Facility: Vermont Yankee Date of Exam: September 24, 2012

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 & Abnormal Plant Evolutions	1	5	4	2	N/A			4	3	N/A		2	20	6		1		7		
	2	1	2	0				1	1			2	7	2		1		3		
	Tier Totals	6	6	2				5	4			4	27	8		2		10		
2. Plant Systems	1	3	5	3	2	2	1	2	2	3	2	1	26	1		4		5		
	2	1	0	0	1	2	2	0	0	3	2	1	12	0	3	0		3		
	Tier Totals	4	5	3	3	4	3	2	2	6	4	2	38	4		4		8		
3. Generic Knowledge and Abilities Categories		1		2		3		4		10				1	2	3	4	7		
		2		3		2		3						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	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295005 Main Turbine Generator Trip / 3					X		Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : **AA2.02** Turbine vibration	2.7	76 C
295030 Low Suppression Pool Wtr Lvl / 5					X		Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : **EA2.02** Suppression pool temperature	3.9	77 T
295028 High Drywell Temperature / 5					X		Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : **EA2.05** Torus/suppression chamber air space pressure: Plant-Specific	3.8	78 C
295026 Suppression Pool High Water Temp. / 5						X	**2.2.42** Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	4.6	79 T
295024 High Drywell Pressure / 5					X		Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: **EA2.04** Suppression Chamber Pressure	3.9	80 C
295031 Reactor Low Water Level / 2					X		Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : **EA2.04** Adequate Core Cooling	4.8	81 T
295003 Partial or Complete Loss of AC / 6					X		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : **AA2.04** System lineups	3.7	82 C
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					X		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: **AA2.06** Nuclear boiler instrumentation	3.2	1 C
295003 Partial or Complete Loss of AC / 6				X			Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : **AA1.04** D.C. electrical distribution system	3.6	2 T
295004 Partial or Total Loss of DC Pwr / 6	X						Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : **AK1.05** Loss of breaker protection	3.3	3 C
295005 Main Turbine Generator Trip / 3	X						Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP : **AK1.01** Pressure effects on reactor power	4.0	4 T
295006 SCRAM / 1		X					Knowledge of the interrelations between SCRAM and the following: **AK2.04** Turbine trip logic: Plant-Specific	3.6	5 C
295016 Control Room Abandonment / 7				X			Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : **AA1.06** Reactor Water Level	4.0	6 T
295018 Partial or Total Loss of CCW / 8		X					Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: **AK2.02** Plant operations	3.4	7 C
295019 Partial or Total Loss of Inst. Air / 8		X					Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: **AK2.14** Plant Air Systems	3.2	8 T
295021 Loss of Shutdown Cooling / 4			X				Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING : **AK3.02** Feeding and bleeding reactor vessel	3.3	9 C
295023 Refueling Acc / 8						X	**2.4.6** Knowledge of EOP mitigation strategies	3.7	10 T

295024 High Drywell Pressure / 5	X						Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : **EK1.01** Drywell integrity: Plant-Specific	4.1	11 C
295025 High Reactor Pressure / 3					X		Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: **EA2.04** Suppression pool level	3.9	12 T
295026 Suppression Pool High Water Temp. / 5	X						Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE : **EK1.01** Pump NPSH	3.5	13 C
295027 High Containment Temperature / 5							Suppressed, no MkIII containment at VY.	N/A	
295028 High Drywell Temperature / 5			X				Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : **EK3.04** Increased drywell cooling	3.6	14 T
295030 Low Suppression Pool Wtr Lvl / 5	X						Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: **EK1.03** Heat Capacity	3.8	15 C
295031 Reactor Low Water Level / 2		X					Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: **EK2.05** Low pressure coolant injection (RHR)	4.2	16 T
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : **EA1.05** SBLC	4.5	17 C
295038 High Off-site Release Rate / 9						X	**2.4.11** Knowledge of abnormal condition procedures.	4.0	18 T
600000 Plant Fire On Site / 8				X			Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: **AA1.08** Firefighting equipment used on each class of fire	2.6	19C
700000 Generator Voltage and Electric Grid Disturbances / 6					X		Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: **AA2.09** Operational status of emergency diesel generators	3.9	20 T
K/A Category Totals:	5	4	2	4	2 / 6	3 / 1	Group Point Total:		20/ 7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
500000 High CTMT Hydrogen Conc. / 5					X		Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: **EA2.02** Oxygen monitoring system availability	3.5	83 T
295002 Loss of Main Condenser Vac / 3					X		Ability to determine and/or interpret the following as they apply to LOSS OF MAIN CONDENSER VACUUM: **AA2.01** Condenser vacuum/Absolute pressure	3.1	84 C
295029 High Suppression Pool Wtr Lvl / 5						X	**2.4.50** Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.0	85 T
295002 Loss of Main Condenser Vac / 3		X					Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following: **AK2.11** Seal steam: Plant-Specific	2.6	21 C
295007 High Reactor Pressure / 3	X						Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE : **AK1.01** Pump Shutoff Head	2.9	22 T
295011 High Containment Temp / 5							Suppressed, no MkIII containment at VY.	N/A	
295013 High Suppression Pool Temp. / 5						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.	4.0	23 C
295029 High Suppression Pool Wtr Lvl / 5				X			Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: **EA1.03** RHR/LPCI	2.9	24 T
295035 Secondary Containment High Differential Pressure / 5					X		Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: **EA2.02** †Off-site release rate: Plant-Specific	2.8	25 C
295036 Secondary Containment High Sump/Area Water Level / 5						X	**2.1.7** Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	26 T
500000 High CTMT Hydrogen Conc. / 5		X					Knowledge of the interrelations between HIGH CONTAINMENT HYDROGEN CONCENTRATIONS the following: **EK2.08** Containment atmosphere control system.	3.3	27 C
K/A Category Point Totals:	1	2	0	1	1 / 2	2 / 1	Group Point Total:		7/3

