

Facility:		Vermont Yankee		Date of Exam:		10/3/03												
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	K	A	A 2	G *	Total
1. Emergency & Abnormal Plant Evolutions	1	2	5	2				4	4			3	20					
	2	2	0	2				1	1			1	7					
	Tier Totals	4	5	4				5	5			4	27					
2. Plant Systems	1	4	2	4	2	2	2	3	2	3	1	1	26					
	2	1	1	0	0	1	0	0	4	1	1	3	12					
	Tier Totals	5	3	4	2	3	2	3	6	4	2	4	38					
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	
					2		3		2		3							

- Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling.
 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. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system or evolution unless they relate to plant-specific priorities.
 4. Systems/evolutions within each group are identified on the associated outline.
 5. The shaded areas are not applicable to the category/tier.
 - 6.* 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
 7. 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; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A." Use duplicate pages for RO and SRO-only exams.
 8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
 9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

ES-401

BWR Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO)

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	#
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 : (CFR: 41.10 / 43.5 / 45.13) AA2.05 Jet pump operability: Not-BWR-1&2	3.1	1
295003 Partial or Complete Loss of AC / 6						X	Emergency Procedures /Plan G2.4.1 Knowledge of EOP entry conditions and immediate action steps. (CFR: 41.10 / 43.5 / 45.13)	4.3	2
295004 Partial or Total Loss of DC Pwr / 6				X			Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : (CFR: 41.7 / 45.6) AA1.03 A.C. electrical distribution	3.4	3
295005 Main Turbine Generator Trip / 3		X					Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: (CFR: 41.7 / 45.8) AK2.01 RPS	3.8	4
295006 SCRAM / 1	X						Knowledge of the operational implications of the following concepts as they apply to SCRAM : (CFR: 41.8 to 41.10) AK1.01 Decay heat generation and removal	3.7	5
295016 Control Room Abandonment / 7					X		Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : (CFR: 41.10 / 43.5 / 45.13) AA2.07 Suppression chamber pressure	3.2	6
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: (CFR: 41.7 / 45.8) AK2.01 System loads	3.3	7
295019 Partial or Total Loss of Inst. Air / 8				x			Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : (CFR: 41.7 / 45.6) AA1.04 Service air isolations valves: Plant-Specific	3.3	8
295021 Loss of Shutdown Cooling / 4	X						Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING : (CFR: 41.8 to 41.10) AK1.04 Natural circulation	3.6	9

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295023 Refueling Acc Cooling Mode / 8		X					Knowledge of the interrelations between REFUELING ACCIDENTS and the following: (CFR: 41.7 / 45.8) AK2.03 Radiation monitoring equipment	3.4	10
295024 High Drywell Pressure / 5		X					Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: (CFR: 41.7 / 45.8) EK2.12 Suppression pool cooling	3.5	11
295025 High Reactor Pressure / 3						X	Conduct of Operations G2.1.32 Ability to explain and apply system limits and precautions. (CFR: 41.10 / 43.2 / 45.12)	3.4	12
295026 Suppression Pool High Water Temp. / 5		X					Knowledge of the interrelations between SUPPRESSION POOL HIGH WATER TEMPERATURE and the following: (CFR: 41.7 / 45.8) EK2.04 SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.5	19
295028 High Drywell Temperature / 5					X		Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : (CFR: 41.10 / 43.5 / 45.13) EA2.05 Torus/suppression chamber pressure: Plant-Specific	3.6	13
295030 Low Suppression Pool Wtr Lvl / 5				X			Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: (CFR: 41.7 / 45.6) EA1.02 RCIC: Plant-Specific	3.4	14
295031 Reactor Low Water Level / 2				X	X		Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13) EA2.02 Reactor power Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL : (CFR: 41.7 / 45.6) EA1.11 Condensate	4.0 4.1	16 15
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1			X				Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : (CFR: 41.5 / 45.6) EK3.04 Hot shutdown boron weight: Plant-Specific	3.2	17
295038 High Off-site Release Rate / 9						X	Equipment Control G2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (CFR: 43.2)	2.5	20

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BWR Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO)

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	#
600000 Plant Fire On Site / 8			X				Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: AK3.04 Actions contained in the abnormal procedure for plant fire on site	2.8	18
K/A Category Totals:	2	5	2	4	4	3	Group Point Total:		20

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BWR Examination Outline
 Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO)

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	#
Sump/Area Water Level / 5									
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals	2	-	2	1	1	1	Group Point Total:		7

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	#
203000 RHR/LPCI: Injection Mode									X			Ability to monitor automatic operations of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) including: (CFR: 41.7 / 45.7) A3.05 Reactor water level	4.4*	28
205000 Shutdown Cooling											X	Conduct of Operations G2.1.28 Knowledge of the purpose and function of major system components and controls. (CFR: 41.7)	3.2	29
206000 HPCI		X					X					Ability to predict and/or monitor changes in parameters associated with operating the HIGH PRESSURE COOLANT INJECTION SYSTEM controls including: (CFR: 41.5 / 45.5) A1.08 System lineup: BWR-2,3,4	4.1*	31
												Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.03 Initiation logic: BWR-2,3,4	2.8*	30
209001 LPCS			X									Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on following: (CFR: 41.7 / 45.4) K3.02 ADS logic	3.8	32
211000 SLC	X		X									Knowledge of the physical connections and/or cause-effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.02 Core plate differential pressure indication	2.7	33
												Knowledge of the effect that a loss or malfunction of the STANDBY LIQUID CONTROL SYSTEM will have on following: (CFR: 41.7 / 45.4) K3.01 †Ability to shutdown the reactor in certain conditions	4.3*	34
212000 RPS							X					Ability to predict and/or monitor changes in parameters associated with operating the REACTOR PROTECTION SYSTEM controls including: (CFR: 41.5 / 45.5) A1.09 Individual relay status: Plant-Specific	2.7	35

