Administrative Topics Outline

Facility: SONGS Units 2 and 3		Date of Examination:	10/12/12
Examination Level	RO ☙	Operating Test Number:	NRC

Administrative Topic (see Note)	Type Code*	Describe Activity to be Performed
Conduct of Operations (A1)	M, R	2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9) JPM: Determine Time to Boil (J213A).
Conduct of Operations (A2)	M, R	2.1.19 Ability to use plant computers to evaluate system or component status (3.9). JPM: Calculate Azimuthal Power Tilt (J250A).
Equipment Control (A3)	N, R	2.2.12 Knowledge of surveillance procedures. (3.7) JPM: Perform a Manual Water Inventory Balance (New).
Radiation Control	-	-
Emergency Plan (A4)	M, S	2.4.39 Knowledge of RO responsibilities in emergency plan implementation. (3.9) JPM: Perform PA/Siren Coordination (J157A).

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

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

A1 The applicant will use data provided to perform a Time to Boil calculation using SO23-5-1.8.1, Shutdown Nuclear Safety. This is a modified bank JPM.

A2 The applicant will use provided data from the Core Protection Calculator System to calculate Azimuthal Power Tilt in the core per SO23-3-3.6, COLSS Out of Service Surveillance. This is a modified bank JPM.

A3 The applicant will use provided data to manually calculate a water inventory balance per SO23-3-3.37, Reactor Coolant System Water Inventory Balance. This is a new JPM.

A4 The applicant will perform a PA/Siren coordination per SO23-VIII-30, Units 2/3 Operations Leader Duties. This JPM will be conducted in the simulator. This is a modified bank JPM.

Facility: SONGS Units 2 and 3		Date of Examination:	10/12/12
Examination Level	SRO	Operating Test Number:	NRC

Administrative Topic (see Note)	Type Code*	Describe Activity to be Performed
Conduct of Operations (A5)	M, R	2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (4.2) JPM: Determine Time to Boil and Containment Closure Requirements (J213A).
Conduct of Operations (A6)	M, R	2.1.19 Ability to use plant computers to evaluate system or component status (3.8). JPM: Calculate Azimuthal Power Tilt and Evaluate Technical Specifications (J250A).
Equipment Control (A7)	N, R	2.2.40 Ability to apply Technical Specification for a system (4.7). JPM: Determine Technical Specification Applicability (New).
Radiation Control (A8)	N, R	2.3.11 Ability to control radiation releases (4.3). JPM: Perform Process Flow Estimation for Waste Gas Decay Tank Release (New).
Emergency Plan (A9)	M, R	2.4.41 Knowledge of the emergency action level thresholds and classifications (4.6). JPM: Classify an Emergency Plan Event (J274A).

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

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

A5 The applicant will use data provided to perform a Time to Boil calculation using SO23-5-1.8.1, Shutdown Nuclear Safety, and determine containment closure requirements based on the time to boil calculation. This is a modified bank JPM.

A6 The applicant will use provided data from the Core Protection Calculator System to calculate Azimuthal Power Tilt in the core per SO23-3-3.6, COLSS Out of Service Surveillance, and evaluate potential Technical Specification Actions based on the Azimuthal Power Tilt calculation. This is a modified bank JPM.

A7 The applicant will determine applicable Technical Specification Conditions and Actions based on a provided timeline of events. This is a new JPM.

A8 The applicant will calculate an estimated Waste Gas Decay Tank flowrate with an inoperable flow detector per SO23-8-15, Radwaste Gas Discharge. This is a new JPM.

A9 The applicant will classify an emergency plan event per SO23-VIII-1, Recognition and Classification of Emergencies, and make protective action recommendations per SO23-VIII-10.3, Protective Action Recommendations. This is a modified bank JPM.

Facility:	SONGS Units 2 and 3	Date of Examination:	10/12/12
Exam Level:	RO ↬ SRO(I) ↬ **SRO (U)** ↬	Operating Test No.:	NRC

Control Room Systems[@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title	Type Code*	Safety Function
S-1	004 – Chemical and Volume Control System (J275S) Perform 50 gallon dilution to the RCS	D, S	1
S-2	011 – Pressurizer Level Control System (New) Transfer in-service letdown flow controllers	N, S	2
S-3	**006 – Emergency Core Cooling System (New)** **Transfer Charging Pump Suction Post-SIAS**	**A, EN, L, N, S**	**3**
S-4	045 – Main Turbine Generator System (New) Synch the Main Turbine to the grid and apply block load	A, N, S	4S
S-5	**022 – Containment Cooling System (New)** **Perform Containment Cooling Actuation System Relay Testing**	**A, EN, N, S**	**5**
S-6	062 – AC Electrical Distribution System (J007) Transfer 6.9kV bus 2A01 from UAT to RAT	A, M, S	6
S-7	**073 – Process Radiation Monitoring System (J290)** **Change Radiation Monitor setpoints during small S/G tube leak**	**D, S**	**7**
S-8	071 – Align and Discharge a Waste Gas Decay Tank (J231FS) (RO only)	A, D, S	9

In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

P-1	039 – Main and Reheat Steam System (J038) Manually open an Atmospheric Dump Valve	D, E	4S
P-2	**064 – Emergency Diesel Generators (J016)** **Locally start Emergency Diesel Generator**	**D, E**	**6**
P-3	**001 – Control Rod Drive System (J017)** **Remove MG Set # 1 from service**	**D, R**	**1**

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

NRC JPM Examination
Summary Description

S-1 The applicant will perform a 50 gallon dilution to the RCS per SO23-3-2.2, Makeup Operations. This is a bank JPM under the Chemical Volume and Control System – Reactivity Control Safety Function.

S-2 The applicant will place the standby Letdown Flow Control Valve controller in service and remove the in-service Letdown Flow Control Valve from service per SO23-3-2.1, CVCS Operations. This is a new JPM under the Chemical Volume and Control System – Reactor Coolant System Inventory Control Safety Function.

S-3 The applicant will perform FS-24, Transfer Charging Pump Suction, per SO23-12-11, EOI Supporting Attachments. The alternate path occurs when a valve is found to be out of its required position. This is a new JPM under the Emergency Core Cooling System – Reactor Pressure Control Safety Function.

