

Facility: Vermont Yankee		Date of Exam: 2/10/14															
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 Evaluations	1	4	4	3				3	3			3	20	4		3	7
	2	1	1	1				1	1			2	7	1		2	3
	Tier Totals	5	5	4				4	4			5	27	5		5	10
2. Plant Systems	1	3	2	2	3	2	2	3	2	3	3	1	26	3		2	5
	2	1	1	1	1	2	1	1	1	1	1	1	12	0	2	1	3
	Tier Totals	4	3	3	4	4	3	4	3	4	4	2	38	5		3	8
3. Generic Knowledge & Abilities				1		2		3		4		10	1	2	3	4	7
				3		2		3		2			1	2	2	2	
<p>Note</p> <ol style="list-style-type: none"> 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). 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. 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. 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. 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. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories. * 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 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. 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 																	

Vermont Yankee
BWR 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#
295023 Refueling Accidents / 8					X		AA2.03 - Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS : Airborne contamination levels	3.8	76
295018 Partial or Total Loss of CCW / 8					X		AA2.05 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : System pressure	2.9	77
600000 Plant Fire On-site / 8					X		AA2.03 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Fire alarm	3.2	78
295005 Main Turbine Generator Trip / 3						X	2.4.20 - Emergency Procedures / Plan: Knowledge of operational implications of EOP warnings, cautions, and notes.	4.3	79
295024 High Drywell Pressure / 5						X	2.4.34 - Emergency Procedures / Plan: Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	4.1	80
295028 High Drywell Temperature / 5						X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.1	81
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA2.01 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Reactor power	4.3	82

Vermont Yankee
BWR 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#
295021 Loss of Shutdown Cooling / 4	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING : Decay heat	3.6	39
295003 Partial or Complete Loss of AC / 6	X						AK1.05 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Failsafe component design	2.6	40
295026 Suppression Pool High Water Temp. / 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	41
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1		X					EK2.04 - Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: SBLC system	4.4	42
295025 High Reactor Pressure / 3		X					EK2.11 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor water level	3.5	43
700000 Generator Voltage and Electric Grid Disturbances		X					AK2.07 - Knowledge of the interrelations between GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES and the following: Turbine/generator control.	3.6	44
295006 SCRAM / 1			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to SCRAM : Reactor water level response	3.8	45

Vermont Yankee
BWR 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#
295028 High Drywell Temperature / 5			X				EK3.06 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : ADS	3.4	46
295016 Control Room Abandonment / 7			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT : Turbine trip	3.7	47
295018 Partial or Total Loss of CCW / 8				X			AA1.02 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : System loads	3.3	48
295031 Reactor Low Water Level / 2				X			EA1.13 - Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL : Reactor water level control	4.3	49
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4				X			AA1.07 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Nuclear boiler instrumentation system	3.1	50
295030 Low Suppression Pool Water Level / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Suppression pool temperature	3.9	51
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	3.5	52

Vermont Yankee
BWR 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#
295019 Partial or Total Loss of Inst. Air / 8					X		AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Instrument air system pressure	3.5	53
295004 Partial or Total Loss of DC Pwr / 6						X	2.2.42 - Equipment Control:: Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	54
295038 High Off-site Release Rate / 9						X	2.2.38 - Equipment Control: Knowledge of conditions and limitations in the facility license.	3.6	55
600000 Plant Fire On-site / 8		X					AK2.04 - Knowledge of the interrelations between PLANT FIRE ON SITE and the following: Breakers, relays, and disconnects	2.5	56
295024 High Drywell Pressure / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : Drywell integrity: Plant-Specific	4.1	57
295023 Refueling Accidents / 8						X	2.4.45 - Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm.	4.1	58
K/A CategoryTotals	4	4	3	3	3/4	3/3	Group Point Total:	20/7	

Vermont Yankee
BWR 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#
295012 High Drywell Temperature / 5					X		AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell temperature	3.9	83
295035 Secondary Containment High Differential Pressure / 5						X	2.4.21 - Emergency Procedures / Plan: 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	84
295020 Inadvertent Cont. Isolation / 5 & 7						X	2.2.37 - Equipment Control: Ability to determine operability and / or availability of safety related equipment.	4.6	85
295017 High Off-site Release Rate / 9	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE : Protection of the general public	3.8	59
295032 High Secondary Containment Area Temperature / 5		X					EK2.02 - Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA TEMPERATURE and the following: Secondary containment ventilation	3.6	60
295013 High Suppression Pool Temperature / 5			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL TEMPERATURE : Suppression pool cooling operation	3.6	61