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
261000 SGTS											X	**2.4.49** Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.4	86 C
400000 Component Cooling Water											X	**2.4.46** Ability to verify that the alarms are consistent with the plant conditions.	4.2	87 T
215003 IRM								X				Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: **A2.04** Up scale or down scale trips	3.8	88 C
263000 DC Electrical Distribution											X	**2.4.41** Knowledge of emergency action level thresholds and classifications.	4.6	89 T
209001 LPCS											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	90 C
263000 DC Electrical Distribution								X				Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: **A2.01** Grounds	2.8	28C
400000 Component Cooling Water	X											Knowledge of the physical connections and / or cause-effect relationships between CCWS and the following: **K1.03** Radiation monitoring systems	2.7	29 T
218000 ADS			X									Knowledge of the effect that a loss or malfunction of the AUTOMATIC DEPRESSURIZATION SYSTEM will have on following: **K3.02** Ability to rapidly depressurize the reactor	4.5	30 C
215005 APRM / LPRM									X			Ability to monitor automatic operations of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM including: **A3.04** Annunciator and alarm signals	3.3	31 T
203000 RHR/LPCI: Injection Mode											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	32 C
203000 RHR/LPCI: Injection Mode						X						Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) : **K6.06** Suppression pool	3.8	33 T

205000 Shutdown Cooling								X				Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: **A2.10** Valve operation	2.9	34 C
206000 HPCI							X					Ability to predict and/or monitor changes in parameters associated with operating the HIGH PRESSURE COOLANT INJECTION SYSTEM controls including: **A1.02** Reactor pressure: BWR-2,3,4	4.2	35 T
207000 Isolation (Emergency) Condenser												Suppressed, system does not exist at VY.	N/A	
209001 LPCS									X			Ability to monitor automatic operations of the LOW PRESSURE CORE SPRAY SYSTEM including: **A3.02** Pump start	3.8	36 C
209002 HPCS												Suppressed, system does not exist at VY.	N/A	
211000 SLC										X		Ability to manually operate and/or monitor in the control room: **A4.07** Lights and alarms	3.6	37 T
212000 RPS					X							Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM : **K5.02** Specific logic arrangements	3.3	38 C
215003 IRM			X									Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: **K3.02** Reactor manual control	3.6	39 T
215004 Source Range Monitor										X		Ability to manually operate and/or monitor in the control room: **A4.06** Alarms and lights	3.2	40 C
215005 APRM / LPRM				X								Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: **K4.02** Reactor SCRAM signals	4.2	41 T
217000 RCIC					X							Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) : **K5.06** Turbine Operation	2.7	42 C
218000 ADS		X										Knowledge of electrical power supplies to the following: **K2.01** ADS logic	3.1	43 T
223002 PCIS/Nuclear Steam Supply Shutoff			X									Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: **K3.01** Reactor water level	3.7	44 C
239002 SRVs	X											Knowledge of the physical connections and/or cause effect relationships between RELIEF/SAFETY VALVES and the following: **K1.07** Suppression Pool	3.5	45 T
259002 Reactor Water Level Control		X										Knowledge of electrical power supplies to the following: **K2.02** Feedwater coolant injection (FWCI) initiation logic: FWCI/HPCI	3.5	46 C
261000 SGTS							X					Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: **A1.07** SBGTS train temperature	2.8	47 T
262001 AC Electrical Distribution		X										Knowledge of electrical power supplies to the following: Off-site sources of power **K2.01**	3.3	48 C

