

Facility:		Susquehanna		Date of Exam:		January 2015												
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	A2		G*	Total	
1. Emergency & Plant Evolutions	1	3	3	4				4	3			3	20	3		4	7	
	2	1	1	1				1	1			2	7	2		1	3	
	Tier Totals	4	4	5				5	4			5	27	5		5	10	
2. Plant Systems	1	2	1	2	3	3	3	3	2	2	3	2	26	3		2	5	
	2	2	1	1	1	1	1	1	1	1	1	1	12	0	1	2	3	
	Tier Totals	4	2	3	4	4	4	4	3	3	4	3	38	4		4	8	
3. Generic Knowledge & Abilities Categories				1		2		3		4		10	1		2	3	4	7
				3		2		3		2			2		2	2	1	

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 that are not included on the outline should be added. Refer to section D.1.b of ES-401, for guidance regarding 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 KAs 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/A's
8. 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 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 10CFR55.43

SSES 2015 Retake
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295005 Main Turbine Generator Trip / 3					X		AA2.07 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Reactor water level	3.6	76
700000 Generator Voltage and Electric Grid Disturbances					X		AA2.10 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Generator overheating and the required actions	3.8	77
295028 High Drywell Temperature / 5					X		EA2.06 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Torus/suppression chamber air space temperature: Plant-Specific	3.7	78
295021 Loss of Shutdown Cooling / 4						X	2.4.11 - Knowledge of abnormal condition procedures.	4.2	79
295030 Low Suppression Pool Water Level / 5						X	2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	80
295024 High Drywell Pressure / 5						X	2.4.6 - Knowledge of EOP mitigation strategies.	4.7	81
295003 Partial or Complete Loss of AC Power / 6						X	2.1.20 - Ability to interpret and execute procedure steps.	4.6	82
295026 Suppression Pool High Water Temperature / 5	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Steam condensation	3.5	39
295030 Low Suppression Pool Water Level / 5	X						EK1.03 - Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Heat capacity	3.8	40
295018 Partial or Complete Loss of CCW / 8	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on component/system operations	3.5	41
295005 Main Turbine Generator Trip / 3		X					AK2.02 - Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Feedwater temperature	2.9	42
295024 High Drywell Pressure / 5		X					EK2.18 - Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Ventilation	3.3	43
295006 SCRAM / 1		X					AK2.07 - Knowledge of the interrelations between SCRAM and the following: Reactor pressure control	4.0	44
295038 High Off-site Release Rate / 9			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Emergency depressurization	3.6	45
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Idle loop flow	2.8	46

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EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295003 Partial or Complete Loss of AC Power / 6			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Load shedding	3.5	47
295028 High Drywell Temperature / 5				X			EA1.04 - Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure	3.9	48
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.01 - Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Reactor Protection System	4.6	49
295023 Refueling Accidents / 8				X			AA1.08 - Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Radiation monitoring equipment	3.4	50
600000 Plant Fire On-site / 8					X		AA2.16 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Vital equipment and control systems to be maintained and operated during a fire	3.0	51
295016 Control Room Abandonment / 7					X		AA2.06 - Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT: Cooldown rate	3.3	52
700000 Generator Voltage and Electric Grid Disturbances					X		AA2.04 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: VARs outside capability curve	3.6	53
295025 High Reactor Pressure / 3						X	2.2.40 - Ability to apply technical specifications for a system.	3.4	54
295004 Partial or Complete Loss of DC Power / 6						X	2.4.9 - Knowledge of low power / shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	3.8	55
295019 Partial or Complete Loss of Instrument Air / 8						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	56
295021 Loss of Shutdown Cooling / 4				X			AA1.02 - Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: RHR/shutdown cooling	3.5	57
295031 Reactor Low Water Level / 2			X				EK3.02 - Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL: Core coverage	4.4	58
K/A Category Totals:	3	3	4	4	3/3	3/4	Group Point Total:	20/7	

