

Facility:		Vermont Yankee NRC		Date of Exam:		February 2009											
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 1	A2	G*	Total	
1. Emergency & Plant Evolution	1	3	3	4				3	3			4	20	4	3	7	
	2	1	1	1				1	2			1	7	1	2	3	
	Tier Totals	4	4	5				4	5			5	27	5	5	10	
2. Plant Systems	1	2	3	2	3	2	2	2	3	3	2	2	26	3	2	5	
	2	1	1	1	1	1	1	1	1	1	1	2	12	0	1	3	
	Tier Totals	3	4	3	4	3	3	3	4	4	3	4	38	4	4	8	
3. Generic Knowledge & Abilities Categories				1		2		3		4		10	1	2	3	4	7
				2		3		2		3			2	2	1	2	
<p>Note: 1. Ensure that at least two topics from every applicable WA 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 WA category shall not be less than two).</p> <p>2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 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.</p> <p>3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to section D.1.b of ES-401, for guidance regarding elimination of inappropriate WA statements.</p> <p>4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.</p> <p>5. Absent a plant specific priority, only those 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.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and WA categories.</p> <p>7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the WA 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</p> <p>8. On the following pages, enter the WA 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.</p> <p>9. For Tier 3, select topics from Section 2 of the WA Catalog, and enter the WA numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10CFR55.43</p>																	

Vermont Yankee Written
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#
295019 Partial or Total Loss of Inst. Air / 8					X		AA2.02 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Status of safety-related instrument air system loads (see AK2.1 - AK2.19)	3.7	76
295005 Main Turbine Generator Trip / 3					X		AA2.02 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Turbine vibration	2.7	77
295004 Partial or Total Loss of DC Pwr / 6					X		AA2.03 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Battery voltage	2.9	78
295006 SCRAM / 1						X	2.1.19 - Conduct of Operations: Ability to use plant computers to evaluate system or component status.	3.8	79
295001 Partial or Complete Loss of Forced Core Flow Circulation 1 & 4						X	2.2.40 - Equipment Control: Ability to apply technical specifications for a system.	4.7	80
295025 High Reactor Pressure / 3						X	2.4.45 - Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	81
295028 High Drywell Temperature / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Reactor pressure	3.9	82
295005 Main Turbine Generator Trip / 3	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP : Pressure effects on reactor power	4.0	39
295028 High Drywell Temperature / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Reactor water level measurement	3.5	40
295030 Low Suppression Pool Water Level / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Steam condensation	3.8	41
295026 Suppression Pool High Water Temp. / 5		X					EK2.06 - Knowledge of the interrelations between SUPPRESSION POOL HIGH WATER TEMPERATURE and the following: Suppression pool level	3.5	42
295019 Partial or Total Loss of Inst. Air / 8		X					AK2.04 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Reactor water cleanup	2.8	43
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	44
295023 Refueling Accidents			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Ventilation isolation.	3.3	45

Vermont Yankee Written
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#
295018 Partial or Total Loss of CCW / 8			X				AK3.04 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Starting standby pump	3.3	46
295016 Control Room Abandonment / 7			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT : Disabling control room controls	3.5	47
700000 Generator Voltage and Electric Grid Disturbances				X			AA1.05 - Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Engineered safety features.	3.9	48
295004 Partial or Total Loss of DC Pwr / 6				X			AA1.01 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : D.C. electrical distribution systems	3.3	49
295006 SCRAM / 1				X			AA1.06 - Ability to operate and/or monitor the following as they apply to SCRAM : CRD hydraulic system	3.5	50
295021 Loss of Shutdown Cooling / 4					X		AA2.05 - Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING : Reactor vessel metal temperature	3.4	51
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA2.04 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Suppression pool temperature	4.0	52
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					X		AA2.06 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Nuclear boiler instrumentation	3.2	53
295024 High Drywell Pressure / 5						X	2.1.30 - Conduct of Operations: Ability to locate and operate components, including local controls.	4.4	54
295038 High Off-site Release Rate / 9						X	2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	55
295031 Reactor Low Water Level / 2						X	2.4.46 - Emergency Procedures / Plan: Ability to verify that the alarms are consistent with the plant conditions.	4.2	56
295003 Partial or Complete Loss of AC / 6			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Manual and auto bus transfer	3.3	57
295025 High Reactor Pressure / 3						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.	4.2	58
WA Category Totals:	3	3	4	3	3/4	4/3	Group Point Total:	20/7	