S-4 The applicant will raise Main Generator load per SO23-5-1.7, Power Operations. The alternate path occurs when high Turbine vibrations require the Reactor to be immediately tripped. This is a new JPM under the Main Turbine Generator System – Secondary System Heat Removal From Reactor Core Safety Function.

S-5 The applicant will perform Containment Cooling Actuation Signal K-Relay testing per SO23-3-3.43.38, ESF Subgroup Relays K-306A and K-306B Semiannual Test. The alternate path occurs when the expected test response is not obtained. This is a new JPM under the Containment Cooling System – Containment Integrity Safety Function.

S-6 The applicant will transfer 6.9kV bus 2A01 from the Unit Auxiliary Transformer to the Reserve Auxiliary Transformer per SO23-6-1, Transferring 6.9kv Buses, in preparation for

breaker maintenance. The alternate path occurs following the transfer when the supply breaker to bus 2A01 trips on overcurrent. The Reactor will fail to automatically trip on RCS Low Flow and the applicant will have to manually trip the Reactor. This is a modified JPM under the AC Electrical Distribution System – Electrical Safety Function.

S-7 The applicant will reset RE-7870, Condenser Air Ejector Wide Range Gas Monitor, Hi and HI-HI setpoints during a small SGTR per SO23-3-2.36, Radiation Monitoring Data Acquisition System. This is a bank JPM under the Process Radiation Monitoring System – Instrumentation Safety Function.

S-8 The applicant will line up and discharge a Waste Gas Decay Tank per SO23-8-15, Radwaste Gas Discharge. The alternate path occurs when radiation monitors respond abnormally after the discharge is commenced. This is a bank JPM under the Waste Gas Disposal System – Radioactivity Release Safety Function.

P-1 The applicant will locally open an Atmospheric Dump Valve to establish RCS Heat Removal per SO23-13-2, Shutdown From Outside the Control Room. This is a bank JPM under the Main and Reheat Steam System - Secondary System Heat Removal From Reactor Core Safety Function.

P-2 The applicant will locally start an Emergency Diesel Generator per SO23-13-2, Shutdown from Outside the Control Room. This is a bank JPM under the Emergency Diesel Generators System – Electrical Safety Function.

P-3 The applicant will remove Control Rod Drive System Motor Generator # 1 from service per SO23-3-2.19, Control Element Drive Mechanism Control System Operation. This is a bank JPM under the Control Rod Drive System – Reactivity Control Safety Function.

Facility: San Onofre Nuclear Generating Station Date of Exam: October 25, 2012

Tier	Group	RO K/A Category Points												SRO-Only Points						
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2		G*		Total		
1. Emergency & Abnormal Plant Evolutions	1	**2**	**2**	**4**	N/A			**4**	**3**	N/A		**3**	18	**4**		**2**		6		
	2	**2**	**2**	**2**				**1**	**1**			**1**	9	**2**		**2**		4		
	Tier Totals	**4**	**4**	**6**				**5**	**4**			**4**	27	**6**		**4**		10		
2. Plant Systems	1	**4**	**1**	**2**	**3**	**2**	**1**	**3**	**3**	**3**	**3**	**3**	28	**3**		**2**		5		
	2	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	10		**1**	**2**		3		
	Tier Totals	**5**	**2**	**3**	**4**	**3**	**2**	**4**	**4**	**4**	**4**	**3**	38	**4**		**4**		8		
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7		
		3			**3**			**2**			**2**			**2**	**2**	**1**	**2**				

Note:

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).
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. 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/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
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.
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.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
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. Refer to Section D.1.b of ES-401 for the applicable K/As.
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; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
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.

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1				X			CE/E02 EA1.1 Ability to interpret and/or monitor the following as they apply to Reactor Trip Recovery: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.	3.7	39
000008 Pressurizer Vapor Space Accident / 3		X					008AK2.02 Knowledge of the interrelation between the Pressurizer Vapor Space Accident and the following: Sensors and detectors.	2.7	40
000009 Small Break LOCA / 3			X				009EK3.21 Knowledge of the reasons for the following responses as the apply to the small break LOCA: Actions contained in EOP for small break LOCA/leak	4.2	41
000011 Large Break LOCA / 3					X		011EA2.04 Ability to determine or interpret the following as they apply to a Large Break LOCA: Significance of PZR readings	3.7	42
000015/17 RCP Malfunctions / 4	X						015/017AK1.04 Knowledge of the operational implications of the following concepts as they apply to Reactor Coolant Pump Malfunctions (Loss of RC Flow): Basic steady state thermodynamic relationship between RCS loops and S/Gs resulting from unbalanced RCS flow.	2.9	43
000025 Loss of RHR System / 4						X	2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.2	44
000026 Loss of Component Cooling Water / 8			X				026AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Effect on the CCW flow header of a loss of CCW.	3.5	45
000027 Pressurizer Pressure Control System Malfunction / 3						X	2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	46
000038 Steam Gen. Tube Rupture / 3	X						038EK1.03 Knowledge of the operational implications of the following concepts as they apply to the SGTR: Natural circulation	3.9	47
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4					X		CE/E05 EA2.2 Ability to determine and interpret the following as they apply to the (Excess Steam Demand): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.4	48
000054 (CE/E06) Loss of Main Feedwater / 4			X				054AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Actions contained in EOPs for loss of MFW.	4.4	49
000055 Station Blackout / 6				X			055EA1.05 Ability to operate and monitor the following as they apply to a Station Blackout: Battery, when approaching fully discharged	3.3	50
000056 Loss of Off-site Power / 6				X			056AA1.06 Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: Safety Injection Pump.	3.6	51
000057 Loss of Vital AC Inst. Bus / 6				X			057AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Manual Inverter Swapping	3.7	52

