service (Attachment 97-A)	A E M 3.6.063.A4.02      2.8*/2.9 3.6.063.K1.03      2.9/3.5		6
<b>JP2</b>	Line up a Borated Water Source during Control Room Fire (PRA Significant) (AO017)	D E R 4.2.068.AA1.11      4.0/4.3		1

<sup>@</sup> All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal <b>in-plant</b>	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: <b>PVNGS</b>		Date of Exam: <b>7/29/05 – 8/05/05</b>											Operating Test No.: <b>2005</b>			
A P P L I C A N T	E V E N T  T Y P E	Scenarios													T O T A L	M I N I M U M
		1			2			3 <i>(SPARE)</i>			4					
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION					
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P			
RO	RX	0			0			0						0	1*	
	NOR	0			1			1						1	1*	
SRO-I	I/C	4			3			5						7	4*	
	MAJ	2			3			2						5	2	
SRO-U	TS	2			2			3						4	2	
RO	RX		0				0		0					0	1*	
	NOR		0				1		1					1	1*	
SRO-I	I/C		5				4		3					9	4*	
	MAJ		2				3		2					5	2	
SRO-U	TS		0				0		0					0	NA	
RO	RX			0		1				0				1	1*	
	NOR			0		0				1				0	1*	
SRO-I	I/C			3		4				3				7	4*	
	MAJ			2		3				2				5	2	
SRO-U	TS			0		0				0				0	NA	

Instructions:

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

Author: Phillip Capehart

NRC Reviewer: \_\_\_\_\_

OPERATING TEST NO.: PVNGS 2005

Competencies	SROU				RO				BOP (CO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	1,2,3 4,5,6 7	1,2,4 5,6,8	1,2,3 4,5,6 7		3,4,5 6,7	2,3,4 5,6,8	2,3,4 5,6,7		2,6,7	2,4,5 6,7,8	2,3,4 5,6,7	
Comply With and Use Procedures (1)	1,2,3 4,5,6 7	1,2,4 5,6,8	1,2,3 4,5,6 7		3,4,5 6,7	2,3,4 5,6,8	2,3,4 5,6,7		2,5,6 7	2,4,5 6,8	2,3,4 5,6,7	
Operate Control Boards (2)	NA	NA	NA		3,4,5 6,7	2,3,4 5,6,8	3,4,5 6,7		2,6,7	2,4,5 6,8	3,4,5 6,7	
Communicate and Interact	1,2,3 4,5,6 7	1,2,3 4,5,6 7,8	1,2,3 4,5,6 7		3,4,5 6,7	2,3,4 5,6,8	2,3,4 5,6,7		2,6,7	2,4,5 6,7,8	2,3,4 5,6,7	
Demonstrate Supervisory Ability (3)	1,2,3 4,5,6 7	1,2,4 5,6,8	1,2,3 4,5,6 7		NA	NA	NA		NA	NA	NA	
Comply With and Use Tech. Specs. (3)	1,5	1,4,5	1,3,5		NA	NA	NA		NA	NA	NA	
<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.

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