262002 UPS (AC/DC)	X											Knowledge of the physical connections and/or cause effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: **K1.16** MSIV's: Plant-Specific	3.1	49 T
263000 DC Electrical Distribution		X										Knowledge of electrical power supplies to the following: **K2.01** Major D.C. loads	3.1	50 C
264000 EDGs				X								Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlocks which provide for the following: **K4.05** Load shedding & sequencing	3.2	51 T
300000 Instrument Air									X			Ability to monitor automatic operations of the INSTRUMENT AIR SYSTEM including: **A3.02** Air temperature	2.9	52 C
400000 Component Cooling Water		X										Knowledge of electrical power supplies to the following: **K2.02** CCW valves	2.9	53 T
K/A Category Point Totals:	3	5	3	2	2	1	2	2 / 1	3	2	1 / 4	Group Point Total:		26/ 5

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
239001 Main and Reheat Steam								X				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: **A2.07** Main steam area high temperature or differential temperature high	3.9	91 T
214000 RPIS								X				Ability to (a) predict the impacts of the following on the ROD POSITION INFORMATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: **A2.03** Overtravel/in-out	3.9	92 C
290003 Control Room HVAC								X				Ability to (a) predict the impacts of the following on the CONTROL ROOM HVAC ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: **A2.04** Initiation/failure of fire protection system	3.3	93 T
201002 RMCS				X								Knowledge of REACTOR MANUAL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: **K4.06** "Emergency In" rod insertion.	3.3	54 C
201004 RSCS												Suppressed, system does not exist at VY.	N/A	
201005 RCIS												Suppressed, system does not exist at VY.	N/A	
202001 Recirculation									X			Ability to monitor automatic operations of the RECIRCULATION SYSTEM including: **A3.05** Pump speed: Plant-Specific	2.9	55 T
215001 Traversing In-core Probe										X		Ability to manually operate and/or monitor in the control room: **A4.03** Isolation valves: Mark-I&II(Not-BWR1)	3.0	56 C
216000 Nuclear Boiler Inst.					X							Knowledge of the operational implications of the following concepts as they apply to NUCLEAR BOILER INSTRUMENTATION : **K5.13** Reference leg flashing: Design-Specific	3.5	57 T
230000 RHR/LPCI: Torus/Pool Spray Mode						X						Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE : **K6.01** A.C. Electrical	3.3	58 C
239001 Main and Reheat Steam					X							Knowledge of the operational implications of the following concepts as they apply to MAIN AND REHEAT STEAM SYSTEM : **K5.05** Flow indication.	2.8	59 T
239003 MSIV Leakage Control												Suppressed, system does not exist at VY.	N/A	

245000 Main Turbine Gen. / Aux.									X			Ability to monitor automatic operations of the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS including: **A3.01** Turbine trip	3.6	60 C
256000 Reactor Condensate						X						Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR CONDENSATE SYSTEM: **K6.09** Offgas system	2.6	61 T
268000 Radwaste	X											Knowledge of the operational implications of the following concepts as they apply to RADWASTE : **K1.06** Drywell Floor Drains	2.9	62 C
288000 Plant Ventilation									X			Ability to monitor automatic operations of the PLANT VENTILATION SYSTEMS including: Isolation/initiation signals **A3.01**	3.8	63 T
290003 Control Room HVAC										X		Ability to manually operate and/or monitor in the control room: **A4.03** Reposition dampers	2.8	64 C
226001 RHR/LPCI: CTMT Spray Mode											X	**2.4.2** Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	65 T
K/A Category Point Totals:	1	0	0	1	2	2	0	0 / 3	3	2	1 / 0	Group Point Total:		12/3