Vermont Yankee Written
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#
295002 Loss of Main Condenser Vac / 3					X		AA2.04 - Ability to determine and/or interpret the following as they apply to LOSS OF MAIN CONDENSER VACUUM : Offgas system flow	2.9	83
295017 High Off-site Release Rate / 9						X	2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	84
295013 High Suppression Pool Temperature / 5						X	2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	85
295010 High Drywell Pressure / 5	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : Temperature increases	3.2	59
295029 High Suppression Pool Water Level / 5		X					EK2.02 - Knowledge of the interrelations between HIGH SUPPRESSION POOL WATER LEVEL and the following: HPCI: Plant-Specific	3.4	60
295033 High Secondary Containment Area Radiation Levels / 9			X				EK3.01 - Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Emergency depressurization	3.3	61
500000 High CTMT Hydrogen Conc. / 5				X			EA1.03 - Ability to operate and monitor the following as they apply to HIGH CONTAINMENT HYDROGEN CONTROL: Containment atmosphere control system	3.4	62
295032 High Secondary Containment Area Temperature / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : Area temperature	3.8	63
295015 Incomplete SCRAM / 1						X	2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	4.1	64
295036 Secondary Containment High Sump/Area Water Level / 5					X		EA2.03 - Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL : Cause of the high water level	3.4	65
K/A Category Totals:	1	1	1	1	2/1	1/2	Group Point Total:	713	

Vermont Yankee Written
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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203000 RHRILPCI: Injection Mode									X				A2.14 - Ability to (a) predict the impacts of the following on the RHRILPCI: 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: Initiating logic failure	3.9	86
259002 Reactor Water Level Control									X				A2.01 - Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct. control, or mitigate the consequences of those abnormal conditions or operations: Loss of any number of main steam flow inputs	3.4	87
400000 Component Cooling Water												X	2.4.49 - Emergency Procedures ! Plan: Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.4	88
262002 UPS (AC/DC)												X	2.1.20 - Ability to interpret and execute procedure steps.	4.6	89
211000 SLC									X				A2.07 - Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct. control, or mitigate the consequences of those abnormal conditions or operations: Valve closures	3.2	90
211000 SLC	X												K1.03 - Knowledge of the physical connections and/or cause- effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: Plant air systems: Plant-Specific	2.5	1
400000 Component Cooling Water	X												K1.03 - Knowledge of the physical connections and / or cause-effect relationships between CCWS and the following: Radiation monitoring systems	2.7	2
263000 DC Electrical Distribution		X											K2.01 - Knowledge of electrical power supplies to the following: Major D.C. loads	3.1	3
205000 Shutdown Cooling		X											K2.02 - Knowledge of electrical power supplies to the following: Motor operated valves	2.5	4

Vermont Yankee Written
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#
262001 AC Electrical Distribution			X									K3.04 - Knowledge of the effect that a loss or malfunction of the A.C. ELECTRICAL DISTRIBUTION will have on following: Uninterruptible power supply	3.1	5
264000 EDGs			X									K3.02 - Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEUJET) will have on following: A.C. electrical distribution	3.9	6
261000 SGTS				X								K4.01 - Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: Automatic system initiation	3.7	7
203000 RHR/LPCI: Injection Mode				X								K4.05 - Knowledge of RHWLPCI: INJECTION MODE (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Prevention of water hammer	3.2	8
212000 RPS					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM : Fuel thermal time constant	2.7	9
218000 ADS					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to AUTOMATIC DEPRESSURIZATION SYSTEM : ADS logic operation	3.8	10
209001 LPCS						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM : A.C. power	3.4	11
239002 SRVs						X						K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the RELIEF/SAFETY VALVES : D.C. power: Plant-Specific	3.0	12
259002 Reactor Water Level Control							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including: Reactor water level	3.8	13
215004 Source Range Monitor							X					A1.04 - Ability to predict and/or monitor changes in parameters associated with operating the SOURCE RANGE MONITOR (SRM) SYSTEM controls including: Control rod block status	3.5	14