SSES 2015 Retake
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295029 High Suppression Pool Water Level / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Suppression pool water level	3.9	83
295010 High Drywell Pressure / 5						X	2.4.30 - Knowledge of events related to system operation / status that must be reported to internal organizations or external agencies, such as the state, the NRC, or the transmission system operator.	4.1	84
295015 Incomplete SCRAM / 1					X		AA2.02 - Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Control rod position	4.2	85
295008 High Reactor Water Level / 2	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR WATER LEVEL : Feed flow/steam flow mismatch	3.2	59
295032 High Secondary Containment Area Temperature / 5		X					EK2.01 - Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA TEMPERATURE and the following: Area/room coolers	3.5	60
295020 Inadvertent Containment Isolation / 5 & 7			X				AK3.07 - Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Suppression pool temperature response	3.4	61
295002 Loss of Main Condenser Vacuum / 3				X			AA1.01 - Ability to operate and/or monitor the following as they apply to LOSS OF MAIN CONDENSER VACUUM: Condensate system	2.6	62
295010 High Drywell Pressure / 5					X		AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Leak rates	3.4	63
295014 Inadvertent Reactivity Addition / 1						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	64
295029 High Suppression Pool Water Level / 5						X	2.4.46 - Ability to verify that the alarms are consistent with the plant conditions.	4.2	65
K/A Category Totals:	1	1	1	1	1/2	2/1	Group Point Total:	7/3	

SSES 2015 Retake
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
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209001 LPCS								X				A2.05 - Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Core spray line break	3.6	86
262001 AC Electrical Distribution								X				A2.06 - Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: De-energizing a plant bus	2.9	87
400000 Component Cooling Water											X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	4.1	88
215005 APRM / LPRM											X	2.4.18 - Knowledge of the specific bases for EOPs.	4.0	89
239002 SRVs								X				A2.04 - Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS actuation	4.1	90
263000 DC Electrical Distribution	X											K1.02 - Knowledge of the physical connections and/or cause-effect relationships between D.C. ELECTRICAL DISTRIBUTION and the following: Battery charger and battery	3.2	1
215004 Source Range Monitor	X											K1.01 - Knowledge of the physical connections and/or cause-effect relationships between SOURCE RANGE MONITOR (SRM) SYSTEM and the following: Reactor protection system	3.6	2
259002 Reactor Water Level Control							X					A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including: Reactor Feedwater flow	3.6	3
239002 SRVs		X										K2.01 - Knowledge of electrical power supplies to the following: SRV solenoids	2.8	4

SSES 2015 Retake
Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
262002 UPS (AC/DC)			X									K3.07 - Knowledge of the effect that a loss or malfunction of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) will have on following: Movement of control rods: Plant-Specific	2.6	5
261000 SGTS			X									K3.06 - Knowledge of the effect that a loss or malfunction of the STANDBY GAS TREATMENT SYSTEM will have on following: Primary containment oxygen content: Mark-I&II	3.0	6
400000 Component Cooling Water				X								K4.01 - Knowledge of CCWS design feature(s) and or interlocks which provide for the following: Automatic start of standby pump	3.4	7
209001 LPCS				X								K4.05 - Knowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s) and/or interlocks which provide for the following: Pump minimum flow	2.6	8
262001 AC Electrical Distribution					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Breaker control	2.6	9
217000 RCIC					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): Flow indication	3.1	10
205000 Shutdown Cooling						X						K6.05 - Knowledge of the effect that a loss or malfunction of the following will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): Component cooling water systems	3.2	11
218000 ADS						X						K6.05 - Knowledge of the effect that a loss or malfunction of the following will have on the AUTOMATIC DEPRESSURIZATION SYSTEM: A.C. power: Plant-Specific	3.0	12
223002 PCIS/Nuclear Steam Supply Shutoff							X					A1.03 - Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF controls including: SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.5	13

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Written Examination Outline
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
211000 SLC							X					A1.08 - Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: RWCU system lineup	3.7	14
215005 APRM / LPRM								X				A2.03 - Ability to (a) predict the impacts of the following on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inoperative trip (all causes)	3.6	15
264000 EDGs								X				A2.05 - Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Synchronization of the emergency generator with other electrical supplies	3.6	16
203000 RHR/LPCI: Injection Mode									X			A3.05 - Ability to monitor automatic operations of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) including: Reactor water level	4.4	17
215003 IRM									X			A3.03 - Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: RPS status	3.7	18
206000 HPCI										X		A4.06 - Ability to manually operate and/or monitor in the control room: Reactor pressure: BWR-2,3,4	4.3	19
300000 Instrument Air										X		A4.01 - Ability to manually operate and/or monitor in the control room: Pressure gauges	2.6	20
212000 RPS											X	2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	4.2	21
211000 SLC											X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	22