Facility: Vermont Yankee		Date of Exam: September 24, 2012				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.36	Knowledge of procedures and limitations involved in core alterations.	3.0	66 C		
	2.1.15	Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, operations memos, etc.	2.7	67 T		
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.			3.8	94 C
	2.1.36	Knowledge of procedures and limitations involved in core alterations.			4.1	95 T
	Subtotal			2		2
2. Equipment Control	2.2.14	Knowledge of the process for controlling equipment configuration or status.	3.9	68 T		
	2.2.7	Knowledge of the process for conducting special or infrequent tests.	2.9	69 C		
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	2.9	70 T		
	2.2.20	Knowledge of the process for managing troubleshooting activities.			3.8	96 T
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	97 C
	Subtotal			3		2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	71 T		
	2.3.11	Ability to control radiation releases.	3.8	72 C		
	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	98 T
	Subtotal			2		1
4. Emergency Procedures / Plan	2.4.25	Knowledge of fire protection procedures.	3.3	73 C		
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	3.6	74 T		
	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	75 C		
	2.4.38	Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.			4.4	99 T
	2.4.40	Knowledge of SRO responsibilities in emergency plan implementation.			4.5	100 C
	Subtotal			3		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
T1/G1	295001 G2.4.45 rejected	Rejected due to oversampling; K/A tested repeatedly in scenarios.
Generic	2.3.14	Rejected due to oversampling; similar test item used in Admin JPM.
Generic	2.1.36	Rejected due to unsuitable testable material (2.1.20 selected in place of 2.1.36)
T2/G2	K6.05	Rejected due to oversampling; similar K/A used in previous written questions (203000 # 33)
T2/G2	268000 K5.02	Rejected due to unsuitable test material (radiation hazards and ALARA
Generic	2.1.36	Rejected due to unsuitable testable material (2.1.36 selected in place)
T1G1	295031/EA2.03	Rejected due to unable to write question. Replaced with EA2.04
T2/G2	245000 A2.04	Changed to A3.01 due to unsuitable test material
T2/G2	290002	Changed 29002 (RX Vessel Internals) to 226001 RHR/LPCI CTMT Spray Mode -> unsuitable test material
T1/G2	295007 AK1.02	Changed to AK1.01 -> unsuitable test material
T1/G1	295024 EA2.09	Changed to EA2.04 -> unsuitable test material
T2/G1	239002 K1.03	Changed to K1.04 -> duplicate KA selected (Q57)
T2/G1	24600 K4.04	Changed to K4.05 -> unable to find operationally oriented exam material for selected KA
T1/G1	295023 2.4.3	Changed to 2.4.6 -> unable to find operationally oriented material.

Facility: Vermont Yankee Date of Examination: 9/24/12

Examination Level: RO X SRO ☐ Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
RO A-1 Conduct of Operations	M,R	2.1.5 Evaluate Overtime Request with Respect to Work Hour Limits
RO A-2 Conduct of Operations	R,D	2.1.7 Perform Reactor Coolant Temperature Checks
RO A-3 Equipment Control	M,R	2.2.15 Isolate leaking Core Spray Weld
Radiation Control	N/A	N/A
RO A-4 Emergency Procedures/Plan	R,N	2.4.21 Determination of Offgas Release Rate

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: Vermont Yankee Date of Examination: 9/24/12

Examination Level: RO ☐ SRO X☐ Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
SRO A-1 Conduct of Operations	N,R	Evaluate Reactor Water Chemistry Results
SRO A-2 Conduct of Operations	M,R	Evaluate Control Room Logs and Determine Actions
SRO A-3 Equipment Control	M,R	Isolate leaking Core Spray weld and determine technical specification required actions
SRO A-4 Radiation Control	M,R	Review and Approve Emergency Plan Allowed Radiation Exposure
SRO A-5 Emergency Procedures/Plan	M,R	Determine Protective Action Recommendations and Complete Event Notification Form

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)