Vermont Yankee
BWR 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#
295007 High Reactor Pressure / 3				X			AA1.03 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE : RCIC: Plant-Specific	3.4	62
295033 High Secondary Containment Area Radiation Levels / 9					X		EA2.02 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Equipment operability	3.1	63
295012 High Drywell Temperature / 5						X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.2	64
295020 Inadvertent Cont. Isolation / 5 & 7						X	2.4.1 - Emergency Procedures / Plan: Knowledge of EOP entry conditions and immediate action steps.	4.6	65
K/A Category Totals	1	1	1	1	1/1	2/2	Group Point Total:	7/3	

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
223002 PCIS/Nuclear Steam Supply Shutoff								X				A2.01 - Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. electrical distribution failures	3.5	86
261000 SGTS								X				A2.10 - Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low reactor water level: Plant-Specific	3.2	87
205000 Shutdown Cooling											X	2.1.27 - Conduct of Operations: Knowledge of system purpose and / or function.	4.0	88
206000 HPCI											X	2.4.2 - Emergency Procedures / Plan: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.6	89

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
400000 Component Cooling Water								X				A2.04 - Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Radiation monitoring system alarm	3.0	90
261000 SGTS	X											K1.07 - Knowledge of the physical connections and/or cause- effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: Elevated release stack	3.1	1
206000 HPCI	X											K1.06 - Knowledge of the physical connections and/or cause- effect relationships between HIGH PRESSURE COOLANT INJECTION SYSTEM and the following: Suppression chamber: BWR-2,3,4	3.7	2
400000 Component Cooling Water		X										K2.01 - Knowledge of electrical power supplies to the following: CCW pumps	2.9	3
212000 RPS		X										K2.02 - Knowledge of electrical power supplies to the following: Analog trip system logic cabinets	2.7	4
262002 UPS (AC/DC)			X									K3.02 - Knowledge of the effect that a loss or malfunction of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) will have on following: Recirculation pump speed: Plant-Specific	2.9	5

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
223002 PCIS/Nuclear Steam Supply Shutoff			X									K3.21 - Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: Traversing in-core probe system	2.6	6
217000 RCIC				X								K4.06 - Knowledge of REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) design feature(s) and/or interlocks which provide for the following: Manual initiation	3.5	7
215005 APRM / LPRM				X								K4.08 - Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: Sampling of overall core power in each APRM (accomplished through LPRM assignments and symmetrical rod patterns)	2.7	8
300000 Instrument Air					X							K5.13 - Knowledge of the operational implications of the following concepts as they apply to the INSTRUMENT AIR SYSTEM: Filters	2.9	9

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
211000 SLC					X							K5.06 - Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM : Tank level measurement	3.0	10
259002 Reactor Water Level Control						X						K6.05 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM : Reactor water level input	3.5	11
239002 SRVs						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the RELIEF/SAFETY VALVES : Air (Nitrogen) supply: Plant-Specific	3.4	12
264000 EDGs							X					A1.09 - Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: Maintaining minimum load on emergency generator (to prevent reverse power)	3.0	13

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
205000 Shutdown Cooling							X					A1.06 - Ability to predict and/or monitor changes in parameters associated with operating the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) controls including: Reactor temperatures (moderator, vessel, flange)	3.7	14
203000 RHR/LPCI: Injection Mode								X				A2.11 - Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Motor operated valve failures	3.4	15
262001 AC Electrical Distribution								X				A2.09 - 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: Exceeding voltage limitations	3.1	16
218000 ADS									X			A3.05 - Ability to monitor automatic operations of the AUTOMATIC DEPRESSURIZATION SYSTEM including: Suppression pool level	3.6	17