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	#
215003 IRM			X			X						<p>Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: (CFR: 41.7 / 45.4) K3.04 Reactor power indication</p>	3.6	36
												<p>Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM : (CFR: 41.7 / 45.7) K6.04 Detectors</p>	3.0	37
215004 Source Range Monitor		X										<p>Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.01 SRM channels/detectors</p>	2.6	38
215005 APRM / LPRM							X					<p>Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: (CFR: 41.5 / 45.5) A1.02 RPS status</p>	3.9	39
217000 RCIC					X							<p>Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) : (CFR: 41.5 / 45.3) K5.06 Turbine operation</p>	2.7*	40
218000 ADS			X									<p>Knowledge of the effect that a loss or malfunction of the AUTOMATIC DEPRESSURIZATION SYSTEM will have on following: (CFR: 41.7 / 45.4) K3.02 Ability to rapidly depressurize the reactor</p>	4.5*	41
223002 PCIS/Nuclear Steam Supply Shutoff								X				<p>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: (CFR: 41.5 / 45.6) A2.02 D.C. electrical distribution failures</p>	2.9	42

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	#
239002 SRVs	X											Knowledge of the physical connections and/or cause-effect relationships between RELIEF/SAFETY VALVES and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.09 Drywell pressure (for safety valves which discharge to the drywell airspace): Plant-Specific	4.0	43
259002 Reactor Water Level Control					X							Knowledge of the operational implications of the following concepts as they apply to REACTOR WATER LEVEL CONTROL SYSTEM : (CFR: 41.5 / 45.3) K5.01 GEMAC/Foxboro/Bailey controller operation: Plant-Specific.	3.1	44
261000 SGTS	X											Knowledge of the physical connections and/or cause-effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.03 Suppression pool	2.9	45
262001 AC Electrical Distribution				X							X	Knowledge of A.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: (CFR: 41.7) K4.05 Paralleling of A.C. sources (synchroscope) Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.01 All breakers and disconnects (including available switch yard): Plant-Specific	3.4	46
262002 UPS (AC/DC)				X								Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: (CFR: 41.7) K4.01 Transfer from preferred power to alternate power supplies	3.1	48

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	#
263000 DC Electrical Distribution	X							X				Knowledge of the physical connections and/or cause-effect relationships between D.C. ELECTRICAL DISTRIBUTION and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.01 A.C. electrical distribution	3.3	49
												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: (CFR: 41.5 / 45.6) A2.01 Grounds	2.8	50
264000 EDGs						X						Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : (CFR: 41.7 / 45.7) K6.09 D.C. power	3.3	51
300000 Instrument Air									X			Ability to monitor automatic operations of the INSTRUMENT AIR SYSTEM including: (CFR: 41.7 / 45.7) A3.02 Air temperature	2.9	52
400000 Component Cooling Water									X			Ability to monitor automatic operations of the CCWS including: (CFR: 41.7 / 45.7) A3.01 Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS	3.0	53
K/A Category Point Totals	4	2	4	2	2	2	3	2	3	1	1	Group Point Total:		26

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	#
201001 CRD Hydraulic														
201002 RMCS								X				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: (CFR: 41.5 / 45.6) A2.01 Rod movement sequence timer malfunctions	2.7	54
201003 Control Rod and Drive Mechanism														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control											X	Conduct of Operations G2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 / 45.3)	3.4	55
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe														
215002 RBM								X				Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.01 Withdrawal of control rod in high power region of core: BWR-3,4,5	3.3	56
216000 Nuclear Boiler Inst.								X				Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.11 Heatup or cooldown of the reactor vessel	3.2	57
219000 RHR/LPCI: Torus/Pool Cooling Mode		X										Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.01 †Valves	2.5*	58

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BWR Examination Outline
Plant Systems – Tier 2/Group 2 (RO)

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	#
290002 Reactor Vessel Internals	X											Knowledge of the physical connections and/or cause-effect relationships between REACTOR VESSEL INTERNALS and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.19 TIP	2.5	65
K/A Category Point Totals	1	1	-	-	1	-	-	4	1	1	3	Group Point Total:		12

ES-401		Generic Knowledge and Abilities Outline (Tier 3)			Form ES-401-3	
Facility:		Date of Exam				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.18	Ability to make accurate / clear and concise logs / records / status boards / and reports. (CFR: 45.12 / 45.13)	2.9	66		
	2.1.20	Ability to execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)	4.3	67		
	2.1.					
	2.1.					
	2.1.					
	2.1.					
	Subtotal					
2. Equipment Control	2.2.23	Ability to track limiting conditions for operations.(CFR: 43.2 / 45.13)	2.6	68		
	2.2.11	Knowledge of the process for controlling temporary changes. (CFR: 41.10 / 43.3 / 45.13)	2.5	69		
	2.2.1	Ability to perform pre-startup procedures for the facility / including operating those controls associated with plant equipment that could affect reactivity. (CFR: 45.1)	3.7	70		
	2.2.					
	Subtotal					
3. Radiation Control	2.3.11	Ability to control radiation releases. (CFR: 45.9 / 45.10)	2.7	71		
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10)	2.9	72		
	2.3.					
	2.3.					
	2.3.					
	2.3.					
	Subtotal					

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Generic Knowledge and Abilities Outline (Tier 3)

Form ES-401-3

Facility:

Date of Exam

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
4. Emergency Procedures / Plan	2.4.18	Knowledge of the specific bases for EOPs. (CFR: 41.10 / 45.13)	2.7	73		
	2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. (CFR: 41.10 / 45.13)	2.8	74		
	2.4.19	Knowledge of EOP layout / symbols / and icons. (CFR: 41.10 / 45.13)	2.7	75		
	2.4.					
	2.4.					
	Subtotal					
Tier 3 Point Total				10		