000058 Loss of DC Power / 6						X	2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	3.8	53
000062 Loss of Nuclear Svc Water / 4			X				062AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.	3.2	54
000065 Loss of Instrument Air / 8					X		AA2.06 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is de-creasing	3.6	55
000077 Generator Voltage and Electric Grid Disturbances / 6		X					077AK2.07 Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Turbine / generator control	3.6	56
K/A Category Totals:	2	2	4	4	3	3	Group Point Total:		18/6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1	X						001AK1.06 Knowledge of the operational implications of the following concepts as they apply to Continuous Rod Withdrawal: Relationship of reactivity and reactor power to rod movement	**4.0**	**57**
000005 Inoperable/Stuck Control Rod / 1			X				005AK3.05 Knowledge of the reasons for the following responses as they apply to the Inoperable / Stuck Control Rod: Power limits on rod misalignment	**3.4**	**58**
000051 Loss of Condenser Vacuum / 4				X			051AA1.04 Ability to operate and / or monitor the following as they apply to the Loss of Condenser Vacuum: Rod position	**2.5**	**59**
000059 Accidental Liquid RadWaste Rel. / 9					X		059AA2.03 Ability to determine and interpret the following as they apply to the Accidental Liquid Radwaste Release: Failure modes, their symptoms, and the causes of misleading indications on a radioactive-liquid monitor.	**3.1**	**60**
000068 (BW/A06) Control Room Evac. / 8		X					068AK2.01 Knowledge of the interrelations between the Control Room Evacuation and the following: Auxiliary shutdown panel layout	**3.9**	**61**
000074 (W/E06&E07) Inad. Core Cooling / 4						X	074 G2.4.6 Knowledge of EOP mitigation strategies.	**3.7**	**62**
000076 High Reactor Coolant Activity / 9		X					AK2.01 Knowledge of the interrelations between the High Reactor Coolant Activity and the following: Process radiation monitors	**2.6**	**63**
CE/A11; W/E08 RCS Overcooling - PTS / 4			X				CE/A11 AK3.3 Knowledge of the reasons for the following responses as they apply to the (RCS Overcooling): Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.	**3.1**	**64**
CE/E09 Functional Recovery	X						CE/E09 EK1.3 Knowledge of the operational implications of the following concepts as they apply to the (Functional Recovery): Annunciators and conditions indicating signals, and remedial actions associated with the (Functional Recovery).	**3.2**	**65**
K/A Category Point Totals:	**2**	**2**	**2**	**1**	**1**	**1**	Group Point Total:		9/4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)											Form ES-401-2		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump											X	2.2.35 Ability to determine Technical Specification Mode of Operation	3.6	1
004 Chemical and Volume Control									X			004A3.03 Ability to monitor automatic operation of the CVCS, including: Ion exchange bypass	2.9	2
005 Residual Heat Removal		X										005K2.01 Knowledge of bus power supplies to the following: RHR Pumps	3.0	3
006 Emergency Core Cooling							X					006A1.06 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Subcooling Margin	3.6	4
007 Pressurizer Relief/Quench Tank				X					X			007K4.01 Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: Quench tank cooling. 007A3.01 Ability to monitor automatic operation of the PRTS, including: Components which discharge to the PRT	2.6 2.7	5 6
008 Component Cooling Water								X				008A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effect of loss of instrument and control air on the position of the CCW valves that are air operated	3.3	7
010 Pressurizer Pressure Control					X							010K5.02 Knowledge of the operational implications of the following concepts as the apply to the PZR PCS: Constant enthalpy expansion through a valve	2.6	8
012 Reactor Protection							X			X		012A1.01 Ability to predict and/or monitor Changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including: Trip setpoint adjustment. 012A4.06 Ability to manually operate and/or monitor in the control room: Reactor trip breakers	2.9 4.3	9 10
013 Engineered Safety Features Actuation	X											013K1.16 Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: MRSS	2.9	11
022 Containment Cooling			X									022K3.02 Knowledge of the effect that a loss or malfunction of the CCS will have on the following: Containment instrumentation readings	3.0	12
026 Containment Spray	X											026K1.02 Knowledge of the physical connections and/or cause / effect relationships between the CSS and the following systems: Cooling water	4.1	13

039 Main and Reheat Steam					X							039K5.08 Knowledge of the operational implications of the following concepts as the apply to the MRSS: Effect of steam removal on reactivity	**3.6**	**14**
059 Main Feedwater	X							X				059K1.04 Knowledge of the physical connections and/or cause-effect relationships between the MFW and the following systems: S/GS water level control system 059A2.12 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of feedwater regulating valves	**3.4** **3.1**	**15** **16**
061 Auxiliary/Emergency Feedwater						X						061K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners.	**2.5**	**17**
062 AC Electrical Distribution										X		062A4.03 Ability to manually operate and/or monitor in the control room: Synchroscope, including an understanding of running and incoming voltages	**2.8**	**18**
063 DC Electrical Distribution			X	X								063K3.01 Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: ED/G 063K4.01 Knowledge of DC electrical system design feature(s) and / or interlock(s) which provide for the following: Manual/automatic transfers of control	**3.7** **2.7**	**19** **20**
064 Emergency Diesel Generator												064A1.03 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: Operating voltages, currents, and temperatures	**3.2**	**21**
073 Process Radiation Monitoring											X	2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	**4.5**	**22**
076 Service Water										X	X	076A4.02 Ability to manually operate and/or monitor in the control room: SWS valves 2.1.27 Knowledge of system purpose and/or function.	**2.6** **3.9**	**23** **24**
078 Instrument Air	X								X			078K1.03 Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: Containment air. 078A3.01 Ability to monitor automatic operation of the IAS, including: Air pressure.	**3.3** **3.1**	**25** **26**