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
263000 DC Electrical Distribution									X			A3.01 - Ability to monitor automatic operations of the D.C. ELECTRICAL DISTRIBUTION including: Meters, dials, recorders, alarms, and indicating lights	3.2	18
215003 IRM										X		A4.06 - Ability to manually operate and/or monitor in the control room: Detector drives	3.0	19
215004 Source Range Monitor										X		A4.07 - Ability to manually operate and/or monitor in the control room: Verification of proper functioning/ operability	3.4	20
209001 LPCS									X			A3.05 - Ability to monitor automatic operations of the LOW PRESSURE CORE SPRAY SYSTEM including: Reactor water level	3.9	21
223002 PCIS/Nuclear Steam Supply Shutoff										X		2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.0	22
211000 SLC							X					A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Explosive valve indication	3.8	23
263000 DC Electrical Distribution				X								K4.02 - Knowledge of D.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: Breaker interlocks, permissives, bypasses and cross ties: Plant-Specific	3.1	24

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 1

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
262001 AC Electrical Distribution	X											K1.02 - Knowledge of the physical connections and/or cause- effect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: D.C. electrical distribution	3.3	25
262002 UPS (AC/DC)										X		A4.01 - Ability to manually operate and/or monitor in the control room: Transfer from alternative source to preferred source	2.8	26
K/A Category Totals	3	2	2	3	2	2	3	2/3	3	3	1/2	Group Point Total:	26/5	

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
201002 RMCS								X				A2.01 - Ability to (a) predict the impacts of the following on the REACTOR MANUAL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Rod movement sequence timer malfunctions	2.8	91
239001 Main and Reheat Steam											X	2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	92
219000 RHR/LPCI: Torus/Pool Cooling Mode								X				A2.06 - Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: D.C. electrical failures	2.9	93
226001 RHR/LPCI: CTMT Spray Mode	X											K1.12 - Knowledge of the physical connections and/or cause- effect relationships between RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE and the following: Suppression pool (spray penetration): Plant-Specific.	3.0	27

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
256000 Reactor Condensate		X										K2.01 - Knowledge of electrical power supplies to the following: System pumps	2.7	28
201002 RMCS			X									K3.02 - Knowledge of the effect that a loss or malfunction of the REACTOR MANUAL CONTROL SYSTEM will have on following: Rod block monitor: Plant-Specific	2.9	29
204000 RWCU				X								K4.03 - Knowledge of REACTOR WATER CLEANUP SYSTEM design feature(s) and/or interlocks which provide for the following: Over temperature protection for system components	2.9	30
268000 Radwaste					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to RADWASTE : Radiation hazards and ALARA concept	3.1	31
288000 Plant Ventilation						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the PLANT VENTILATION SYSTEMS : Applicable component cooling water system: Plant-Specific	2.5	32
234000 Fuel Handling Equipment							X					A1.03 - Ability to predict and/or monitor changes in parameters associated with operating the FUEL HANDLING EQUIPMENT controls including: core reactivity level	3.4	33

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
230000 RHR/LPCI: Torus/Pool Spray Mode								X				A2.12 - Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve logic failure	3.2	34
215002 RBM									X			A3.04 - Ability to monitor automatic operations of the ROD BLOCK MONITOR SYSTEM including: Verification or proper functioning/ operability: BWR-3,4,5	3.6	35
290003 Control Room HVAC										X		A4.01 - Ability to manually operate and/or monitor in the control room: Initiate/reset system	3.2	36
290001 Secondary CTMT											X	2.2.44 - Equipment Control: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives effect plant and system conditions.	4.2	37
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	38
K/A Category Totals	1	1	1	1	2	1	1	1/2	1	1	1/1	Group Point Total:	12/3	

Vermont Yankee
BWR Examination Outline
Plant Systems - Tier 2 Group 2

System #/Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Q#
---------------	----	----	----	----	----	----	----	----	----	----	---	--------------	------	----

Facility: Vermont Yankee			Date: 2/10/14			
Category	KA #	Topic	RO		SRO-Only	
1. Conduct of Operations			IR	Q#	IR	Q#
	2.1.1	Knowledge of conduct of operations requirements.	3.8	66		
	2.1.25	Ability to interpret reference materials, such as graphs, curves, tables, etc.	3.9	67		
	2.1.45	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	75		
	2.1.6	Ability to manage the control room crew during plant transients.			4.8	94
	Subtotal			3		1
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	4.5	68		
	2.2.39	Knowledge of less than or equal to one hour technical specification action statements for systems.	3.9	69		
	2.2.23	Ability to track Technical Specification limiting conditions for operations.			4.6	95
	2.2.19	Knowledge of maintenance work order requirements.			3.4	99
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.	3.4	70		
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	71		
	2.3.11	Ability to control radiation releases.	3.8	74		
	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	96
	2.3.12	Knowledge of Radiological Safety Principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.7	100
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.2	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	72		
	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	73		
	2.4.18	Knowledge of the specific bases for EOPs.			4.0	97
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.			4.2	98
Subtotal				2		2
Tier 3 Point Total:				10		7