Tier / Group	Randomly Selected K/A	Reason for Rejection
3	2.2.31	K/A < 2.5 for RO (2.2)
3	2.2.5	K/A < 2.5 for RO (1.6)
3	2.4.41	K/A < 2.5 for RO (2.3)
2/1	211000 K3.03	Very similar to 211000 K1.02
2/1	223002 K2	No K/A > 2.5
2/1	259002 K5.09	FWCI not at VYN/Pilgrim
2/1	259002 K5.08	FWCI not at VYN/Pilgrim
2/1	400000 A1	No K/A
2/2	202002 K2.01	K/A < 2.5
2/2	202002 K2.02	Equipment not installed at VYN/Pilgrim
2/2	290002 K1.12	Very similar to 211000 K1.02
2/1	262001 K1.01	Deselected to allow selection of 2 nd K4 in Tier 2
2/1	300000 A1	No A1 K/A in this system; picked from remaining 10 chips
1/1	295031	EA1.05 removed: 4 questions on RCIC
1/2	295029	EA1.04 removed: 4 questions on RCIC: 295031 EA1.05, 295029 EA1.04 removed 295030 EA2.02, 217000 K5.06 kept Replacements poker chipped in

EXAMINATION
LICENSED OPERATOR INITIAL TRAINING PROGRAM

Course: Draft RO NRC Exam 2003

Exam Activity Code: Date Exam Prepared: 9 July 2003

Date Exam Taken: 3 October 2003

Exam Questions

No.	Ans	Q #	Rev	IG	Objectives	Time	K&A Ref	Level	Source
1	c	5614	2	LOT-00-202	CRO 3j	3	295001/AA2.05	2	New
2	c	5615	1	LOT-01-262	CRO 6	3	295003/2.4.01	2	New
3	b	5616	3	LOT-00-601	CRO 2, 3, 4	3	295004/AA1.03	1	New
4	b	5617	0	LOT-00-249	CRO 8	3	295005/AK2.01	1	New
5	d	5618	2	LOT-00-129	31	3	295006/AK1.01	0	New
6	c	5619	2	LOT-00-612	A2, A4	3	295016/AA2.07	2	New
7	d	5620	0	LOT-00-603	CRO 3g	3	295018/AK2.01	1	New
8	a	5621	1	LOT-00-279	CRO 1e, 5	3	295019/AA1.04	1	New
9	d	5622	1	LOT-00-601	CRO 3, 4	3	295021/AK1.04	1	New
10	d	5623	3	LOT-00-620	3	3	295023/AK2.03	0	New
11	a	5624	0	LOT-00-205	CRO 2	3	295024/EK2.12	1	New
12	c	5625	2	LOT-00-302	CRO 3	3	295025/2.1.32	0	New
13	c	5626	2	LOT-00-607	CRO 2	3	295028/EA2.05	1	New
14	a	5627	0	LOT-00-217	CRO 5b	3	295030/EA1.02	1	New
15	c	5628	2	LOT-00-256	CRO 2	3	295031/EA1.11	0	New
16	a	5629	1	LOT-00-610	CRO 2	3	295031/EA2.02	2	New
17	b	5630	0	LOT-00-610	CRO 2	3	295037/EK3.04	2	New
18	d	5631	3	LOT-00-286	CRO 4a	3	600000/AK3.04	1	New
19	a	5632	0	LOT-00-607	CRO 1	3	295026/EK2.04	0	New
20	a	5633	2	LOT-00-138	17, 19	3	295038/2.2.25	0	New
21	d	5634	4	LOT-00-602	CRO 3	3	295002/AK1.04	1	New
22	a	5635	1	LOT-00-288	CRO 5	3	295010/AK3.02	1	New
23	b	5636	0	LOT-00-618	1, 13, 15	3	295013/AK3.01	0	New
24	b	5637	2	LOT-00-308	CRO 2, 3, 4, 5	3	295015/2.2.22	0	New
25	a	5638	1	LOT-00-607	CRO 2, 3	3	295029/EK1.01	1	Bank
26	c	5639	0	LOT-00-611	CRO 3, 5	3	295033/EA2.01	0	New
27	b	5640	1	LOT-01-223	CRO 4, 5	3	295034/EA1.02	1	New
28	b	5641	2	LOT-00-205	CRO 2, 4	3	203000/A3.05	2	New
29	a	5642	0	LOT-00-205	CRO 2	3	205000/2.1.28	0	New
30	c	5643	2	LOT-00-206	10c	3	206000/K2.03	0	New
31	c	5644	0	LOT-00-206	CRO 3, 5b, 6b, 7	3	206000/A1.08	0	New
32	d	5645	0	LOT-00-218	CRO 2	3	209001/K3.02	0	New
33	d	5646	2	LOT-00-211	AO 2g	3	211000/K1.02	1	New
34	c	5647	1	LOT-00-626	CRO 4	3	211000/K3.01	0	Bank
35	a	5648	0	LOT-00-212	CRO 2	3	212000/A1.09	1	New
36	d	5649	1	LOT-02-215	CRO 2i	3	215003/K3.04	0	New
37	a	5650	1	LOT-02-215	CRO 8	3	215003/K6.04	2	New
38	d	5651	0	LOT-01-215	CRO 6	3	215004/K2.01	0	New
39	c	5652	2	LOT-05-215	CRO 6	3	215005/A1.02	1	New