**SSES 2015 Retake
Written Examination Outline
Plant Systems – Tier 2 Group 1**

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
261000 SGTS				X								K4.04 - Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: Radioactive particulate filtration	2.7	23
400000 Component Cooling Water						X						K6.07 - Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: Breakers, relays, and disconnects	2.7	24
262001 AC Electrical Distribution										X		A4.05 - Ability to manually operate and/or monitor in the control room: Voltage, current, power, and frequency on A.C. buses	3.3	25
263000 DC Electrical Distribution					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to D.C. ELECTRICAL DISTRIBUTION: Hydrogen generation during battery charging.	2.6	26
K/A Category Totals:	2	1	2	3	3	3	3	2/3	2	3	2/2	Group Point Total:	26/5	

**SSES 2015 Retake
Written Examination Outline
Plant Systems – Tier 2 Group 2**

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
239001 Main and Reheat Steam								X				A2.07 - Ability to (a) predict the impacts of the following on the MAIN AND REHEAT STEAM SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Main steam area high temperature or differential temperature high	3.9	91
230000 RHR/LPCI: Torus/Pool Spray Mode											X	2.4.41 - Knowledge of the emergency action level thresholds and classifications.	4.6	92
271000 Off-gas											X	2.2.3 - (multi-unit license) Knowledge of the design, procedural, and operational differences between units.	3.9	93
241000 Reactor/Turbine Pressure Regulator	X											K1.04 - Knowledge of the physical connections and/or cause-effect relationships between REACTOR/TURBINE PRESSURE REGULATING SYSTEM and the following: Reactor steam flow	3.7	27
239001 Main and Reheat Steam		X										K2.01 - Knowledge of electrical power supplies to the following: Main steam isolation valve solenoids	3.2	28
230000 RHR/LPCI: Torus/Pool Spray Mode			X									K3.02 - Knowledge of the effect that a loss or malfunction of the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE will have on following: Suppression pool temperature	3.3	29
215002 RBM				X								K4.01 - Knowledge of ROD BLOCK MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: Prevent control rod withdrawal: BWR-3,4,5	3.4	30
201001 CRD Hydraulic					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to CONTROL ROD DRIVE HYDRAULIC SYSTEM: Flow indication	2.6	31
290003 Control Room HVAC						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the CONTROL ROOM HVAC: Component cooling water systems	2.7	32
233000 Fuel Pool Cooling/Cleanup							X					A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the FUEL POOL COOLING AND CLEAN-UP controls including: Pool level	2.9	33

**SSES 2015 Retake
Written Examination Outline
Plant Systems – Tier 2 Group 2**

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		Imp.	Q#
201003 Control Rod and Drive Mechanism								X				A2.08 - Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low HCU accumulator pressure/high level	3.8	34
201002 RMCS									X			A3.03 - Ability to monitor automatic operations of the REACTOR MANUAL CONTROL SYSTEM including: Rod drift alarm	3.2	35
214000 RPIS										X		A4.02 - Ability to manually operate and/or monitor in the control room: Control rod position	3.8	36
204000 RWCU											X	2.4.35 - Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects.	3.8	37
286000 Fire Protection	X											K1.08 - Knowledge of the physical connections and/or cause-effect relationships between FIRE PROTECTION SYSTEM and the following: Intake canals: Plant-Specific	3.0	38
K/A Category Totals:	2	1	1	1	1	1	1	1/1	1	1	1/2	Group Point Total:	12/3	