[illegible]

Facility: Vermont Yankee			Date: 2/10/14			
Category	KA #	Topic	RO		SRO-Only	
1. Conduct of Operations			IR	Q#	IR	Q#
	2.1.1	Knowledge of conduct of operations requirements.	3.8	66		
	2.1.25	Ability to interpret reference materials, such as graphs, curves, tables, etc.	3.9	67		
	2.1.45	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	75		
	2.1.6	Ability to manage the control room crew during plant transients.			4.8	94
Subtotal				3		1
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	4.5	68		
	2.2.39	Knowledge of less than or equal to one hour technical specification action statements for systems.	3.9	69		
	2.2.23	Ability to track Technical Specification limiting conditions for operations.			4.6	95
	2.2.19	Knowledge of maintenance work order requirements.			3.4	99
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.	3.4	70		
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	71		
	2.3.11	Ability to control radiation releases.	3.8	74		
	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	96
	2.3.12	Knowledge of Radiological Safety Principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.7	100
Subtotal				3		2
4. Emergency Procedures / Plan	2.4.2	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	72		
	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	73		
	2.4.18	Knowledge of the specific bases for EOPs.			4.0	97
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.			4.2	98
Subtotal				2		2
Tier 3 Point Total:				10		7

[illegible]

Tier / Group	Randomly Selected KA	Reason for Rejection
1 / 1	295024 / EK1.02 replaced by 295024 / EK1.01	The subject K/A isn't relevant at the subject facility.
3 / 3	G3 / 2.3.6 replaced by G3 / 2.3.12	Facility is a zero release plant and SROs are not required to approve radioactive releases
3 / 2	G2 / 2.2.39 replaced by G2 / 2.2.23	Same KA as RO #69.
3 / 3	G3 / 2.3.13 replaced by G3 / 2.3.5	Same KA selected for RO #70
2 / 2	234000 / A1.02 replaced by 234000 / A1.03	Unacceptable overlap with SRO #76
1 / 1	295037 / EK2.11 replaced by 295037 / EK2.04	The subject K/A isn't relevant at the subject facility.
2 / 1	209001 / 2.4.41 replaced by 209001 / A3.05	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
2 / 1	261000 / A2.08 replaced by 261000 / A2.10	Unacceptable topic overlap with SRO #93, and excessive number of items referring to DC electrical
1 / 1	600000 / 2.4.49 replaced by 600000 / AK2.04	There are no immediate actions or actions taken without references for the selected topic
1 / 1	295028 / EK3.06 replaced by 295028 / EK3.01	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
1 / 1	295004 / 2.2.42 replaced by 295004 / 2.1.27	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
1 / 1	295038 / 2.2.38 replaced by 295038 / 2.1.30	It isn't possible to prepare a psychometrically sound question related to the subject K/A.
2 / 2	256000 / K2.01 replaced by 259001 / K2.01	Topic would only yield test item at LOD = 1
1 / 1	295025 / EK2.11 replaced by 295025 / EK3.02	Changed KA to accurately reflect question developed
1 / 1	295005 / AA2.07 replaced by 295005 / AK3.04	Changed KA to accurately reflect question developed
1 / 1	295005 / 2.4.20 replaced by 295024 / 2.4.4	Could not develop psychometrically sound SRO test item with original topic