ES-301 **Control Room/In-Plant Systems Outline** **Form ES-301-2**

Facility: Vermont Yankee Date of Examination: 9/24/2012

Exam Level: **RO** X☐ SRO-I ☐ SRO-U ☐ Operating Test Number: 1

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 Recirculation System/Recirculation Flow Control System *Startup the Idle Recirc Pump With the Other Pump Running*	A,M,S	1 (Reactivity Control)
S-2 RHR/LPCI Mode (Alternate Path) *S/U Torus Cooling During Normal Operation (RHR Pump 'A' Seal Leakage)*	A,M,S,EN	2 (Reactor Water Inventory Control)
S-3 Reactor Pressure/Turbine Regulating System (Alternate Path) *Normal Reactor Ops EPR Performance Test (Failure results in placing MPR in service)*	A,M,S	3 (Reactor Pressure Control)
S-4 Core Spray *Place 'B' Core Spray in Normal Standby Alignment*	L,N,S,EN	4 (Heat Removal From the Core)
S-5 Primary Containment Isolation System/NSSSF *Defeating HPCI Group VI Isolation Interlocks for Alternate RPV Depressurization*	E,L,N,S	5 (Containment Integrity)
S-6 AC Electrical Distribution System *Reactor @ 25% power, Transfer Station Loads to Aux. Transformer*	L,D,S	6 (Electrical)
S-7 Reactor Protection System *RPS Bus "A" Power Supply Swap*	D,EN,S	7 (Instrumentation)
S-8 Standby Gas Treatment (Alternate Path) *Manually Initiate SBGT Train 'A' –(Failure of Fan 'A' to Start)*	A,N,S,EN	9 (Radioactivity Release)
In-Plant Systems@ **(3 for RO)**; (3 for SRO-I); (3 or 2 for SRO-U)		
P-1 Component Cooling/Instrument Air/Fire Protection *Transfer of RBCCW Heat Exchangers from 'A' to 'B'*	N,R	8 (Plant Service Systems)
P-2 Emergency Diesel Generators (Alternate Path) *Alternate Shutdown Att. 4 EDG Starts Fails to Load*	A,D,E	6 (Electrical)

P-3 RCIC *Reactor Scram with subsequent Control Room evacuation.* *Inject RCIC from Alternate Shutdown Panel*	L,D,EN,E	4 (Heat Removal From the Core)

@ 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	

Facility: Vermont Yankee	Date of Examination: 9/24/2012
Exam Level: RO ☐ **SRO-I** X☐ SRO-U ☐	Operating Test Number: 1

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 Recirculation System/Recirculation Flow Control System *Startup the Idle Recirc Pump With the Other Pump Running*	A,M,S	1 (Reactivity Control)
S-2 RHR/LPCI Mode (Alternate Path) *S/U Torus Cooling During Normal Operation (RHR Pump 'A' Seal Leakage)*	A,M,S,EN	2 (Reactor Water Inventory Control)
S-3 Reactor Pressure/Turbine Regulating System (Alternate Path) *Normal Reactor Ops EPR Performance Test (Failure results in placing MPR in service)*	A,M,S	3 (Reactor Pressure Control)
S-4 Core Spray *Place 'B' Core Spray in Normal Standby Alignment*	L,N,S,EN	4 (Heat Removal From the Core)
S-5 Primary Containment Isolation System/NSSSF *Defeating HPCI Group VI Isolation Interlocks for Alternate RPV Depressurization*	E,L,N,S	5 (Containment Integrity)
S-7 Reactor Protection System *RPS Bus "A" Power Supply Swap*	D,EN,S	7 (Instrumentation)
S-8 Standby Gas Treatment (Alternate Path) *Manually Initiate SBGT Train 'A' –(Failure of Fan 'A' to Start)*	A,N,S,EN	9 (Radioactivity Release)
In-Plant Systems@ (3 for RO); **(3 for SRO-I);** (3 or 2 for SRO-U)		
P-1 Component Cooling/Instrument Air/Fire Protection *Transfer of RBCCW Heat Exchangers from 'A' to 'B'*	N,R	8 (Plant Service Systems)
P-2 Emergency Diesel Generators (Alternate Path) *Alternate Shutdown Att. 4 EDG Starts Fails to Load*	A,D,E	6 (Electrical)
P-3 RCIC *Reactor Scram with subsequent Control Room evacuation.* *Inject RCIC from Alternate Shutdown Panel*	L,D,EN,E	4 (Heat Removal From the Core)