Vermont Yankee Written
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#
215003 IRM								X				A2.04 - 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: Up scale or down scale trips	3.7	15
262002 UPS (AC/DC)								X				A2.01 - Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage	2.6	16
223002 PCIS/Nuclear Steam Supply Shutoff									X			A3.01 - Ability to monitor automatic operations of the PRIMARY CONTAINMENT SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF including: System indicating lights and alarms	3.4	17
215005 APRM / LPRM									X			A3.05 - Ability to monitor automatic operations of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM including: Flow converter/comparator alarms	3.3	18
217000 RCIC										X		A4.05 - Ability to manually operate and/or monitor in the control room: Reactor water level	4.1	19
206000 HPCI										X		A4.02 - Ability to manually operate and/or monitor in the control room: Flow controller: BWR-2,3,4	4.0	20
300000 Instrument Air											X	2.4.4 - Emergency Procedures / Plan: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.5	21
262001 AC Electrical Distribution											X	2.4.30 - Emergency Procedures / Plan; 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.	2.7	22

Vermont Yankee Written
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#
203000 RHWLPCI: Injection Mode								X				A2.14 - Ability to (a) predict the impacts of the following on the RHWLPCI: 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: Initiating logic failure	3.8	23
218000 ADS				X								K4.03 - Knowledge of AUTOMATIC DEPRESSURIZATION SYSTEM design feature(s) and/or interlocks which provide for the following: ADS logic control	3.8	24
215004 Source Range Monitor									X			A3.02 - Ability to monitor automatic operations of the SOURCE RANGE MONITOR (SRM) SYSTEM including: Annunciator and alarm signals	3.4	25
215005 APRM / LPRM		X										K2.02 - Knowledge of electrical power supplies to the following: APRM channels	2.6	26
K/A Category Totals:	2	3	2	3	2	2	2	3	3	3	2	2/2	Group Point Total:	26/5

Vermont Yankee Written
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 #
286000 Fire Protection								X				A2.08 - Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: failure to actuate when required	3.3	91
268000 Radwaste											X	2.2.36 - Equipment Control: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	4.2	92
204000 RWCU											X	2.4.6 - Emergency Procedures / Plan: Knowledge symptom based EOP mitigation strategies.	4.7	93
201006 RWM	X											K1.04 - Knowledge of the physical connections and/or cause- effect relationships between ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) and the following: Steam flowreactor power: P-Spec(Not-BWR6)	3.1	27
223001 Primary CTMT and Aux.		X										K2.08 - Knowledge of electrical power supplies to the following: Containment cooling air handling units: Plant-Specific	2.7	28
256000 Reactor Condensate			X									K3.04 - Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on following: Reactor Feedwater System	3.6	29
230000 RHWLPCI: Torus/Pool Spray Mode				X								K4.02 - Knowledge of RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE design feature(s) and/or interlocks which provide for the following: Redundancy	3.1	30
290002 Reactor Vessel Internals					X							K5.07 - Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS : Safety Limits	3.9	31
201002 RMCS						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR MANUAL CONTROL SYSTEM : Select matrix power	2.5	32
233000 Fuel Pool Cooling/Cleanup							X					A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the FUEL POOL COOLING AND CLEAN-UP controls including: System temperature	2.7	33

Vermont Yankee Written
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 #
202001 Recirculation								X				A2.08 - Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation flow mismatch: Plant-Specific	3.1	34
259001 Reactor Feedwater									X			A3.10 - Ability to monitor automatic operations of the REACTOR FEEDWATER SYSTEM including: Pump trips	3.4	35
234000 Fuel Handling Equipment										X		A4.02 - Ability to manually operate and/or monitor in the control room: Control rod drive system	3.4	36
290001 Secondary CTMT											X	2.2.37 - Equipment Control: Ability to determine operability and / or availability of safety related equipment.	3.6	37
272000 Radiation Monitoring											X	2.4.47 - Emergency Procedures ■ Plan: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	38
K/A Category Totals:	1	1	1	1	1	1	1	1/1	1	1	2/2	Group Point Total:	12/3	