40	c	5653	1	LOT-00-217	CRO 4b	3	217000/K5.06	0	New
41	c	5654	2	LOT-00-608	CRO 1, 2	3	218000/K3.02	0	New
42	d	5655	1	LOT-00-206	CRO 5, 7, 10a	3	223002/A2.02	2	New
43	d	5656	1	LOT-00-239	CRO 3	3	239002/K1.09	1	New
44	b	5657	0	LOT-01-259	CRO 5e	3	259002/K5.01	1	New
45	c	5658	0	LOT-00-261	CRO 5	3	261000/K1.03	2	New
46	c	5659	5	LOT-00-264	CRO 11	3	262001/K4.05	1	New
47	a	5660	1	LOT-00-262	1d, 3	3	262001/A4.01	1	New
48	c	5661	1	LOT-03-262	CRO 7	3	262002/K4.01	0	Bank Mod
49	a	5662	1	LOT-00-601	CRO 2, 3, 4	3	263000/K1.01	0	Bank Mod
50	a	5663	2	LOT-00-263	CRO 2	3	263000/A2.01	1	New
51	c	5664	0	LOT-00-603	CRO 3	3	264000/K6.09	0	New
52	c	5665	0	LOT-00-279	AO 9d, 11; CRO 1d	3	300000/A3.02	1	New
53	b	5666	0	LOT-00-208	CRO 7	3	400000/A3.01	0	New
54	a	5667	2	LOT-02-201	CRO 1a, c, e, 3	3	201002/A2.01	0	New
55	c	5668	3	LOT-00-202	CRO 4, 5	3	202002/2.1.33	0	Bank Mod
56	d	5669	2	LOT-03-201	CRO 4	3	215002/A2.01	1	New
57	a	5670	0	LOT-00-216	CRO 4, 11a, 14	3	216000/A2.11	1	New
58	c	5671	1	LOT-00-205	CRO 2	3	219000/K2.01	0	New
59	a	5672	0	LOT-01-229	CRO 5	3	223001/K5.13	0	New
60	b	5673	1	LOT-00-234	AO 2a, b, c, 10a	3	234000/A2.03	2	New
61	b	5674	1	LOT-00-212	CRO 3	3	239001/2.2.22	2	New
62	c	5675	1	LOT-00-249	CRO 5, 7, 9	3	241000/A3.12	1	New
63	a	5676	1	LOT-00-256	1j, 2	3	256000/A4.07	2	New
64	c	5677	0	LOT-01-288	AO 3, CRO 3, 5	3	290001/2.1.30	1	New
65	a	5678	1	LOT-04-215	CRO 1, FND 3	3	290002/K1.19	0	New
66	b	5679	0	LOT-00-302	CRO 2	3	0/2.1.18	0	New
67	a	5680	1	LOT-03-400	CRO 1	3	0/2.1.20	0	New
68	b	5681	1	LOT-01-400	CRO 3	3	0/2.2.23	0	New
69	a	5682	0	LOT-00-402	CRO 2, 3	3	0/2.2.11	0	Bank Mod
70	b	5683	1	LOT-02-201	CRO 1a, b, 7	3	0/2.2.01	0	New
71	b	5684	1	LOT-00-271	CRO 5	3	0/2.3.11	0	New
72	d	5685	3	LOT-00-602	CRO 3	3	0/2.3.10	1	New
73	b	5686	2	LOT-00-610	CRO 3	3	0/2.4.18	1	New
74	b	5687	1	LOT-00-607	CRO 2, 3	3	0/2.4.23	1	New
75	a	5688	0	LOT-00-622	CRO 4	3	0/2.4.19	0	New
Total						225			

Question Level Totals

Level	Description	Number of Questions
0	Fundamental Knowledge/Memory	34
1	Comprehension	29
2	Analysis	12

Originator: Brown, Scott T.

Last Revised: 08/20/2003 9:05:36 AM by Hallonquist, Nora E.

Facility:		Date of Exam:																	
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	K	A	A 2	G *	Total	
1. Emergency & Abnormal Plant Evolutions	1	2	5	2				4	4				3	20	0	3	4	1	8
	2	2	0	2				1	1				1	7	1	0	1	2	4
	Tier Totals	4	5	4				5	5				4	27	1	3	5	3	12
2. Plant Systems	1	4	2	4	2	2	2	3	2	3	1	1	26	1	0	2	1	4	
	2	1	1	0	0	1	0	0	4	1	1	3	12	0	0	1	1	2	
	Tier Totals	5	3	4	2	3	2	3	6	4	2	4	38	1	0	3	2	6	
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7	
					2		3		2		3			2	1	2	2		

- Note:
- Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling.
 - 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.
 - Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system or evolution unless they relate to plant-specific priorities.
 - Systems/evolutions within each group are identified on the associated outline.
 - The shaded areas are not applicable to the category/tier.
 - * 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
 - 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; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A." Use duplicate pages for RO and SRO-only exams.
 - For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
 - Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

ES-401

BWR Examination Outline
 Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (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	#
295038 High Off-site Release Rate / 9									
600000 Plant Fire On Site / 8				X			Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: AA1.05 Plant and control room ventilation systems 43(b)(2)	3.1	83
K/A Category Totals:	0	0	0	3	4	1	Group Point Total:		8

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3									
295007 High Reactor Pressure / 3						X	Equipment Control G2.2.22 Knowledge of limiting conditions for operations and safety limits. (CFR: 43.2 / 45.2)	4.1	84
295008 High Reactor Water Level / 2						X	Equipment Control G2.2.2 Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 45.2) 43(b)(5)	3.5	85
295009 Low Reactor Water Level / 2									
295010 High Drywell Pressure / 5					X		Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE : (CFR: 41.10 / 43.5 / 45.13) AA2.02 Drywell pressure	3.9	86
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1									
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9									
295020 Inadvertent Cont. Isolation / 5 & 7									
295022 Loss of CRD Pumps / 1									
295029 High Suppression Pool Wtr Lvl / 5									
295032 High Secondary Containment Area Temperature / 5									
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9			X				Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION : (CFR: 41.5 / 45.6) 43(b)(2) EK3.02 Starting SBGT/FRVS: Plant-Specific	4.1	87
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5									
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals	0	0	1	0	1	2	Group Point Total:		4