Facility: Susquehanna		Date: January 2015				
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.			3.1	94
	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.			4.7	100
	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	4.1	66		
	2.1.21	Ability to verify the controlled procedure copy.	3.5	67		
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.	2.9	75		
	Subtotal			3		2
2. Equipment Control	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	95
	2.2.7	Knowledge of the process for conducting special or infrequent tests.			3.6	99
	2.2.43	Knowledge of the process used to track inoperable alarms	3.0	68		
	2.2.35	Ability to determine Technical Specification Mode of Operation.	3.6	69		
	Subtotal			2		2
3. Radiation Control	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.			3.8	96
	2.3.14	Knowledge of radiation or containment hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	98
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	70		

	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	71		
	2.3.11	Ability to control radiation releases.	3.8	74		
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.6	Knowledge of EOP mitigation strategies.			4.7	97
	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.6	72		
	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	73		
Subtotal			2		1	
Tier 3 Point Total				10		7

ES-401**Record of Rejected K/As****Form ES-401-4**

Tier / Group	Randomly Selected K/A	Reason for Rejection
The following topics / K/As were excluded from the systematic and random sampling process:		
1 / 1	295027 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark II containment.
1 / 2	295011 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark II containment.
2 / 1	207000 Isolation (Emergency) Condenser	This system is not installed at the facility.
2 / 1	209002 HPCS	This system is not installed at the facility.
2 / 2	201004 RSCS	This system is no longer installed at the facility.
2 / 2	201005 RCIS	This system is not installed at the facility.
2 / 2	239003 MSIV Leakage Control	This system is no longer installed at the facility.

The following K/As were rejected following the systematic and random sampling process:		
1 / 1	<p>Question 50</p> <p>295023 Refueling Accidents</p> <p>AA1.08 - Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Containment building ventilation: Mark-III</p>	<p>The facility has a Mark-II containment, not a Mark-III.</p> <p>Randomly resampled K/A 295023 Refueling Accidents AA1.04 - Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Radiation monitoring equipment.</p>
1 / 2	<p>Question 85</p> <p>295014 Inadvertent Reactivity Addition</p> <p>AA2.03 - Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of reactivity addition</p>	<p>A discriminating SRO-level question cannot be developed for the randomly sampled K/A. Additionally, this topic is oversampled (Questions 64 and 85).</p> <p>Randomly resampled K/A 295015 Incomplete SCRAM AA2.02 - Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Control rod position.</p>
1 / 2	<p>Question 63</p> <p>295010 High Drywell Pressure</p> <p>AA2.05 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell air cooler drain flow: BWR-6</p>	<p>The facility is a BWR-4, not a BWR-6.</p> <p>Randomly resampled K/A 295010 High Drywell Pressure AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Leak rates.</p>
2 / 1	<p>Question 89</p> <p>215005 APRM / LPRM</p> <p>2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.</p>	<p>The randomly sampled generic K/A does not support developing an SRO-level question for the given system.</p> <p>Randomly resampled K/A 215005 APRM / LPRM 2.4.18 - Knowledge of the specific bases for EOPs.</p>

2 / 1	<p>Question 3</p> <p>259002 Reactor Water Level Control</p> <p>K2.02 - Knowledge of electrical power supplies to the following: Feedwater coolant injection (FWCI) initiation logic: FWCI/HPCI</p>	<p>The facility does not have a Feedwater coolant injection mode for the Feedwater system.</p> <p>Randomly resampled K/A 259002 Reactor Water Level Control A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including: Reactor Feedwater flow.</p>
2 / 1	<p>Question 15</p> <p>215005 APRM / LPRM</p> <p>A2.10 - Ability to (a) predict the impacts of the following on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Changes in void concentration</p>	<p>A question could not be developed for the randomly sampled K/A without overlapping GFE material.</p> <p>Randomly resampled K/A 215005 APRM / LPRM A2.03 - Ability to (a) predict the impacts of the following on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inoperative trip (all causes).</p>
2 / 2	<p>Question 36</p> <p>214000 RPIS</p> <p>A4.01 - Ability to manually operate and/or monitor in the control room: RCIS rod action control bypass switches</p>	<p>The facility does not have RCIS.</p> <p>Randomly resampled K/A 214000 RPIS A4.02 - Ability to manually operate and/or monitor in the control room: Control rod position.</p>
1 / 2	<p>Question 83</p> <p>295029 High Suppression Pool Water Level</p> <p>EA2.03 - Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Drywell/containment water level</p>	<p>An acceptable question could not be developed for the randomly sampled K/A without overlapping the previous NRC exam's Question 65.</p> <p>Randomly resampled K/A 295029 High Suppression Pool Water Level EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Suppression pool water level.</p>