Facility:		Vermont Yankee Written	Date:		07/17/08	
Category	WA #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1 ³⁹	Knowledge of conservative decision making practices.			4.3	94
	2.1.25	Ability to Interpret reference materials, such as graphs, curves, tables, etc.			4.2	100
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.4	66		
	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.	3.3	67		
Subtotal				2		2
2. Equipment Control	2.2.35	Ability to determine Technical Specification Mode of Operation.			4.5	95
	2.2.21	Knowledge of pre and post-maintenance operability requirements.			4.1	99
	2.2.13	Knowledge of tagging and clearance procedures	4.1	68		
	2.2.40	Ability to apply technical specifications for a system.	3.4	69		
	2.2.37	Ability to determine operability and/or availability of safety related equipment.	3.6	75		
Subtotal				3		2
3. Radiation Control	2.3.11	Ability to control radiation releases.			4.3	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.	3.2	70		
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	71		
Subtotal				2		1

4. Emergency Procedures / Plan	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.			4.4	97
	2.4.20	Knowledge of operational implications of EOP warnings, cautions, and notes.			4.3	98
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	72		
	2.4.42	Knowledge of emergency response facilities.	2.6	73		
	2.4.6	Knowledge of EOP mitigation strategies.	3.7	74		
	Subtotal			3		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 2	500000 / EA1.05	<p>(#62) EA1.05 - Ability to operate and monitor the following as they apply to HIGH CONTAINMENT HYDROGEN CONTROL: Wetwell sprays Topic does not apply to VY. Randomly selected EA1.03, Ability to operate and monitor the following as they apply to HIGH CONTAINMENT HYDROGEN CONTROL: Containment atmosphere control system</p>
2 / 2	286000 / A2.02	<p>(#91) A2.02 - Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: D.C. distribution failure: Plant-Specific Topic does not lend itself to a discriminating question (system function) Randomly selected A2.08, Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to actuate when required</p>
2 / 2	204000 / 2.4.3	<p>(#93) 2.4.3 - Emergency Procedures / Plan: Ability to identify post-accident instrumentation. Topic does not apply to VY. Randomly selected 2.4.6, Emergency Procedures / Plan: Knowledge symptom based EOP mitigation strategies.</p>
2 / 2	256000 / K3.07	<p>(#29) K3.07 - Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on following: Isolation condenser: Plant-Specific Topic does not apply to VY. Randomly selected K3.04, Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on following: Reactor Feedwater System</p>
3	2.2.4	<p>(#68) 2.2.4 (multi-unit license) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility. Not a multi unit license. Randomly selected 2.2.13, Knowledge of tagging and clearance procedures</p>
2 / 2	201006 / K1.08	<p>(#27) K1.08 - Knowledge of the physical connections and/or cause- effect relationships between ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) and the following: Reactor power (turbine first stage pressure): P-Spec(Not-BWR6) Does not apply to VY. Randomly selected K1.04, Knowledge of the physical connections and/or cause- effect relationships between ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) and the following: Steam flow/reactor power</p>
2 / 2	29002 / K5.03	<p>(#31) K5.03 - Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS : Burnable poisons Not discriminating at RO level, minutia for licensing decision, generic fundamentals area. Randomly selected K5.07 Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS : Safety Limits</p>