ES-401

BWR Examination Outline
Plant Systems – Tier 2/Group 1 (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	#
264000 EDGs						X						Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : (CFR: 41.7 / 45.7) 43(b)(2) K6.01 Starting air	3.9	91
300000 Instrument Air														
400000 Component Cooling Water														
K/A Category Point Totals	0	0	0	0	0	1	0	2	0	0	1	Group Point Total:		4

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	#
201001 CRD Hydraulic														
201002 RMCS														
201003 Control Rod and Drive Mechanism														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe														
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode											X	Equipment Control G2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (CFR: 43.2)	3.7	92
233000 Fuel Pool Cooling/Cleanup								X				Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) 43(b)(2) A2.07 High fuel pool temperature	3.2	93
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate														
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas														
272000 Radiation Monitoring														
286000 Fire Protection														
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals														
K/A Category Point Totals	0	0	0	0	0	0	0	1	0	0	1	Group Point Total:		2

Facility: _____ Date of Exam _____

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.22	Ability to determine Mode of Operation. (CFR: 43.5 / 45.13)			3.3	94
	2.1.25	Ability to obtain and interpret station reference materials such as graphs / monographs / and tables which contain performance data. (CFR: 41.10 / 43.5 / 45.12)			3.1	95
	2.1.					
	2.1.					
	2.1.					
	2.1.					
	Subtotal					
2. Equipment Control	2.2.21	Knowledge of pre and post maintenance operability requirements. (CFR: 43.2)			3.5	96
	2.2.					
	2.2.					
	2.2.					
	2.2.					
	2.2.					
Subtotal						
3. Radiation Control	2.3.9	Knowledge of the process for performing a containment purge. (CFR: 43.4 / 45.10)			3.4	97
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10)			3.3	98
	2.3.					
	2.3.					
	2.3.					
	2.3.					
	Subtotal					

ES-401

Generic Knowledge and Abilities Outline (Tier 3)

Form ES-401-3

Facility:		Date of Exam				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
4. Emergency Procedures / Plan	2.4.40	Knowledge of the SRO's responsibilities in emergency plan implementation. (CFR: 45.11) 43(b)(1) & (5)			4.0	99
	2.4.43	Knowledge of emergency communications systems and techniques. (CFR: 45.13) 43(b)(5)			3.5	100
	2.4.					
	2.4.					
	2.4.					
	2.4.					
	Subtotal					
Tier 3 Point Total						7

EXAMINATION

LICENSED OPERATOR INITIAL TRAINING PROGRAM

Course: Draft SRO NRC Exam 2003

Exam Activity Code: Date Exam Prepared: 9 July 2003

Date Exam Taken: 3 October 2003

Exam Questions

No.	Ans	Q #	Rev	IG	Objectives	Time	K&A Ref	Level	Source
1	c	5614	2	LOT-00-202	CRO 3j	3	295001/AA2.05	2	New
2	c	5615	1	LOT-01-262	CRO 6	3	295003/2.4.01	2	New
3	b	5616	3	LOT-00-601	CRO 2, 3, 4	3	295004/AA1.03	1	New
4	b	5617	0	LOT-00-249	CRO 8	3	295005/AK2.01	1	New
5	d	5618	2	LOT-00-129	31	3	295006/AK1.01	0	New
6	c	5619	2	LOT-00-612	A2, A4	3	295016/AA2.07	2	New
7	d	5620	0	LOT-00-603	CRO 3g	3	295018/AK2.01	1	New
8	a	5621	1	LOT-00-279	CRO 1e, 5	3	295019/AA1.04	1	New
9	d	5622	1	LOT-00-601	CRO 3, 4	3	295021/AK1.04	1	New
10	d	5623	3	LOT-00-620	3	3	295023/AK2.03	0	New
11	a	5624	0	LOT-00-205	CRO 2	3	295024/EK2.12	1	New
12	c	5625	2	LOT-00-302	CRO 3	3	295025/2.1.32	0	New
13	c	5626	2	LOT-00-607	CRO 2	3	295028/EA2.05	1	New
14	a	5627	0	LOT-00-217	CRO 5b	3	295030/EA1.02	1	New
15	c	5628	2	LOT-00-256	CRO 2	3	295031/EA1.11	0	New
16	a	5629	1	LOT-00-610	CRO 2	3	295031/EA2.02	2	New
17	b	5630	0	LOT-00-610	CRO 2	3	295037/EK3.04	2	New
18	d	5631	3	LOT-00-286	CRO 4a	3	600000/AK3.04	1	New
19	a	5632	0	LOT-00-607	CRO 1	3	295026/EK2.04	0	New
20	a	5633	2	LOT-00-138	17, 19	3	295038/2.2.25	0	New
21	d	5634	4	LOT-00-602	CRO 3	3	295002/AK1.04	1	New
22	a	5635	1	LOT-00-288	CRO 5	3	295010/AK3.02	1	New
23	b	5636	0	LOT-00-618	1, 13, 15	3	295013/AK3.01	0	New
24	b	5637	2	LOT-00-308	CRO 2, 3, 4, 5	3	295015/2.2.22	0	New
25	a	5638	1	LOT-00-607	CRO 2, 3	3	295029/EK1.01	1	Bank
26	c	5639	0	LOT-00-611	CRO 3, 5	3	295033/EA2.01	0	New
27	b	5640	1	LOT-01-223	CRO 4, 5	3	295034/EA1.02	1	New
28	b	5641	2	LOT-00-205	CRO 2, 4	3	203000/A3.05	2	New
29	a	5642	0	LOT-00-205	CRO 2	3	205000/2.1.28	0	New
30	c	5643	2	LOT-00-206	10c	3	206000/K2.03	0	New
31	c	5644	0	LOT-00-206	CRO 3, 5b, 6b, 7	3	206000/A1.08	0	New
32	d	5645	0	LOT-00-218	CRO 2	3	209001/K3.02	0	New
33	d	5646	2	LOT-00-211	AO 2g	3	211000/K1.02	1	New
34	c	5647	1	LOT-00-626	CRO 4	3	211000/K3.01	0	Bank
35	a	5648	0	LOT-00-212	CRO 2	3	212000/A1.09	1	New
36	d	5649	1	LOT-02-215	CRO 2i	3	215003/K3.04	0	New