Facility: Vermont Yankee		Date of Examination: 02/10/2014	
Examination Level: RO <input type="checkbox"/>		SRO X	
		Operating Test Number: NRC	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	N, S	2.1.31 (4.3)	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.
		JPM:	Perform a system walkdown following a HPCI pump and valve operability tests.
Conduct of Operations	M, R	2.1.36 (4.1)	Knowledge of procedures and limitations involved in core alterations.
		JPM:	Review Daily SRM Response Check prior to Conducting Core Alteration (29921)
Equipment Control	D, R	2.2.12 (4.1)	Surveillance Requirements
		JPM:	Review Completed Surveillance and Take Action for Out of Spec Data (29904)
Radiation Control	P, D, R	2.3.7 (3.6)	Ability to comply with radiation work permit requirements during normal or abnormal conditions.
		JPM:	Determine the Radiological Protection Requirements for Entering a Locked High Radiation Area. (2010 SRO NRC JPM-A3 SRO)
Emergency Procedures/Plan	N, R	2.4.29 (4.4)	Knowledge of the emergency plan.
		JPM:	Classify a loss of all offsite and onsite AC event while in mode 5. (AP 3125)
<p>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.</p>			

* 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)
--------------------------	---

SRO NRC Admin JPM Summary

- A1a This is a new JPM. The operator will be given a set of initial conditions and told to perform a system walkdown following HPCI pump and valve operability tests. The operator will be provided with the completed surveillance as a reference. There will be a valve out of position and indications of a blown fuse. The operator will then be asked to determine any Technical Specifications and reportability requirements.
- A1b This is a modified JPM using the 20012 SRO audit exam. This JPM was modified by changing the readings as well as changing the quadrant. The operator will be given a set of initial conditions and asked to review the results of the Daily Neutron Response Check provided and determine which SRMs are operable and whether the scheduled Core Alteration can commence. The operator will be provided with the appropriate procedures and completed SRM Response Check. The operator will evaluate the data and then inform the Shift Manager of the results.
- A2 This is a direct bank JPM (29904) not used in the previous two NRC exams. The operator will be given a completed RHR system surveillance and asked to review the provided surveillance data and sign as Shift Supervisor. The Operator will be given a completed VYOPF 4124.01 form for RHR Loop "A". The operator will review the data as well as technical specifications, and determine the results.
- A3 This JPM was used in the 2012 SRO NRC exam (SRO A3) and was randomly selected. (Refer to the random selection order/JPM matrix). The operator will be given a set of initial conditions and asked to determine the conditions where work will be performed. The operator will be provided the procedure and the survey map to determine how much dose will be received. The operator evaluates the information and provides the conclusions to the evaluator.
- A4 This is a new JPM. This JPM evaluates AC power supplies while in Mode 5. The initial conditions will address Local Intense Precipitation and a area wide blackout, flooding in the switchgear rooms, and fault conditions on Emergency Buses. The operator will assess conditions and classify the event.

Facility: Vermont Yankee		Date of Examination: 02/10/2014
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X		Operating Test No.: NRC 2014

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. 245000 Main turbine generator and Auxiliary Systems Startup the Turbine to Rated Speed (Hi vibration) (24506)	S, M, A	4
b. 239001 Main and Reheat Steam System Open MSIVs After a Group I Isolation (20010)	S, EN, D	3
c. 206000 High Pressure Coolant Injection Manually start HPCI and inject to vessel	S, D, EN, A	2
d.		
e.		
f.		
g.		
h.		
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 211000 Standby Liquid Control System Perform Local Firing of squib Valves (Valve fails to fire) (20017F)	D, A, E, R	1
j. 212000 Reactor Protection System Startup the "A" RPS MG set (21202, AO-010)	D	7
k.		
<p>[@] 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.</p>		

* 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	

SRO NRC CR-IP JPM Summary

- A(S) This is a modified JPM using bank JPM (24506) as its basis. The bank JPM was modified by adding turbine vibrations requiring a manual turbine trip. The operator will be given a set of initial conditions with a startup is in progress and the turbine is on the turning gear, and told to startup the Main Turbine to rated speed. During the startup, the turbine will experience high vibrations requiring the operator to stop the startup, and ultimately manually tripping the turbine.
- B(S) This is a direct bank JPM (20010) and has not used in the previous two NRC exams. The operator will be placed in a condition where a group 1 isolation has occurred due to condenser backpressure. The signals have cleared / bypassed and the operator will have to open the MSIVs.
- C(S) This is a direct bank JPM (20601F) and has not been used in the previous two NRC Exams. The operator will manually start HPCI and inject to the vessel. A failure of the HPCI flow controller will require the operator to take manual control and re-establish flow.
- I(IP) This is a direct bank JPM (20017F) and has not used in the previous two NRC exams. The operator will be given a set of initial conditions where a scram condition exists, but the reactor is not shutdown. Torus temperature is approaching 110°F and normal squib valve firing did not function. The operator will then have to fire the squib valve locally. The first attempt will fail, and the operator will have to attempt local firing on a different terminal.
- J(IP) This is a direct bank JPM (21202) not used in the previous two NRC exams. The operator will be given a set of initial conditions where the "A" RPS MG set is being returned to service after brush replacement. The operator will then be asked to start up the "A" RPS MG set and place it in service.