2 / 1	<p>Question 90 239002 SRVs</p> <p>A2.05 - Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low reactor pressure</p>	<p>An acceptable question could not be written at the SRO license level for the randomly sampled K/A.</p> <p>Randomly resampled K/A 239002 SRVs A2.04 - Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS actuation.</p>
2 / 1	<p>Question 21 212000 RPS</p> <p>2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.</p>	<p>An acceptable question could not be developed at the RO license level for the randomly sampled K/A.</p> <p>Randomly resampled K/A 212000 RPS 2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.</p>
1 / 1	<p>Question 40 295030 Low Suppression Pool Water Level</p> <p>EK1.02 - Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Pump NPSH</p>	<p>An acceptable question could not be developed for the randomly sampled K/A without overlapping Question 80 (SRO Question 5).</p> <p>Randomly resampled K/A 295030 Low Suppression Pool Water Level EK1.03 - Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Heat capacity.</p>
1 / 1	<p>Question 53 700000 Generator Voltage and Electric Grid Disturbances</p> <p>AA2.06 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Generator frequency limitations</p>	<p>An acceptable question could not be developed for the randomly sampled KA due to lack of documented system or procedural limitations for Generator frequency limitations.</p> <p>Randomly resampled K/A 700000 Generator Voltage and Electric Grid Disturbances AA2.04 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: VARs outside capability curve.</p>

3	<p>Question 68</p> <p>2.2.41 - Ability to obtain and interpret station electrical and mechanical drawings.</p>	<p>An acceptable and discriminating question could not be developed at the RO license level for the randomly sampled K/A.</p> <p>Randomly resampled K/A 2.2.43 - Knowledge of the process used to track inoperable alarms.</p>
3	<p>Question 69</p> <p>2.2.40 - Ability to apply technical specifications for a system.</p>	<p>The randomly sampled K/A has already been tested on Question 54. Resampling to limit overlap.</p> <p>Randomly resampled K/A 2.2.35 - Ability to determine Technical Specification Mode of Operation.</p>
3	<p>Question 73</p> <p>2.4.41 - Knowledge of the emergency action level thresholds and classifications.</p>	<p>An acceptable question could not be developed at the RO license level for the randomly sampled K/A.</p> <p>Randomly resampled K/A 2.4.13 - Knowledge of crew roles and responsibilities during EOP usage.</p>

Facility: **SSES Units 1 and 2**Date of Examination: **January 19-30, 2015**Exam Level: RO ☐ SRO ☒Operating Test No.: **Loc26 NRC Retake**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S,D	Compute Average Drywell Air Temperature 00.SO.2103.101 SO-100-007, K/A 2.2.12 (3.4)
Conduct of Operations	R,D	Determine Estimated Time to 200 °F and Required T.S. Action 49.ON.1869.103 ON-149-001, K/A 2.1.25 (4.2)
Equipment Control	R,D	Authorize Bypassing Rod Block Monitor 00.AD.1021.101 NDAP-QA-0338, K/A 2.1.37 (4.6)
Radiation Control	R,D	Review and Approve Rad Liq Release Permit 00.AD.2175.001 OP-069-050, K/A 2.3.6 (3.7)
Emergency Procedures/Plan	R,M	Classify an Emergency Condition 00.EP.1132.180 EP-PS-100, K/A 2.4.41 (4.6)

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

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom
 (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)