37	a	5650	1	LOT-02-215	CRO 8	3	215003/K6.04	2	New
38	d	5651	0	LOT-01-215	CRO 6	3	215004/K2.01	0	New
39	c	5652	2	LOT-05-215	CRO 6	3	215005/A1.02	1	New
40	c	5653	1	LOT-00-217	CRO 4b	3	217000/K5.06	0	New
41	c	5654	2	LOT-00-608	CRO 1, 2	3	218000/K3.02	0	New
42	d	5655	1	LOT-00-206	CRO 5, 7, 10a	3	223002/A2.02	2	New
43	d	5656	1	LOT-00-239	CRO 3	3	239002/K1.09	1	New
44	b	5657	0	LOT-01-259	CRO 5e	3	259002/K5.01	1	New
45	c	5658	0	LOT-00-261	CRO 5	3	261000/K1.03	2	New
46	c	5659	5	LOT-00-264	CRO 11	3	262001/K4.05	1	New
47	a	5660	1	LOT-00-262	1d, 3	3	262001/A4.01	1	New
48	c	5661	1	LOT-03-262	CRO 7	3	262002/K4.01	0	Bank Mod
49	a	5662	1	LOT-00-601	CRO 2, 3, 4	3	263000/K1.01	0	Bank Mod
50	a	5663	2	LOT-00-263	CRO 2	3	263000/A2.01	1	New
51	c	5664	0	LOT-00-603	CRO 3	3	264000/K6.09	0	New
52	c	5665	0	LOT-00-279	AO 9d, 11; CRO 1d	3	300000/A3.02	1	New
53	b	5666	0	LOT-00-208	CRO 7	3	400000/A3.01	0	New
54	a	5667	2	LOT-02-201	CRO 1a, c, e, 3	3	201002/A2.01	0	New
55	c	5668	3	LOT-00-202	CRO 4, 5	3	202002/2.1.33	0	Bank Mod
56	d	5669	2	LOT-03-201	CRO 4	3	215002/A2.01	1	New
57	a	5670	0	LOT-00-216	CRO 4, 11a, 14	3	216000/A2.11	1	New
58	c	5671	1	LOT-00-205	CRO 2	3	219000/K2.01	0	New
59	a	5672	0	LOT-01-229	CRO 5	3	223001/K5.13	0	New
60	b	5673	1	LOT-00-234	AO 2a, b, c, 10a	3	234000/A2.03	2	New
61	b	5674	1	LOT-00-212	CRO 3	3	239001/2.2.22	2	New
62	c	5675	1	LOT-00-249	CRO 5, 7, 9	3	241000/A3.12	1	New
63	a	5676	1	LOT-00-256	1j, 2	3	256000/A4.07	2	New
64	c	5677	0	LOT-01-288	AO 3, CRO 3, 5	3	290001/2.1.30	1	New
65	a	5678	1	LOT-04-215	CRO 1, FND 3	3	290002/K1.19	0	New
66	b	5679	0	LOT-00-302	CRO 2	3	0/2.1.18	0	New
67	a	5680	1	LOT-03-400	CRO 1	3	0/2.1.20	0	New
68	b	5681	1	LOT-01-400	CRO 3	3	0/2.2.23	0	New
69	a	5682	0	LOT-00-402	CRO 2, 3	3	0/2.2.11	0	Bank Mod
70	b	5683	1	LOT-02-201	CRO 1a, b, 7	3	0/2.2.01	0	New
71	b	5684	1	LOT-00-271	CRO 5	3	0/2.3.11	0	New
72	d	5685	3	LOT-00-602	CRO 3	3	0/2.3.10	1	New
73	b	5686	2	LOT-00-610	CRO 3	3	0/2.4.18	1	New
74	b	5687	1	LOT-00-607	CRO 2, 3	3	0/2.4.23	1	New
75	a	5688	0	LOT-00-622	CRO 4	3	0/2.4.19	0	New
76	c	5689	2	LOT-05-215	SRO 1	4	295001/AA2.02	2	Bank Mod
77	c	5690	0	LOT-00-601	SRO 8	4	295004/AA1.01	2	New
78	c	5691	1	LOT-00-601	SRO 8	4	295018/AA2.04	2	New
79	d	5692	1	LOT-00-601	SCRO (CRS) 5, 7	4	295021/AA1.02	1	New
80	c	5693	3	LOT-00-614	SRO 1	4	295024/EA2.02	2	New
81	c	5694	0	LOT-00-602	SRO 6	4	295025/EA2.02	1	New