2 / 2	259001 / A3.06	(#35) A3.06 - Ability to monitor automatic operations of the REACTOR FEEDWATER SYSTEM including: Pump discharge pressure VY has electric feed pumps could not write a specific question to match the K/A. Randomly selected A3.10, Ability to monitor automatic operations of the REACTOR FEEDWATER SYSTEM including: Pump trips
1 / 1	295023 / AK3.05	(#45) AK3.05 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS : Initiation of SLC/shut-down cooling: Plant-Specific Does not apply to VY, randomly selected AK3.03 Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Ventilation isolation.
1 / 1	295025 / 2.4.41	(#81) 2.4.41 - Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications. (High Reactor Pressure) There is no E-Plan action level associated with High Reactor Pressure. Randomly selected 2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.
1 / 2	295013 / 2.1.27	(#85) 2.1.27 Knowledge of system purpose and/or function. Low LOD for a discriminating SRO level question for this K/A. Randomly selected 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.
2 / 1	262002 / 2.1.28	(#89) 2.1.28 - Conduct of Operations: Knowledge of the purpose and function of major system components and controls. Low LOD for a discriminating SRO level question for this K/A. Randomly selected 2.1.20 Ability to interpret and execute procedure steps.
3	2.2.43	(#99) 2.2.43 - Knowledge of the process used to track inoperable alarms. Same K/A as Common question #75. Randomly selected 2.2.21, Knowledge of pre and post-maintenance operability requirements.
1 / 1	295003 / AK3.04	Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Ground isolation. Could not write a discriminating question. Very limited procedural guidance. Randomly selected AK3.01, Manual and auto bus transfer
3	2.2.43	Knowledge of the process used to track inoperable alarms. Used as a JPM on the Audit Exam. Randomly selected 2.2.37, Ability to determine operability and/or availability of safety related equipment.

Facility: Vermont Yankee		Date of Examination: 2/09	
Examination Level: RO		Operating Test Number: N09-1	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	N, S	2.1.29 (4.1)	Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.
		JPM:	Perform the RHR System Valve Lineup
Equipment Control	N, S	2.2.12 (3.7)	Knowledge of Surveillance Procedures
		JPM:	Perform a Drywell Temperature Profile
Radiation Control	M, R	2.3.11 (3.8)	Ability to control radiation releases
		JPM:	Determine Offgas Release Rate without ERFIS
Emergency Procedures/Plan	D, S	2.4.43 (3.2)	Knowledge of Emergency Communications Systems and techniques
		JPM:	Perform Control Room Emergency Communications Checks
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.			
*Type Codes & Criteria: (C)ontrol room (0), (S)imulator (3) , or Class(R)oom (1) (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (1) (N)ew or (M)odified from bank (≥ 1) (3) (P)revious 2 exams (≤ 1 ; randomly selected) (0)			

Facility:	Vermont Yankee	Date of Examination:	2/09
Examination Level:	SRO	Operating Test Number:	N09-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, S	2.1.29 (4.0) Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.
		JPM: Perform the RHR System Valve Lineup
Conduct of Operations	P, S	2.1.7 (4.7) Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation
		JPM: Perform a Core Thermal Hydraulic Limits Evaluation
Equipment Control	N, R	2.2.12 (4.1) Knowledge of Surveillance Procedures
		JPM: Review a Surveillance
Radiation Control	M, R	2.3.11 (4.3) Ability to control radiation releases
		JPM: Determine Offgas Release Rate without ERFIS
Emergency Procedures/Plan	N, S	2.4.44 (4.4) Knowledge of Emergency Plan Protective Action Recommendations
		JPM: Off-Site Protective Action Recommendations (evacuate)

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

*Type Codes & Criteria:

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

Facility:	Vermont Yankee	Date of Examination:	2/2009
Exam Level (circle one):	RO / SRO(I) / SRO (U)	Operating Test No.:	NRC-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	Shift Rx Level Control From The Main Feed Reg Valve To The Auxiliary Feed Reg Valve 259002 RX Water Level Control System, K/A: A4.01 3.8/3.6	M, A, S	2
S-2	Advanced Off Gas System, Vacuum Pump Transfer (RO) 271000 OffGas System, K/A: A4.09 3.3/3.2	D, S	3
S-3	Secure RHR from the Shutdown Cooling Mode 205000 Shutdown Cooling System, K/A: A4.01 3.7/3.7	N, L, S	4
S-4	Line-up for Primary Containment Spray Using Fire System to RHR Loop "A" 226001 RHR/Containment Spray Mode, K/A: A4.02 3.1/3.1	D, EN, S	5
S-5	Swap RBCCW & TBCCW Pumps 400000 Component Cooling Water System, K/A: A2.01 3.3/3.4	N, A, S	8
S-6	Initiate SLC to the Vessel 211000 Standby Liquid Control System, K/A: A4.02 4.2/4.2	D, A, EN, S	1
S-7	Transfer Station Load from the Auxiliary Transformer to the Startup Transformer 262001 AC Electrical Distribution, K/A: A4.04 3.6/3.7	D, S	6
S-8	Rx Startup to Criticality 215004 SRM System, K/A: A4.01 3.9/3.8	P, A, L, S	7
In-Plant Systems [®] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P-1	Place Charger BC-1-1B in Service 263000 DC Electrical Distribution, K/A: A3.01 3.2/3.3	D	6
P-2	Boron Injection from the SLC Tank Using the CRD System APE 295037 Scram Condition Present and Reactor Power Above APRM Downscale or Unknown K/A: EA1.10 3.7/3.9	D, E, R	1
P-3	Line-up for Alternate Vessel Injection Using SLC Test Tank EPE 295031 Reactor Low Water Level, K/A: EA1.08 3.8/3.9	D, E, R	2