Facility:	Vermont Yankee	Scenario No.:	1	Op Test No.:	2014 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	100% MOL Steady State conditions. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A & F APRM's are bypassed. House Heating Boilers in service.				
Turnover:					
Perform Turbine Oil Pump Test in accordance with OP 4160 section B					
Critical Tasks: See scenario summary					
Event No.	Malf. No.	Event Type*	Event Description		
1	mfRD12A 35%		Partial SCRAM		
2	mfRD12B 40%		Partial SCRAM		
3	mfRP_09 A&B		PCIS Group V Isolation Failure		
4	N/A	N-BOP N-CRS	Perform Turbine Oil Pump Test IAW OP 4160		
5	mfRD_15 0%	I-RO I-CRS	Control Rod Drive flow controller fails low		
6	mfAD_09B	TS-SRO	RV-71B de-energized		
7	mfRR_07A 50% over 300 sec.	C-BOP C-SRO	A Recirc Pump # 1 Seal Failure		
8	mfRR_08A 15% over 800 sec.	C-BOP C-SRO	A Recirc Pump # 2 Seal Failure		
9	N/A	R-ALL TS-SRO	Rapid load reduction – Single Loop Operation (TS)		
10	mfRR_05B		B Recirculation Pump Trip		

11	mfSL_01 A or B		Operating SLC Pump Trips 60 seconds after start
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario Summary

The crew assumes the watch with the unit at 100% power. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A & F APRM's are bypassed. House Heating Boilers in service. The SRO will direct the BOP to Perform Turbine Oil Pump Test in accordance with OP 4160 section B.

After the performance of the Turbine Oil Pump test, the Control Rod Drive flow controller will fail low resulting in the in-service FCV throttling close. The RO will respond to typer alarms. Review CRD indications and diagnose the controller failure. The SRO will enter OPON-3145-01 Loss of CRD Regulating Function and direct the RO to place the CRD flow controller in manual and restore CRD flow.

Once CRD flow has been stabilized, the BOP will respond to annunciator 3-A-4, ADS Power Failure and determine that the position indicating lights for RV-71B are extinguished. The SRO will review Technical Specifications, determine that RV-71B is inoperable and enter TS LCO 3.5.F.2.

As a result of the CRD flow controller failure, the A Recirc Pump #1 Seal will fail. The BOP will respond to seal indications and alarms and diagnose the failure of the #1 seal. The SRO will enter OPON-3142-01 and direct the BOP to increase monitoring of seal parameters. After the commencement of monitoring, the #2 seal will fail requiring the A Recirc Pump to be shut down and the crew to conduct a rapid load reduction IAW OPOT-3118-01 Recirculation Pump Trip. The RO will insert control rods to lower reactor power to approximately 45%. The SRO will review Technical Specifications and enter TS LCO 3.6.G.1 for single loop operation.

After reactor power is reduced to between 40 to 45% and the B Recirculation pump speed is being lowered, the B Recirculation Pump will trip. The crew will recognize the need to manually scram the reactor. Manual scram will result in partial rod insertion and the SRO will direct actions from EOP-1 and EOP-2. With the reactor not shutdown, the SRO will direct the RO to inject boron using the standby liquid control system. The operating SLC pump will trip after 60 seconds and the RO will diagnose failure and start the remaining SLC Pump to re-establish boron injection (Critical Task). PCIS Group V valves (RWCU-15, 18, and 68) will fail to isolate. The RO will diagnose the failure and manually close the valves.

During the ATWS, conditions will be met to perform power/level control TERMINATE AND PREVENT INJECTION into the RPV using appendix GG, until conditions are met to re-establish injection (Critical Task). The SRO will direct the implementation of OE 3107, Appendix BB to insert control rods using cooling water differential pressure.

The scenario will be terminated when all rods are inserted and RPV level is restored.