82	c	5695	1	LOT-00-614	SRO 1	4	295026/2.4.03	1	New
83	c	5696	1	LOT-00-603	SRO 4	4	600000/AA1.05	1	New
84	a	5697	2	LOT-00-308	SCRO 1	4	295007/2.2.22	0	New
85	d	5698	3	LOT-00-610	SRO 3, 4	4	295008/2.2.02	1	New
86	a	5699	0	LOT-00-615	SRO 1	4	295010/AA2.02	1	Bank Clinton 2000 NRC
87	d	5700	1	LOT-00-261	SRO 1	4	295034/EK3.02	0	Bank Grand Gulf 1998 NRC
88	d	5701	1	LOT-00-205	SCRO 1	4	205000/A2.12	2	New
89	b	5702	1	LOT-00-614	SRO 1, 2	4	209001/A2.09	2	New
90	a	5703	0	LOT-00-223	SRO 3	4	261000/2.1.27	1	New
91	a	5704	3	LOT-00-264	SCRO 1a	4	264000/K6.01	2	New
92	a	5705	2	LOT-00-205	SCRO 1	4	230000/2.2.25	1	New
93	a	5706	2	LOT-00-233	SRO 1	4	233000/A2.07	0	New
94	b	5707	0	LOT-00-308	SCRO (CRS) 1	4	0/2.1.22	0	New
95	d	5708	1	LOT-00-138	22, 24	4	0/2.1.25	2	New
96	a	5709	0	LOT-00-400	SCRO 3	4	0/2.2.21	0	New
97	c	5710	1	LOT-00-223	SRO 3	4	0/2.3.09	0	New
98	b	5711	2	LOT-00-404	SRO 1	4	0/2.3.10	2	Bank Palisade 2001 NRC
99	a	5712	2	LOT-00-900	SRO 1, 4	4	0/2.4.40	0	New
100	a	5713	1	LOT-00-900	SRO (CRS) 1, 4	4	0/2.4.43	0	New
						Total			325

Question Level Totals

Level	Description	Number of Questions
0	Fundamental Knowledge/Memory	42
1	Comprehension	37
2	Analysis	21

Originator: Brown, Scott T.

Last Revised: 08/20/2003 9:45:25 AM by Hallonquist, Nora E.

Facility: <u>Vermont Yankee</u> Date of Examination: <u>10/3/03</u> Examination Level (circle one): RO / <u>SRO</u> Operating Test Number: <u>1</u>	
Administrative Topic /Subject Description— (see Note)	Describe activity to be performed method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Take actions for inadequate shift staffing (new) Generic 2.1.5 Ability to locate and use procedures and directives related to shift staffing and activities. (CFR: 41.10 / 43.5 / 45.12) IMPORTANCE SRO 3.4
Conduct of Operations	Isolate leaking RHR piping leak and determine Technical Specification impact (new) Generic 2.1.24 Ability to obtain and interpret station electrical and mechanical drawings. (CFR: 45.12 / 45.13) IMPORTANCE SRO 3.1
A.2 Equipment Control	Determine if equipment can be removed from service for minor unscheduled maintenance (new) Generic 2.2.17 Knowledge of the process for managing maintenance activities during power operations. (CFR: 43.5 / 45.13) IMPORTANCE SRO 3.5
A.3 Radiation Control	Determine emergency plan allowed radiation exposure (new) Generic 2.3.4 Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized. (CFR: 43.4 / 45.10) IMPORTANCE SRO 3.1
A.4 Emergency Plan	Determine protective action recommendation (bank) Generic 2.4.29 Knowledge of the emergency plan. (CFR: 43.5 / 45.11) IMPORTANCE SRO 4.0
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.	

Facility: Vermont YankeeDate of Examination: 10/3/03Exam Level (circle one): RO / **SRO(I)** / SRO(U)Operating Test No.: 1**B.4 Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)**

System / JPM Title	Type Code*	Safety Function
a. Perform Weekly Operable Control Rod Check (Stuck Rod) (20107F)	D, A, S	1
b. Reset MG Scoop Tube Lockup (20205)	D, S	4
c. Bypass Reactor Building HVAC Trips (20041)	D, C	5
d. Transfer MCC 89A from the Maintenance Tie to RUPS (26209)	D, S	6
e. Core Spray Pump Surveillance (20901F)	D, S, A	2
f. Initiate Manual Scram (OE 3107 Appendix F) (20023F)	M, S, A	7
g. Parallel Main Generator to Grid (24503)	D, L, S	3
h. none		

B.2 Facility Walk-Through In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i. Place Standby CRD FCV in Service (Loss of CRD Regulating Function) (20106)	D, R	1
j. Respond to High Service Water Strainer D/P (27601)	D	8
k. Startup RPS Motor Generator (21202F)	D, A	7

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: <u>Vermont Yankee</u> Date of Examination: <u>10/3/03</u> Examination Level (circle one): <u>RO</u> / SRO Operating Test Number: <u>1</u>	
Administrative Topic /Subject Description— (see Note)	Describe activity to be performed method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Isolate leaking RHR piping weld leak (new) Generic 2.1.24 Ability to obtain and interpret station electrical and mechanical drawings. (CFR: 45.12 / 45.13) IMPORTANCE RO 2.8
A.2 Equipment Control	Perform "emergency in" functional test (new) Generic 2.2.1 Ability to perform pre-startup procedures for the facility / including operating those controls associated with plant equipment that could affect reactivity. (CFR: 45.1) IMPORTANCE RO 3.7
A.3 Conduct of Operations	Prepare Control Room Shift Turnover Checklist (new) Alternate path Generic 2.1.3 Knowledge of shift turnover practices. (CFR: 41.10 / 45.13) IMPORTANCE RO 3.0 Generic 2.1.31 Ability to locate control room switches / controls and indications and to determine that they are correctly reflecting the desired plant lineup. (CFR: 45.12) IMPORTANCE RO 4.2
A.4 Emergency Plan	Control room Emergency Communication check (new) Generic 2.4.43 Knowledge of emergency communications systems and techniques CFR: 45.13) IMPORTANCE RO 2.8
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.	