103 Containment				X				X				103K4.06 Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Containment isolation system 103A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Containment evacuation (including recognition of the alarm)	**3.1** **3.5**	27 28
K/A Category Point Totals:	**4**	**1**	**2**	**3**	**2**	**1**	**3**	**3**	**3**	**3**	**3**	Group Point Total:	28/5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
001 Control Rod Drive	X											001K1.05 Knowledge of the physical connections and/or cause effect relationships between the CRDS and the following systems: NIS and RPS	4.5	29
002 Reactor Coolant									X			002A3. 03 Ability to monitor automatic operation of the RCS, including: Pressure, temperatures, and flows	4.4	30
014 Rod Position Indication				X								014K4.06 Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: Individual and group misalignment	3.4	31
015 Nuclear Instrumentation					X							015K5.06 Knowledge of the operational implications of the following concepts as they apply to the NIS: Subcritical multiplications and NIS indications	3.4	32
017 In-core Temperature Monitor								X				017A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Core damage.	3.6	33
033 Spent Fuel Pool Cooling			X									033K3.02 Knowledge of the effect that a loss or malfunction of the Spent Fuel Pool Cooling System will have on the following: Area and ventilation radiation monitoring systems	2.8	34
041 Steam Dump/Turbine Bypass Control						X						041K6.03 Knowledge of the effect of a loss or malfunction on the following will have on the SDS: Controller and positioners, including ICS, S/G, CRDS	2.7	35
045 Main Turbine Generator							X					045A1.05 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including: Expected response of primary plant parameters (temperature and pressure) following T/G trip	3.8	36
068 Liquid Radwaste										X		068 A4.04 Ability to manually operate and/or monitor in the control room: Automatic isolation	3.8	37
075 Circulating Water		X										075K2.03 Knowledge of bus power supplies to the following: Emergency/essential SWS pumps	2.6	38
K/A Category Point Totals:	1	1	1	1	1	1	1	1	1	1	0	Group Point Total:		10/3

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)							Form ES-401-2	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		007EA2.02 Ability to determine or interpret the following as they apply to a reactor trip: Proper actions to be taken if the automatic safety functions have not taken place.	**4.6**	**76**
000008 Pressurizer Vapor Space Accident / 3						X	2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	**4.6**	**77**
000056 Loss of Off-site Power / 6						X	2.4.13 Knowledge of crew roles and responsibilities during EOP usage.	**4.6**	**78**
000058 Loss of DC Power / 6					X		058AA2.03 Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost; impact on ability to operate and monitor plant systems	**3.9**	**79**
000062 Loss of Nuclear Svc Water / 4					X		062AA2.02 Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The cause of possible SWS loss	**3.6**	**80**
000077 Generator Voltage and Electric Grid Disturbances / 6					X		077AA2.10 Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Generator overheating and the required actions	**3.8**	**81**
K/A Category Totals:					**4**	**2**	Group Point Total:		18/6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)							Form ES-401-2	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
000003 Dropped Control Rod / 1						**X**	2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	**4.7**	**82**
000060 Accidental Gaseous Radwaste Rel. / 9					**X**		AA2.02 Ability to determine and interpret the following as they apply to the Accidental Gaseous Radwaste Release: The possible location of a radioactive-gas leak, with the assistance of PEO, health physics and chemistry personnel	**4.0**	**83**
000061 ARM System Alarms / 7						**X**	2.4.6 Knowledge of EOP mitigation strategies.	**4.7**	**84**
CE/A16 Excess RCS Leakage / 2					**X**		CE/A16 AA2.1 Ability to determine and interpret the following as they apply to the (Excess RCS Leakage): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	**3.5**	**85**
K/A Category Point Totals:					**2**	**2**	Group Point Total:		9/4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (SRO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
005 Residual Heat Removal								**X**				005A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: RHR valve malfunction	**2.9**	**86**
013 Engineered Safety Features Actuation								**X**				013A2.06 Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent ESFAS actuation	**4.0**	**87**
062 AC Electrical Distribution											**X**	2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	**4.2**	**88**
063 DC Electrical Distribution								**X**				063A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Grounds	**3.2**	**89**
078 Instrument Air											**X**	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	**4.7**	**90**
K/A Category Point Totals:								**3**			**2**	Group Point Total:		28/5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (SRO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
011 Pressurizer Level Control								**X**				011A2.06 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent PZR spray actuation.	**3.9**	**91**
035 Steam Generator											**X**	2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	**4.2**	**92**
071 Waste Gas Disposal											**X**	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.	**4.4**	**93**
K/A Category Point Totals:								**1**			**2**	Group Point Total:		10/3

Facility: SONGS		Date of Exam: 10/25/2012				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.3	Knowledge of shift or short-term relief turnover practices.	3.7	66		
	2.1.19	Ability to use plant computers to evaluate system or component status.	3.9	67		
	2.1.44	Knowledge of RO duties in the control room during fuel handling, such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9	68		
	2.1.					
	2.1.15	Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc.			3.4	94
	2.1.42	Knowledge of new and spent fuel movement procedures.			3.4	95
	Subtotal			3		2
2. Equipment Control	2.2.4	(multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.	3.6	69		
	2.2.14	Knowledge of the process for controlling equipment configuration or status.	3.9	70		
	2.2.41	Ability to obtain and interpret station electrical and mechanical drawings.	3.5	71		
	2.2.					
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	96
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.			3.9	97
	Subtotal			3		2
3. Radiation Control	2.3.11	Ability to control radiation releases.	3.8	72		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4	73		
	2.3.					
	2.3.					
	2.3.					
	2.3.6	Ability to approve release permits.			3.8	98
	Subtotal			2		1
4. Emergency Procedures / Plan	2.4.3	Ability to identify post-accident instrumentation.	3.7	74		
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.4	75		
	2.4.					
	2.4.					

	2.4.18	Knowledge of the specific bases for EOPs.			**4.0**	**99**
	2.4.44	Knowledge of emergency plan protective action recommendations.			**4.4**	**100**
	Subtotal			**2**		**2**
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/1	003 G2.2.39	No less than or equal to one hour TS exists for the Reactor Coolant Pump System. Reselected 003 G2.2.35.
2/1	004 A3.07	The CVCS System does not tie into S/G level and pressure. Reselected 004 A3.03.
2/1	039 K5.05	TS Bases is SRO knowledge. Reselected 039 K5.08.
2/1	059 K3.03	Oversampling (Q 14 and Q 15). Reselected 059 K1.04

Facility:	SONGS 2 & 3	Scenario No.:	1	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 100% power MOC.

Turnover: Maintain steady state conditions.