Facility:	VERMONT YANKEE	Scenario No.:	1	Op Test No.:	2009 NRC																				
Examiners:	_____	Operators:	SRO -																						
	_____		RO -																						
	_____		BOP -																						
<p>Initial Conditions: At 100% power DG " A has been operating for 30 minutes for Monthly Diesel Generator Slow Start Operability Test (Tech Spec) per OP 4126, Sect B. The test is being performed following a-diesel lube oil change. The test must be run for at least two hours at 2700 to 2750 kW and 1600 \pm 50 kVAR OUT. RHR Pump B is OOS for severe vibrations that occurred during surveillance testing and is tagged out for Maintenance investigation.</p>																									
<p>Turnover: RHR Pump B is OOS for severe vibrations that occurred during surveillance testing and is tagged out for Maintenance investigation. DG " A is in operation for the Monthly Diesel Generator Slow Start Operability Test per OP 4126, Sect B. This requires DG A being declared inop IAW T.S. 3.10.B.1 You are requested to bring voltage to 358 KV by VELCO</p>																									
<p>Critical Tasks:</p> <ol style="list-style-type: none"> 1. With a reactor scram required and the reactor not shutdown, INHIBIT ADS to prevent an uncontrolled RPV depressurization to prevent causing a significant power excursion. 2. During an ATWS with conditions met to perform power/level control TERMINATE AND PREVENT INJECTION into the RPV using appendix GG, until conditions are met to re-establish injection. 3. With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits. 																									
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4	mfRR_11B 100% over 600 sec	I - RO I - SRO	"B" Recirc speed controller will fail and will begin to run away requiring the RO to take manual control and rebalance flows.																						

5	mfED_05Da	C - RO C - SRO TS - SRO	Loss of MCC-9A with a failure of the Group 3 Isolation (AC-6B will not auto close) Consult Tech Specs
6	mfED05Cb	C - BOP C - SRO TS - SRO	480V MCC-8B will trip causing a half scram (if RPS B was transferred to its alternate supply) also the loss of the bus will challenge DW pressure by the loss of power to RRUs 1A and 1B, alternate RRUs must be started. (This power lost will affect ATWS recovery by preventing the use of cooling water flow to insert the control rods.) The SRO will address TS
7	mfRP_02A mf RD-12A mf RD-12B (20120%)	M- ALL	Loss of RPS MG Set A, Hydraulic ATWS with MSIV closure
8	mfSL_02A	C - RO C - SRO	SLC Squib Valve " A failure (the loss of 8B takes away SLC Pump B) Candidate must recognize that the Squib Valves must be fired locally using the battery.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: VERMONT YANKEE Scenario No.: 2 Op Test No.: 2009 NRC

Examiners: _____ Operators: SRO -

RO -

BOP -

Initial Conditions: At -1% power, Startup in progress. OP 0105, Phase 2.D Step 10
"A" IRM failed upscale during the startup and is bypassed.
RHR Pump "C" is OOS

Turnover: Indefinite LCO due to IRM "A" OOS (TS Table 3.1.1 and TRM 3.2.5)
RHR Pump "C" is OOS for severe vibrations during surveillance testing. Tagged out on previous shift; estimated return to service is 48 hours, 7-day LCO due to RHR Pump "C" OOS (TS 3.5.A.3)
MSIV Isolation Testing is NOT required