Facility: Vermont Yankee
Exam Level (circle one): RO / SRO(I) / SRO(U)

Date of Examination: 10/3/03
Operating Test No.: 1

B.1 Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. Perform Weekly Operable Control Rod Check (Stuck Rod) (20107F)	D, A, S	1
b. Parallel Main Generator to Grid (24507)	D, L, S	3
c. Reset MG Scoop Tube Lockup (20205)	D, S	4
d. Bypass Reactor Building HVAC Trips (20041)	D, C	5
e. Transfer MCC 89A from the Maintenance Tie to RUPS (26209)	D, S	6
f. Core Spray Pump Surveillance (20901F)	D, S, A	2
g. Initiate Manual Scram (OE 3107 Appendix F) (20023F)	M, S, A	7
h. Swap SJAE Suction Valves (516) (27106)	D, S	9

B.2 ~~Facility Walk-Through~~ In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i. Place Standby CRD FCV in Service (Loss of CRD Regulating Function) (20106)	D, R	1
j. Respond to High Service Water Strainer D/P (27601)	D	8
k. Startup RPS Motor Generator (21202F)	D, A	7

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Vermont Yankee

Facility: (1999 NRC)Modified Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____ ACRO
 _____ CRO
 _____ CRS

Objectives: Evaluate the crew's ability to operate plant equipment to support a normal power ascension, respond to and evaluate (Technical Specification) a level instrument failure and the resultant reactivity addition transient. Recognize and take action for a Recirc Pump failure, recognize and limit the positive reactivity from a Recirc Pump speed transient. Determine the affect of a loss of a 480 VAC ECCS bus on plant operation, and to implement the EOPs to monitor and control plant parameters for a major primary containment steam leak resulting in emergency depressurization as well as recognizing the inability to spray the drywell

Initial Conditions: IC-67(Snapshot) 30% power, approaching conditions for second Feedwater Pump Start

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		R CRO CRS	Continue power ascension IAW OP 0105
2		N CRO CRS	Start the second Feedwater Pump
3	Key 1 RR18A RC04	I ACRO CRO CRS	ECCS level instrument failure, Inadvertent RCIC initiation (TS) 5 minutes after RFP start
4	Key 2 RR07B RR08B	C CRO CRS	"B" Recirc Pump lower and upper seal failure
5	Key 3 RR10 100% @ 3600 sec	I CRO CRS	"A" Recirc Pump speed controller failure, pump speed increasing
6	Key 4 ED05C	C ACRO CRO CRS	480 VAC ECCS Bus 8 fails
7	Key 5 .4% @ 300 sec MS06 Key 6 10% @ 1000 sec	M ACRO CRO CRS	Steam line leak in the drywell – emergency depressurization
8 Preinsert	RH03A	C ACRO	Drywell Spray Valve does not open (B valves have no power)
Preinsert	RFHP05	N/A	HPCI aux oil pump ACB open - out of service for governor oil leak repair

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

Facility: Vermont Yankee (new) Scenario No.: 2 Op-Test No.: _____

Examiners: _____ Operators: _____ ACRO
 _____ CRO
 _____ CRS

Objectives: Evaluate the crew's ability to operate plant equipment in response to a loss of the startup transformers during closed cycle operation. Evaluate the Technical Specification for a loss of one off-site power source, and commence a plant shutdown to ensure NPDES compliance. Recognize a stuck FWRV and take actions to avert a high reactor water level scram. Recognize and respond to an LPRM upscale failure. Recognize and respond to a loss of main condenser vacuum, ATWS, and SLC system failures.

Initial Conditions: IC-9, 100% power, preparing to chlorinate the Circ Water System

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO CRS	Place CW in Closed Cycle for chlorination
2	Key 1 ED-02A	C ACRO CRO CRS	Loss of Startup Transformers
3	Preinsert FW-09A ANN Failure 9-5-E-2	R CRO C CRS	Power Reduction with stuck Feedwater regulating valve Soft panel FRV A lockup red light out
4	Key 2 NM2-24-41B NM5D 97%	I ACRO CRO CRS	LPRM upscale failure, APRM D upscale APRM D failure is Automatically deleted when LPRM 24-41B is bypassed
5	Key 3 MC-8 7%	C ACRO CRO CRS	Main Condenser air inleakage (minor)
	Key 3 modify MC-8 50% 120 Sec	M ACRO CRO CRS	After control rod insertion for event 5 has started. Main Condenser large air Leak Loss of Vacuum Turbine Trip / LNP
6	Preinsert RD 12A 87% RD 12B 92%	M ACRO CRO CRS	Hydraulic ATWS / Level Power Control
7	Preinsert SLO1 A SLO2 B	C CRO CRS	SLC A Pump Failure / B Squib Failure
	Bypass APRM A Preinsert NM-06A		APRM A INOP, Bypass APRM A prior to insertion

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

Facility: Vermont Yankee (new) Scenario No.: 3 (spare) Op-Test No.: _____
 Examiners: _____ Operators: _____ ACRO
 _____ CRO
 _____ CRS

Objectives: Evaluate the crew's ability to operate the service water system, respond to a condensate pump trip and maneuver the plant. Evaluate crew response to a loss of stator cooling, control reactor level when a FWRV controller fails. Evaluate crew response to a failure of transient level instrument and implement Technical Specifications. Evaluate crew response to a loss of off-site power, reactor scram, loss of high pressure feed.

Initial Conditions: IC-9, 100% power, preparing to swap service water pumps for maintenance

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO CRS	Swap operating service water pumps
2	KEY 1 CD01A	C CRO CRS	Trip of the "A" Condensate Pump
3		R CRO CRS	Power Reduction due to Condensate Pump Trip
4	KEY 2 EG05A Preinsert EG12B	C ACRO CRS	Trip of running stator cooling water pump with stby pump auto start failure
5	KEY 3 FW10A Ramp 200 sec	I CRO CRS	"A" FWRV Controller Failure to "0"
6	KEY 4 RR-18N	I ACRO CRO CRS	"B" Transient level downscale failure
7	KEY 5 ED17	M ACRO CRO CRS	LNP Load Reject Scram
8	KEY 6 RR01A .5% 1200 sec ramp	M ACRO CRO CRS	Recirc Loop leak in drywell
9	KEY 7 HP08 (Low)	C ACRO CRS	HPCI flow controller failure

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