Critical Tasks:

- Restore power to 1E 4kV bus 2A04 following a Station Blackout per SO23-12-9, Functional Recovery.
- Manually start HPSI Pump P-018 (or P-017) following the restoration of power to 1E 4kV bus 2A04 to establish minimum required HPSI flow per SO23-12-9, Functional Recovery.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	RM06	I (RO, SRO) TS (SRO)	Containment High Range Radiation Monitor 7820-1 Fails High
2 (15 min)	NSW LP	C (BOP, SRO)	Nuclear Service Water Pump P-139 O/C Trip, P-138 Fails to Auto Start
3 (25 min)	RC03	C (RO, SRO) TS (SRO)	Reactor Coolant System Leak (10 GPM)
4 (45 min)		R (RO, BOP, SRO)	Rapid Power Reduction due to RCS Leak
5 (50 min)	ED04A	C (BOP, SRO)	480V Bus 2A03 O/C
6 (50 min)	RC03	M (RO, BOP, SRO)	RCS Leak Increases to 500 GPM on Reactor Trip
7 (50 min)	PG24	C (RO, BOP, SRO)	Loss of Offsite Power upon Reactor Trip (10 second time delay)
8 (50 min)	EG08A	C (BOP, SRO)	Train A EDG Fails to Start (cannot be started from CR)
9 (50 min)	EG16B	C (BOP, SRO)	Train B EDG Output Breaker Fails to Auto Close
10 (55 min)	ED03B	M (RO, BOP, SRO)	Train B EDG Output Breaker O/C Trip (60 second time delay from manual breaker closure)
11 (75 min)	RP01BA	C (RO/BOP, SRO)	Train A HPSI P-018 Fails to Auto Start upon restoration of power to 1E 4kV bus 2A04

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

Actual	Target Quantitative Attributes
10	Total malfunctions (5-8)
5	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
2	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

Facility:	SONGS 2 & 3	Scenario No.:	2	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 100% Power MOC

Turnover: Maintain steady state conditions.

Critical Tasks:

- Emergency Borate the RCS following Reactor Trip following the failure of two full-length CEAs to insert on Reactor trip per SO23-12-1, Standard Post Trip Actions.
- Trip all 4 RCPs within 10 minutes of the CIAS due to the loss of Component Cooling Water to the RCPs.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	SG03G	I (BOP, SRO) TS (SRO)	S/G E-089 Pressure Transmitter PT-1013-3 fails low
2 (25 min)	MFW LP	N (RO, BOP, SRO)	MFW Pump K-006 Trip (Rapid Power Reduction to 65% Power)
3 (25 min)	FW02A	TS (SRO)	AFW Pump P-141 O/C Trip
4 (35 min)	RC11	I (RO, SRO)	T_{hot} Instrument TT-0121X2 Fails High
5 (50 min)	ED08B	C (RO, BOP, SRO)	Loss of Non-1E Instrument Bus 2Q0612
6 (52 min)	RP23B	M (RO, BOP, SRO)	Inadvertent CIAS – Loss of Forced Circulation
7 (55 min)	ED03A	C (BOP)	1E 4kV Bus 2A04 O/C Trip on Reactor Trip
8 (55 min)	RD1002 RD4002	R (RO, SRO)	Two Full Length CEAs Fail to Fully Insert – Gravity Feed Emergency Boration Required
9 (55 min)	ELEC LP	I (BOP)	Non-1E 4kV Bus 2A08 Fails to Auto Transfer on Reactor Trip

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

Actual	Target Quantitative Attributes
9	Total malfunctions (5-8)
3	Malfunctions after EOP entry (1-2)
5	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

Facility:	SONGS 2 & 3	Scenario No.:	3	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 100 Power MOC

Turnover: Perform post-maintenance testing of CEA 55. Maintain steady state conditions.

Critical Tasks:

- Emergency Borate the RCS following a failure of two full-length CEAs to insert on the Reactor trip per SO23-12-1, Standard Post Trip Actions.
- Isolate S/G E-088 prior to exiting SO23-12-5, Excess Steam Demand Event.
- Perform HPSI Throttle/Stop prior to the Pressurizer going solid per SO23-12-11, EOI Supporting Attachments.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	SG05A	I (BOP, SRO) TS (SRO)	S/G E-088 Level Transmitter LT-1123-1 fails high
2 (15 min)		N (RO)	Exercise CEA 55 for post-maintenance testing
3 (30 min)	RD5503	I (RO, SRO) TS (SRO)	CEA 55 Drop ~ 50”
4 (45 min)		N (RO, BOP, SRO)	Rapid Power Reduction to 85%
5 (50 min)	TP02B TP08A	C (BOP)	TPCW Pump O/C, Standby Pump Fails to Auto Start
6 (55 min)	FW04B	M (RO, BOP, SRO)	MFW Rupture (S/G E-089) Inside Containment (50% severity, 15 minute ramp)
7 (60 min)	RD5502 RD5802	R (RO, SRO)	Two Full Length CEAs Fail to Fully Insert on Reactor Trip
8 (65 min)	RP01E	C (RO)	LPSI P-016 Fails to Auto Start on SIAS

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

Actual	Target Quantitative Attributes
6	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
3	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

Facility:	SONGS 2 & 3	Scenario No.:	4	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 100% Power MOC

Turnover: Maintain steady state conditions.

Critical Tasks:

- Transfer the CCW Non-Critical Loop prior to exceeding an RCP operating temperature limits following a loss of Train A SWC Pump P-112.
- Manually start a HPSI pump following an O/C on HPSI Pump P-018 and failure of HPSI Pump P-019 to auto start on SIAS.
- Manually initiate CIAS following a failure of CIAS to automatically actuate on high containment pressure prior to exiting SO23-12-1, Standard Post Trip Actions.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	SC01A	C (BOP, SRO) TS (SRO)	Train A Saltwater Cooling Pump P-112 Shaft Seizure
2 (20 min)	RX04B	I (RO, SRO)	Pressurizer Pressure Control Channel Transmitter PT-0100Y Fails High
3 (40 min)	ED07B	C (RO, BOP, SRO) TS (SRO)	Loss of Vital Bus Y02
4 (45 min)	SWC LP	C (BOP, SRO)	Stator Water Cooling Pump P-291 OC Trip, P-290 Fails to Auto Start
5 (50 min)	RD1501	M (RO, BOP, SRO)	Ejected CEA (LBLOCA)
6 (50 min)	RP01P	C (BOP)	Motor Driven Auxiliary Feedwater Pump P-141 Fails to Auto Start on EFAS
7 (50 min)	EC08DA RP01C	I (RO/BOP)	HPSI P-018 O/C Trip on SIAS, HPSI P-019 Fails to Auto Start on SIAS
8 (55 min)	PPS LP	I (RO/BOP)	CIAS Fails to Auto Actuate

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

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
3	Malfunctions after EOP entry (1-2)
3	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

Facility:	SONGS 2 & 3	Scenario No.:	5	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 100% Power MOC

Turnover: Maintain steady state conditions.