Facility:	SSES Units 1 and 2		Date of Examination:	January 19-30, 2014	
Exam Level:	RO <input type="checkbox"/>	SRO-I <input checked="" type="checkbox"/>	SRO-U <input type="checkbox"/>	Operating Test No.:	Loc26 NRC Retake
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	
a. Respond to Multiple Notching Rod (55.ON.2003.151)			A,D,S	1	
b. HPCI Full Flow Test Quarterly Surveillance (52.SO.1964.151)			A,D,S	2	
c. Main Steam Line Isolation Recovery (84.ON.003.101)			D,L,S	3	
d. Perform Manual Comp by Comp S/U of Core Spray System IAW OP-151-001 (51.OP.1934.101)			E,N,S	4	
e. Placing RHRSW I/S for Suppression Pool Cooling (16.OP.1354.151)			A,D,S	5	
f. Implement Placing Alternate TBCCW Pump In Service (15.OP.1347.151)			A,D,S	8	
g. Restore Offgas System IAW ON-143-001			E,N,S	9	
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)					
i. Shifting CRD Drive Water Filters (55.OP.2016.001)			D,R	1	
j. Establish and Maintain Reactor Vessel Level (RCIC) not injecting) from U2 RSDP			D,E,R	2	
k. Start Containment Hydrogen Recombiner (73.OP.011.202)			D,E	9	
[@] 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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Facility: **SSES Units 1 and 2** Scenario No.: **1** Op-Test No.: **LOC26R**

Examiners: _____ Operators: _____

Initial Conditions **Unit 1 87% power after control rod pattern adjustment, EOL**
EHC pump 1B OOS for maintenance

Turnover **Raise power to 95% using recirc flow**

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	R SRO,ATC	Raise Power with Recirc Flow per RMR OP-164-002, OP-AD-338
2	cmfRL01_X YC411M600 B	C SRO	SLC Squib Valve Continuity Loss AR-107-A03, Technical Specifications
3	cmfRL02_E 111K11A mfRH14900 4B	C SRO,BOP	RHR Pump 1B Spurious Start and Suction Flange Leak ON-169-002, EO-100-104, Technical Specifications
4	aiHS10001	C SRO,ATC	Main Generator Auto Voltage Regulator Failure ON-198-001
5	mfHP15200 9 cmfMV06_HV 155F002(3)	M ALL	HPCI Steam Leak into Reactor Building, HPCI Fails to Automatically Isolate EO-100-113
6	cmfMV01_HV 155F002(3)	I SRO,BOP	HPCI Isolation Valve Power Loss When Manual Closure Attempted EO-100-104, EO-100-112
7	cmfPM04_1 V209A(B)	I SRO,BOP	HPCI Room Coolers Fail to Automatically Start EO-100-104
8	mfTC19302 3B(C)(D)(E)	C SRO,ATC	Four Turbine Bypass Valves Fail Closed EO-100-102
9	mfHP15200 3	M ALL	HPCI Steam Leak in Second Area of Reactor Building EO-100-104, EO-100-112

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Scenario Events	Actual Attributes
1. Total malfunctions (5–8)	2,3,4,5,6,7,8,9	8
2. Malfunctions after EOP entry (1–2)	6,7,8	3
3. Abnormal events (2–4)	3,4	2
4. Major transients (1–2)	5,9	2
5. EOPs entered/requiring substantive actions (1–2)	EO-100-102 EO-100-104	2
6. EOP contingencies requiring substantive actions (0–2)	EO-100-112	1
7. Critical tasks (2–3)		2
CT-1 Manually scram the reactor when any Secondary Containment Area temperature approaches or exceeds Max Safe temperature.		
CT-2 Rapidly depressurize the reactor when two Secondary Containment Areas exceed Max Safe Temperature levels.		

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Scenario Events	Actual Attributes
1. Total malfunctions (5–8)	2,3,4,5,6,7,8	7
2. Malfunctions after EOP entry (1–2)	6,7	2
3. Abnormal events (2–4)	2,3,4	3
4. Major transients (1–2)	5,8	2
5. EOPs entered/requiring substantive actions (1–2)	EO-100-102 EO-100-103	2
6. EOP contingencies requiring substantive actions (0–2)	EO-100-112 EO-100-113	2
7. Critical tasks (2–3)		3
CT-1 Lower Reactor power using one or more of the following methods IAW EO-100-113: <ul style="list-style-type: none"> • Trip Recirculation pumps • Inject boron • Lower Reactor water level 		
CT-2 Insert control rods IAW EO-100-113 Sht. 2.		
CT-3 Perform Rapid Depressurization when RPV level drops to -161" IAW EO-100-102.		