Facility:	Vermont Yankee	Scenario No.:	2	Op Test No.:	2014 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	80% reactor power, MOL. Power was reduced to allow maintenance to evaluate A Main Feedwater Pump seal leakage. A main feedwater pump is in service. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A & F APRM's are bypassed. House Heating Boilers in service.				
Turnover:					
Place Torus Cooling in service in accordance with OPOP-RHR-2124 Residual Heat Removal System. Section 7.3 Torus Cooling during normal operations.					
Critical Tasks: See scenario summary					

Event No.	Malf. No.	Event Type*	Event Description
1	mfSW_18B preinsert		Standby Service Water Pump(B) auto start failure
2	mfPC_1HP15 mfPC_1HP16 preinsert		HPCI Steam Supply valves fail to isolate (automatic & manual)
3	mfRP_08A mfRP_08B preinsert		PCIS Group 3 failure
4	N/A	N-BOP N-SRO	Establish Torus Cooling
5	mfNM_05C 0%	I-RO I-SRO TS-SRO	C APRM Fails downscale
6	mfSW_07A mfSW_18B	C-BOP C-SRO TS-SRO	A Service Water Pump trips; standby pump (B) fails to auto start
7	mfED_06C	C-ALL TS-SRO	Loss of DC Bus 3

8	mfHP_09 5% over 300 sec	C-ALL	HPCI Steam Leak in Reactor Building - small
9	mfHP_09 50% over 900 sec	M-ALL	Post Scram - HPCI Steam Leak in Reactor Building - large
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario Summary

The crew assumes the watch with the unit at 80% power. Reactor power was reduced to allow Maintenance to evaluate A Main Feedwater Pump seal leakage. House Heating Boilers are in service. The SRO will direct the BOP to place Torus Cooling in service in accordance with OPOP-RHR-2124 Residual Heat Removal System. Section 7.3 Torus Cooling during normal operations to reduce torus temperature.

After torus cooling has been established, C APRM will fail downscale. The RO will respond to APRM Downscale and Rod Withdrawal Block alarms and diagnose the failure of C APRM. The SRO will direct the RO to remove A APRM from bypass and place C APRM in bypass. The SRO will determine the impact with 2 APRM's inoperable in the same channel (TS Table 3.1.1 Action 1). Once C APRM is bypassed the SRO will exit the APRM TS LCO.

After the Technical Specifications for C APRM have been addressed, B Service Water Pump will trip and the standby Service Water Pump will fail to auto start. The BOP will diagnose the failures. The SRO will direct the BOP to start the standby Service Water Pump, address actions in ON 3148 'Loss of Service Water', declare the B Service water Pump inoperable and enter TS LCO 3.5.D.2.

A loss of DC Bus 3 will result in a loss of the majority of control room annunciators and various control room indicators. The SRO will enter ON 3161 'Loss of DC-3' and direct the transfer of DC-3A to DC-1 (restores annunciators) and the BOP will place the Auxiliary Oil Pump in pull-to-lock. The SRO will review Technical Specifications, declare DC Bus1 inoperable and enter TS LCO 3.10. B.2.b.

A small steam leak will develop from the HPCI steam supply line in the reactor building. The fire detection Zone 11 Reactor Building Panel will alarm. The SRO will initially enter OP 3020 'Control Room Response to a Fire' and exit the procedure when the report of a steam leak is received. The SRO will enter ON-3158 'Reactor Building High Area Temperature / Water Level' and direct the BOP to isolate HPCI. The HPCI steam supply valves will fail to isolate automatically and will not close manually from the control room.

As area temperatures rise, the SRO will enter EOP-4 due to area temperature and will direct a reactor scram prior to any area in the reactor building exceeding the maximum safe operating level (Critical Task) and enter EOP-1.

The HPCI steam leak will increase after the reactor scram. PCIS Group 3 will fail to actuate requiring the crew to align and start standby gas (Critical Task). Additional attempts to isolate the HPCI steam leak will be unsuccessful requiring the crew to enter EOP-5 and perform an emergency depressurization of the reactor pressure vessel when two reactor building area temperatures exceed the maximum safe operating limits (Critical Task).

The scenario will be terminated when Reactor Vessel Emergency Depressurization has been achieved and vessel level is being controlled between 127 to 177 inches.