Critical Tasks:

- Restore CCW flow to the RCPs prior to exceeding RCP operating temperature limits per SO23-13-7, Loss of Component Cooling Water / Saltwater Cooling.
- Manually initiate Containment Spray prior to exceeding Containment temperature and pressure limits following a failure of Containment Spray to automatically actuate.
- Stabilize RCS temperature following an ESDE from S/G E-088.
- Isolate S/G E-088 within 30 minutes of entering SO23-12-9, Functional Recovery.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	RC16B	I (RO, SRO) TS (SRO)	Pressurizer Level Control Channel Transmitter LT-0110-2 fails low
2 (20 min)	CC06B CCW LP	C (BOP, SRO) TS (SRO)	CCW Pump P-025 O/C, P-024 fails to start
3 (30 min)	CV03C CV04C	C (RO, SRO)	RCP P-003 Upper and Middle Seal Failures
4 (50 min)		N (RO, BOP, SRO)	Rapid Power Reduction
5 (55 min)	OBE LP SG01A	M (RO, BOP, SRO)	Earthquake (OBE w/o MFW Pump Trip) 400 GPM SGTR on S/G E-088
6 (55 min)	MS03A	M (RO, BOP, SRO)	ESDE inside containment from S/G E-088 on Reactor Trip
7 (55 min)	TU07	I (BOP)	Main Turbine Fails to Trip on Reactor Trip
8 (60 min)	PPS LP	I (RO)	CSAS Fails to Auto Actuate

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

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
3	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
2	Major transients (1-2)
3	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
4	Critical tasks (2-3)

Facility:	SONGS 2 & 3	Scenario No.:	6	Op Test No.:	October 2012 NRC
Examiners:		Operators:			

Initial Conditions: 4% Reactor Power MOC

Turnover: Raise power to 18% and stabilize for > 20% power surveillances.

Critical Tasks:

- Manually trip the Reactor within one minute of the failure of the Reactor Trip Pushbutton failure to trip the Reactor.
- Restore power to 1E 4kV bus 2A04 prior to exiting SO23-12-1, Standard Post Trip Actions.
- Manually start HPSI Pump P-018 (or P-017) following the restoration of power to 1E 4kV bus 2A04 to establish minimum HPSI flow.

Event No.	Malf. No.	Event Type*	Event Description
1 (20 min)		R (RO, BOP, SRO)	Raise Reactor Power to 18%
2 (30 min)	CS05C	I (RO, SRO) TS (SRO)	RWST Level Transmitter LT-0305-3 Fails Low
3 (40 min)	RX08	C (BOP, SRO)	SBCS Valves Fail Open
4 (50 min)	ED11	I (RO, BOP, SRO)	Loss of Control Room Annunciators
5 (55 min)	RC03	M (RO, BOP, SRO) TS (SRO)	400 GPM Steam Generator Tube Rupture (600 second ramp)
6 (55 min)	RP02A RP02B	C (RO, SRO)	Failure of All Reactor Trip Pushbuttons to Trip the Reactor
7 (55 min)	PG24	M (RO, BOP, SRO)	Loss of Offsite Power on Reactor Trip
8 (55 min)	ED03B	C (BOP)	1E 4kV Bus 2A06 O/C Trip on Reactor Trip
9 (60 min)	ELEC LP	C (BOP)	Reserve Aux Transformer breaker fails to open on Rx Trip (2G002 O/P breaker will not close until RAT breaker is opened manually).
10 (65 min)	RP01BA	C (RO)	HPSI Pump P-018 Fails to Start on SIAS

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

Actual	Target Quantitative Attributes
9	Total malfunctions (5-8)
4	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
2	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5												
	Applicants											
Competencies	SROU-1				SROU-2				SROU-3			
	SCENARIO				SCENARIO				SCENARIO			
	1	2			1	4			1	4		
Interpret/Diag-nose Events and Conditions	1,2,3,5, 7,8,9,1 0,11	1,2,3,4, 5,6,8,			1,2,3,5, 7,8,9,10 ,11	ALL			1,2,3,5, 7,8,9,10 ,11	ALL		
Comply With and Use Procedures (1)	ALL	ALL			ALL	ALL			ALL	ALL		
Operate Control Boards (2)	N/A	N/A			N/A	N/A			N/A	N/A		
Communicate and Interact	ALL	ALL			ALL	ALL			ALL	ALL		
Demonstrate Supervisory Ability (3)	ALL	ALL			ALL	ALL			ALL	ALL		
Comply With and Use Tech. Specs. (3)	1,3	1,3			1,3	1,3			1,3	1,3		

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5												
	Applicants											
Competencies	SROU-4				SROI-1				SROI-2			
	SCENARIO				SCENARIO				SCENARIO			
	1	4			1	2	5		1	5	5	
Interpret/Diag-nose Events and Conditions	1,2,3,5, 7,8,9,1 0,11	ALL			1,3,8	1,2,3,5, 7,9	1,2,3, 5,6,8		1,3,8	1,2,3,5, 6,8		
Comply With and Use Procedures (1)	ALL	ALL			1,3,4,8	1,2,5,7, 9	ALL		1,3,4,8	ALL		
Operate Control Boards (2)	N/A	N/A			1,3,4,5, 8	1,2,5,7, 9	N/A		1,3,4,5, 8	N/A		
Communicate and Interact	ALL	ALL			ALL	ALL	ALL		ALL	ALL		
Demonstrate Supervisory Ability (3)	ALL	ALL			N/A	N/A	ALL		N/A	ALL		
Comply With and Use Tech. Specs. (3)	1,3	1,3			N/A	N/A	1,2		N/A	1,2		