Critical Task:

1. Following a Loss of Normal Power diagnoses "B" DG failed to auto-start and manually starts " B DG and places on 4KV Bus 4.
2. With the reactor shutdown and reactor pressure greater than the shutoff head of the low pressure systems, initiate RPV-ED BEFORE RPV level reaches -19 inches
3. Restore and maintain RPV level above TAF (+6 inches)

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R-RO R-SRO	Withdraw control rods to continue the startup
2	mfNM_03C (100%)	I-RO I-SRO TS - SRO	IRM " C Inop Failure, results in half scam.
3	N/A	N - RO N - SRO	Transfer Reactor Mode Switch to RUN and continue the startup.
4	MfRD_15	I - RO I - SRO	Failure of CRD Flow Controller Automatic Output Signal
5	mfHP_03 mfHP_04	C-BOP C-SRO TS-SRO	HPCI inadvertently injects to the vessel with a controller failure (low - to prevent a reactor scram). The crew will confirm that the HPCI injection is spurious and trip the HPCI turbine. Requires T.S. 3.5.E entry
6	mfED_02A mfED-02B	M - ALL	Loss of the startup transformers which will result in a LNP and reactor scram.
7	mfDG_05A mfDG_08B	C - BOP C-SRO	Both DGs fail to auto start, DG " A cannot be started, DG " B can be manually started.

8	mfRR_01A OVRD ANN	M - ALL	Core spray line "B" break in the Drywell between the RPV and injection check valve resulting in a LOCA and loss of the remaining Core Spray system.
9	mfRC_03 – RCIC flow controller failure mfRC_05 – RCIC inadvertent Isolation	C – BOP C-SRO	RCIC Controller Fails in AUTO, then isolates
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility:	VERMONT YANKEE	Scenario No.:	3	Op Test No.:	2009 NRC																			
Examiners:	_____	Operators:	SRO -																					
	_____		RO -																					
	_____		BOP -																					
<p>Initial Conditions: 85% power IC-807 "A" RHR OOS for severe vibration, maintenance is investigating.</p>																								
<p>Turnover: RHR Pump "A" is OOS while maintenance investigates high vibration. It was tagged out on the previous shift; estimated return to service is 48 hours, 7-day LCO due to RHR Pump "A" OOS (TS 3.5.A.3) Perform OP 4160 Once/Week Pump Performance Test Section 1.a and b.</p>																								
<p>Critical Tasks:</p> <ol style="list-style-type: none"> 1. When drywell temperature cannot be restored and maintained below 280°F, initiate RPV-ED (and/or anticipate ED and use bypass valves). 2. IF Reactor water level cannot be determined, Enters EOP-6, RPV Flooding, opens all SRVs and commences injection using Shutdown RPV Flooding Systems until the Main Steam lines are flooded. OR 3. Restores RPV water level and containment parameters with Condensate injecting directly into the RPV AND/OR aligns alternate injection systems such as RHR. 																								
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4	IOR RRlo042AS7B IOR RRdi042AS7B IOR RRlo042AS7B IRF rRR_12	C - BOP C - SRO R-RO R-SRO	"B" Recirc Pump discharge valve full open indication fails causing the "B" Recirc Pump to runback to minimum flow. Insert control rods to get below MELLA
5	mfED06A	C - R O C-SRO TS - SRO	Trip of CRD Pump B with a loss of 125 VDC Bus 1 (Inops 4 KV Bus 3 ECCS equipment). The crew will implement ON 3159, Loss of Bus DC 1. The SS/SRO will review Tech Specs Sections 3.10 and 3.5 and determine that a second 24 hour LCO, requiring a plant shutdown, has been entered. (STG 04)
6	mfTC_04A	I - BOP I - SRO	EPR Oscillations OT 3115, Reactor Pressure Transients – Place MPR in service.
7	mfMS_06	M - CREW	Main Steam Line Break in the Drywell
8	mfFW_08A mfFW_08B mfFW_08C mfCS_03A	C - BOP C - SRO 	Failure of the Reactor Feedwater Pumps and Core Spray Pump A Injection Valve require lining up Condensate Pumps to restore RPV water level.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			