@	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	

ES-301 **Control Room/In-Plant Systems Outline** **Form ES-301-2**

Facility: Vermont Yankee Date of Examination: 9/24/2012

Exam Level: RO ☐ SRO-I ☐ **SRO-U** X☐ Operating Test Number: 1

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-2 RHR/LPCI Mode (Alternate Path) *S/U Torus Cooling During Normal Operation (RHR Pump 'A' Seal Leakage)*	A,M,S,EN	2 (Reactor Water Inventory Control)
S-5 Primary Containment Isolation System/NSSSF *Defeating HPCI Group VI Isolation Interlocks for Alternate RPV Depressurization*	E,L,N,S	5 (Containment Integrity)
S-8 Standby Gas Treatment (Alternate Path) *Manually Initiate SBGT Train 'A' –(Failure of Fan 'A' to Start)*	A,N,S,EN	9 (Radioactivity Release)
In-Plant Systems@ (3 for RO); (3 for SRO-I); **(3 or 2 for SRO-U)**		
P-1 Component Cooling/Instrument Air/Fire Protection *Transfer of RBCCW Heat Exchangers from 'A' to 'B'*	N,R	8 (Plant Service Systems)
P-2 Emergency Diesel Generators (Alternate Path) *Alternate Shutdown Att. 4 EDG Starts Fails to Load*	A,D,E	6 (Electrical)

@ 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	

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Vermont Yankee Scenario No.: 1 Op-Test No.: VY NRC 2012

Examiners: _____ Operators: SRO
_____ ATC
_____ BOP

Initial Conditions: 100% Reactor Power
'B' CRD pump OOS

Turnover:
-Perform monthly TBCCW/RBCCW pump swaps IAW RP 4183 and OP 2182.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N -BOP	Monthly TBCCW/RBCCW pump swaps IAW OP 0150, OP2182, and RP 4182
2	AD 09A	TS-CRS	Electrical short in SRV-71A (TS Entry)
3	mfSW01B mfSW23A	C-RO	Respond to a trip of the 'A' RBCCW pump
4	rfHP10	I-BOP TS-CRS	HPCI inverter failure (TS Entry)
5	CD01	C-RO R-RO	'B' Condensate pump trips and failure of 40% auto recirc runback.
6	mfRD15	C-RO	CRD FCV fails in Auto
7	ED17 RR01 RC02	M-All	Loss of normal power (LNP), small break LOCA, RCIC fails in auto control
8	 RC02	C-BOP C-RO	RHR-39A(B) fails to open RCIC Turbine trips
9	RR01A RC01	M-All	Medium break LOCA
10	mfRH07A/B mfCS03A/B	C-BOP	Low pressure systems fail to auto inject (all injection valves fail to auto open)

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

Facility: VY Scenario No.: 4 Op-Test No.: _____

Examiners: _____ Operators: SRO _____
_____ RO _____
_____ BOP _____

Initial Conditions:
- Plant operating normally at 90% power
- "A" RHR in suppression pool cooling mode
- #2 Circulating Pump to be returned to service this shift.

Turnover: Secure RHR suppression pool cooling with #2 Circulating Pump to be returned to service this shift.

Event No.	Malf. No.	Event Type*	Event Description
N/A	N/A	N - BOP	Secure suppression pool cooling lineup
1	mfRH01 A	C - BOP CRS- TS	Trip of 'A' RHR pump (TS Entry)
2		CRS- TS	Loss of 'B' EDG (TS Entry)
3	EG05A &EG12B	C - BOP	Loss of Stator Cooling
4	SPE override and alarm	C - BOP	Trip of 'B' Steam Packing Exhaust Blower
5	MC_08 mfRR05 B	R - RO C - RO	'B' Recirc pump vibration and Trip
6	mfRR11 A	I - RO	'A' Recirc pump controller fails downscale, power oscillations, RPS failure
7	RD_12A & B	M - ALL	Failure to Scram, Hydraulic ATWS
8	SL_01B	C - RO	SLC Pump Failures
9	RD11A	I - RO	CRD Flow Controller Failure

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

Facility: Vermont Yankee Scenario No.: 5 Op-Test No.: VY NRC 2012

Examiners: _____ Operators: SRO _____
_____ RO _____
_____ BOP _____

Initial Conditions: -90% RTP; Summer Lineup

Turnover: -None

Event No.	Malf. No.	Event Type*	Event Description
1	FW28C	I-All	Steam Flow transmitter failure
2	RC05	C-BOP TS-CRS	Inadvertent isolation of RCIC with failure of one isolation valve to auto close
3	MC01A	C-BOP/ RO R-RO	Trip of the 'A' Circ Water pump
4	mfRD05 3023	C-All TS-CRS	Control rod drift out
5	HP09	M-All	Unisolable leak in HPCI steam piping, RB area approaching max safe operating rad level
6	DG08A	C-BOP	Failure of 'A' EDG to auto start
7	RP17 ED21	C-BOP	PCIS Group III failure to auto close

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