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5

Competencies	Applicants											
	SROI-3				SROI-4				SROI-5			
	SCENARIO				SCENARIO				SCENARIO			
	1	5			1	5			3	5		
Interpret/Diagnose Events and Conditions	1,3,8	1,2,3,5,6,8			1,3,8	1,2,3,5,6,8			1,3,5,6,7	1,3,5,6,8		
Comply With and Use Procedures (1)	1,3,4,8	ALL			1,3,4,8	ALL			ALL	1,3,4,5,8		
Operate Control Boards (2)	1,3,4,5,8	N/A			1,3,4,5,8	N/A			N/A	1,3,4,5,8		
Communicate and Interact	ALL	ALL			ALL	ALL			ALL	ALL		
Demonstrate Supervisory Ability (3)	N/A	ALL			N/A	ALL			ALL	N/A		
Comply With and Use Tech. Specs. (3)	N/A	1,2			N/A	1,2			1,3	N/A		

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5

Competencies	Applicants											
	SROI-6				SROI-7				SROI-8			
	SCENARIO				SCENARIO				SCENARIO			
	3	5			3	5			3	5		
Interpret/Diag-nose Events and Conditions	1,3,5,6,7	1,3,5,6,8			1,3,5,6,7	1,3,5,6,8			1,3,5,6,7	1,3,5,6,8		
Comply With and Use Procedures (1)	ALL	1,3,4,5,8			ALL	1,3,4,5,8			ALL	1,3,4,5,8		
Operate Control Boards (2)	N/A	1,3,4,5,8			N/A	1,3,4,5,8			N/A	1,3,4,5,8		
Communicate and Interact	ALL	ALL			ALL	ALL			ALL	ALL		
Demonstrate Supervisory Ability (3)	ALL	N/A			ALL	N/A			ALL	N/A		
Comply With and Use Tech. Specs. (3)	1,3	N/A			1,3	N/A			1,3	N/A		

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5

Competencies	Applicants											
	SROI-9				RO-1				RO-2			
	SCENARIO				SCENARIO				SCENARIO			
	2	4			1	3	4		1	3	4	
Interpret/Diag-nose Events and Conditions	4,5,6,8	ALL			2,5,7,9, 10,11	3,6,7, 8	1,3,4, 5,6,7, 8		2,5,7,9, 10,11	3,6,7, 8	1,3,4, 5,6,7, 8	
Comply With and Use Procedures (1)	2,4,5,8	ALL			2,9,10, 11	2,3,4,7	1,3,4, 6,8		2,9,10, 11	2,3,4,7	1,3,4, 6,8	
Operate Control Boards (2)	2,4,5,6, 8	N/A			2,4,9,10 ,11	2,3,4,6, 7,8	1,3,4, 6,8		2,4,9,10 ,11	2,3,4,6, 7,8	1,3,4, 6,8	
Communicate and Interact	ALL	ALL			ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)	N/A	ALL			N/A	N/A	N/A		N/A	N/A	N/A	
Comply With and Use Tech. Specs. (3)	N/A	1,3			N/A	N/A	N/A		N/A	N/A	N/A	

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5

Competencies	Applicants											
	RO-3				RO-4				RO-5			
	SCENARIO				SCENARIO				SCENARIO			
	1	3	4		1	3	4		3	4	5	
Interpret/Diag-nose Events and Conditions	2,5,7,9, 10,11	3,6,7 ,8	1,3,4 ,5,6, 7,8		2,5,7,9, 10,11	3,6,7, 8	1,3,4, 5,6,7, 8		1,5,6	2,3,5, 9	2,5,6, 7	
Comply With and Use Procedures (1)	2,9,10, 11	2,3,4,7	1,3,4 ,6,8		2,9,10, 11	2,3,4,7	1,3,4, 6,8		1,4,5	2,3,9	2,4,6, 7	
Operate Control Boards (2)	2,4,9,1 0,11	2,3,4,6, 7,8	1,3,4 ,6,8		2,4,9,10 ,11	2,3,4,6, 7,8	1,3,4, 6,8		1,4,5	2,3,5, 9	2,4,6, 7	
Communicate and Interact	ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A	
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A	

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 & 3 Date of Examination: 10/12/12 Operating Test Number: NRC 1, 2, 3, 4, & 5												
Competencies	Applicants											
	RO-6				RO-7				RO-8			
	SCENARIO				SCENARIO				SCENARIO			
	3	4	5		3	4	5		3	4	5	
Interpret/Diag-nose Events and Conditions	1,5,6	2,3,5,9	2,5,6,7		1,5,6	2,3,5,9	2,5,6,7		1,5,6	2,3,5,9	2,5,6,7	
Comply With and Use Procedures (1)	1,4,5	2,3,9	2,4,6,7		1,4,5	2,3,9	2,4,6,7		1,4,5	2,3,9	2,4,6,7	
Operate Control Boards (2)	1,4,5	2,3,5,9	2,4,6,7		1,4,5	2,3,5,9	2,4,6,7		1,4,5	2,3,5,9	2,4,6,7	
Communicate and Interact	ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A	
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A	

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Facility: SONGS 2 and 3 Date of Exam: 10/12/12 Operating Test Number: 1

APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		SONGS #1			SONGS #2			SONGS #3			SONGS #4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROU-1	RX	4			8									**2**			**0**
	NOR	-			2									**1**			**1**
	I/C	1,2,3,7, 8,9,10			1,4,5									**10**			**2**
	MAJ	6,11			6									**3**			**1**
	TS	1,3			1,3									**4**			**2**
SROU-2	RX	4									-			**1**			**0**
	NOR	-									-			**0**			**1**
	I/C	1,2,3,7, 8,9,10									1,2, 3,4, 5,7			**13**			**2**
	MAJ	6,11									8			**3**			**1**
	TS	1,3									1,3			**4**			**2**
SROU-3	RX	4									-			**1**			**0**
	NOR	-									-			**0**			**1**
	I/C	1,2,3,7, 8,9,10									1,2, 3,4, 5,7			**13**			**2**
	MAJ	6,11									8			**3**			**1**
	TS	1,3									1,3			**4**			**2**
SROU-4	RX	4									-			**1**			**0**
	NOR	-									-			**0**			**1**
	I/C	1,2,3,7, 8,9,10									1,2, 3,4, 5,7			**13**			**2**
	MAJ	6,11									8			**3**			**1**
	TS	1,3									1,3			**4**			**2**
SROI-1	RX		4				-	*-						**1**		**1**	
	NOR		-				2	*5						**2**		**1**	
	I/C		1,3,5 ,7,8				1,5, 7,9	*1,2 ,3						**12**		**4**	
	MAJ		6,11				6	*5,6						**5**		**2**	
	TS		-				-	*1,2						**2**		**2**	
SROI-2	RX		4					*-						**1**		**1**	
	NOR		-					*5						**1**		**1**	
	I/C		1,3,5 ,7,8					*1,2 ,3						**8**		**4**	
	MAJ		6,11					*5,6						**4**		**2**	
	TS		-					*1,2						**2**		**2**	

*Scenario #5

Facility: SONGS 2 and 3																			
APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		SONGS #1			SONGS #2			SONGS #3			SONGS #4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROI-3	RX		4					*-						**1**		**1**	
	NOR		-					*5						**1**		**1**	
	I/C		1,3,5,7,8					*1,2,3						**8**		**4**	
	MAJ		6,11					*5,6						**4**		**2**	
	TS		-					*1,2						**2**		**2**	
SROI-4	RX		4					*-						**1**		**1**	
	NOR		-					*5						**1**		**1**	
	I/C		1,3,5,7,8					*1,2,3						**8**		**4**	
	MAJ		6,11					*5,6						**4**		**2**	
	TS		-					*1,2						**2**		**2**	
SROI-5	RX							4				*-		**1**		**1**	
	NOR							-				*5		**1**		**1**	
	I/C							1,3				*1,3,8		**5**		**4**	
	MAJ							6				*5,6		**3**		**2**	
	TS							1,3				*-		**2**		**2**	
SROI-6	RX							4				*-		**1**		**1**	
	NOR							-				*5		**1**		**1**	
	I/C							1,3				*1,3,8		**5**		**4**	
	MAJ							6				*5,6		**3**		**2**	
	TS							1,3				*-		**2**		**2**	
SROI-7	RX							4				*-		**1**		**1**	
	NOR							-				*5		**1**		**1**	
	I/C							1,3				*1,3,8		**5**		**4**	
	MAJ							6				*5,6		**3**		**2**	
	TS							1,3				*-		**2**		**2**	
SROI-8	RX							4				*-		**1**		**1**	
	NOR							-				*5		**1**		**1**	
	I/C							1,3				*1,3,8		**5**		**4**	
	MAJ							6				*5,6		**3**		**2**	
	TS							1,3				*-		**2**		**2**	

*Scenario #5

Facility: SONGS 2 and 3 Date of Exam: 10/12/12 Operating Test Number: 1

APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		SONGS #1			SONGS #2			SONGS #3			SONGS #4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROI-9	RX					8					-			**1**		**1**	
	NOR					2					-			**1**		**1**	
	I/C					4,5					1,2, 3,4, 5,7			**8**		**4**	
	MAJ					6					8			**2**		**2**	
	TS					-					1,3			**2**		**2**	
RO-1	RX			4					4,7				-	**3**	**1**		
	NOR			-					2				-	**1**	**1**		
	I/C			2,7, 9,10					3,7				1,3, 4,5, 6,7	**12**	**4**		
	MAJ			6,11					6				8	**4**	**2**		
	TS			-					-				-	**0**	**0**		
RO-2	RX			4					4,7				-	**3**	**1**		
	NOR			-					2				-	**1**	**1**		
	I/C			2,7, 9,10					3,7				1,3, 4,5, 6,7	**12**	**4**		
	MAJ			6,11					6				8	**4**	**2**		
	TS			-					-				-	**0**	**0**		
RO-3	RX			4					4,7				-	**3**	**1**		
	NOR			-					2				-	**1**	**1**		
	I/C			2,7, 9,10					3,7				1,3, 4,5, 6,7	**12**	**4**		
	MAJ			6,11					6				8	**4**	**2**		
	TS			-					-				-	**0**	**0**		
RO-4	RX			4					4,7				-	**3**	**1**		
	NOR			-					2				-	**1**	**1**		
	I/C			2,7, 9,10					3,7				1,3, 4,5, 6,7	**12**	**4**		
	MAJ			6,11					6				8	**4**	**2**		
	TS			-					-				-	**0**	**0**		
RO-5	RX						*-			4		-		**1**	**1**		
	NOR						*5			-		-		**1**	**1**		
	I/C						*2,7			1,5		2,3, 5,9		**8**	**4**		
	MAJ						*5,6			6		8		**4**	**2**		
	TS						*-			-		-		**0**	**0**		

*Scenario #5

Facility: SONGS 2 and 3 Date of Exam: 10/12/12 Operating Test Number: 1

APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		SONGS #1			SONGS #2			SONGS #3			SONGS #4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO-6	RX						*-			4		-		**1**	**1**		
	NOR						*5			-		-		**1**	**1**		
	I/C						*2,7			1,5		2,3, 5,9		**8**	**4**		
	MAJ						*5,6			6		8		**4**	**2**		
	TS						*-			-		-		**0**	**0**		
RO-7	RX						*-			4		-		**1**	**1**		
	NOR						*5			-		-		**1**	**1**		
	I/C						*2,7			1,5		2,3, 5,9		**8**	**4**		
	MAJ						*5,6			6		8		**4**	**2**		
	TS						*-			-		-		**0**	**0**		
RO-8	RX						*-			4		-		**1**	**1**		
	NOR						*5			-		-		**1**	**1**		
	I/C						*2,7			1,5		2,3, 5,9		**8**	**4**		
	MAJ						*5,6			6		8		**4**	**2**		
	TS						*-			-		-		**0**	**0**		

*Scenario #5

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