VERMONT YANKEE
NUCLEAR POWER CORPORATION

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May 28, 2002
BVY 02-36
TDL 02-005

Regional Administrator, Region I
Attn: Todd Fish
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pa. 19406-1415

References: (a) License No. DPR-28 (Docket No. 50-271)

Subject: SENIOR REACTOR OPERATOR LICENSING EXAMINATIONS – VERMONT YANKEE, AUGUST 2002

Enclosed are the examination outlines for the exam to be given to the license candidates at Vermont Yankee the week of August 12, 2002. Included also are the K/A'S that were excluded from the written exam with justifications for exclusion.

The enclosed materials are to be withheld from public disclosure until after the related licensing examination is complete.

If you have any questions, please contact Mr. Mike Gosekamp, Operations Training Manager, in our Brattleboro office at (802) 258-4161.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Mike Gosekamp
Operations Training Manager

c: USNRC Resident Inspector – VYNPS (Attachments Withheld from Public Disclosure)
USNRC Project Manager - VYNPS (Attachments Withheld from Public Disclosure)
Document Control Desk (Attachments Withheld from Public Disclosure)
Vermont Department of Public Service (Attachments Withheld from Public Disclosure)

Facility: Vermont Yankee Date of Exam: Aug 12, 2002 Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	5	4	5				4	4			4	26
	2	3	3	3				2	3			3	17
	Tier Totals	8	7	8				6	7			7	43
2. Plant Systems	1	3	2	2	2	2	2	2	2	2	1	3	23
	2	1	1	1	1	2	1	1	1	1	1	2	13
	3	0	0	0	1	0	1	1	0	0	0	1	4
	Tier Totals	4	3	3	4	4	4	4	3	3	2	6	40

3. Generic Knowledge and Abilities	Cat 1	Cat 2	Cat 3	Cat 4	17
	5	4	4	4	

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., 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 exam must total 100 points.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system 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 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

BWR SRO ımination Outline Printed: 05/16/

Facility: Ver.. ..it Yankee

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-1**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295006	SCRAM / 1						X	2.4.29 - Knowledge of the emergency plan.	4.0	1
295006	SCRAM / 1	X						AK1.02 - Shutdown margin	3.7	1
295007	High Reactor Pressure / 3	X						AK1.04 - Turbine load	2.8	1
295007	High Reactor Pressure / 3			X				AK3.05 - Low pressure system isolation	3.2	1
295009	Low Reactor Water Level / 2			X				AK3.01 - Recirculation pump run back: Plant-Specific	3.3	1
295013	High Suppression Pool Temperature / 5		X					AK2.01 - Suppression pool cooling	3.7	1
295013	High Suppression Pool Temperature / 5				X			AA1.01 - Suppression pool cooling	3.9	1
295014	Inadvertent Reactivity Addition / 1					X		AA2.04 - †Violation of fuel thermal limits	4.4	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.01 - Reactor SCRAM	4.1	1
295016	Control Room Abandonment / 7			X				AK3.03 - Disabling control room controls	3.7*	1
295016	Control Room Abandonment / 7					X		AA2.03 - Reactor pressure	4.4*	1
295017	High Off-Site Release Rate / 9						X	2.4.7 - Knowledge of event based EOP mitigation strategies.	3.8	1
295017	High Off-Site Release Rate / 9	X						AK1.02 - †Protection of the general public	4.3*	1
295023	Refueling Accidents / 8	X						AK1.01 - Radiation exposure hazards	4.1	1
295023	Refueling Accidents / 8		X					AK2.04 - RMCS/Rod control and information system	3.4	1

BWR SRO amination Outline Printed: 05/16 2

Facility: Ve. .it Yankee

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-1**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295024	High Drywell Pressure / 5	X						EK1.01 - Drywell integrity: Plant-Specific	4.2*	1
295024	High Drywell Pressure / 5		X					EK2.17 - Auxiliary building isolation logic: Plant-Specific	3.3	1
295025	High Reactor Pressure / 3				X			EA1.07 - ARI/RPT/ATWS: Plant-Specific	4.1	1
295026	Suppression Pool High Water Temperature / 5		X					EK2.03 - Suppression chamber pressure: Mark-I&II	3.6	1
295026	Suppression Pool High Water Temperature / 5						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
295031	Reactor Low Water Level / 2					X		EA2.02 - Reactor power	4.2*	1
295031	Reactor Low Water Level / 2			X				EK3.03 - Spray cooling	4.4*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.06 - Neutron monitoring system	4.1	1
295038	High Off-Site Release Rate / 9						X	2.4.7 - Knowledge of event based EOP mitigation strategies.	3.8	1
500000	High Containment Hydrogen Concentration / 5					X		EA2.02 - Oxygen monitoring system availability	3.5	1
500000	High Containment Hydrogen Concentration / 5				X			EA1.06 - Drywell sprays	3.4	1

K/A Category Totals: 5 4 5 4 4 4 **Group Point Total:** 26

BWR SRO ımination Outline Printed: 05/16/

Facility: Ver.. .it Yankee

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2** **Form ES-401-1**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295002	Loss of Main Condenser Vacuum / 3						X	2.1.6 - Ability to supervise and assume a management role during plant transients and upset conditions.	4.3	1
295004	Partial or Complete Loss of D.C. Power / 6					X		AA2.04 - System lineups	3.3	1
295004	Partial or Complete Loss of D.C. Power / 6			X				AK3.01 - †Load shedding: Plant-Specific	3.1	1
295005	Main Turbine Generator Trip / 3						X	2.4.7 - Knowledge of event based EOP mitigation strategies.	3.8	1
295005	Main Turbine Generator Trip / 3		X					AK2.08 - A.C. electrical distribution.:	3.3	1
295008	High Reactor Water Level / 2		X					AK2.04 - PCIS/NSSSS: Plant-Specific	3.3	1
295008	High Reactor Water Level / 2			X				AK3.05 - HPCI turbine trip: Plant-Specific	3.6	1
295012	High Drywell Temperature / 5					X		AA2.02 - Drywell pressure	4.1	1
295012	High Drywell Temperature / 5	X						AK1.01 - Pressure/temperature relationship	3.5	1
295018	Partial or Complete Loss of Component Cooling Water / 8				X			AA1.03 - Affected systems so as to isolate damaged portions	3.4	1
295021	Loss of Shutdown Cooling / 4			X				AK3.04 - Maximizing reactor water cleanup flow	3.4	1
295021	Loss of Shutdown Cooling / 4		X					AK2.04 - Component cooling water systems: Plant-Specific	3.1	1
295022	Loss of CRD Pumps / 1	X						AK1.01 - Reactor pressure vs. rod insertion capability	3.4	1
295028	High Drywell Temperature / 5				X			EA1.01 - Drywell spray: Mark-I&II	3.9	1
295029	High Suppression Pool Water Level / 5					X		EA2.03 - Drywell/containment water level	3.5	1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295033	High Secondary Containment Area Radiation Levels / 9	X						EK1.03 - †Radiation releases	4.2*	1
295034	Secondary Containment Ventilation High Radiation / 9						X	2.2.15 - Ability to identify and utilize as-built design and configuration change documentation to ascertain expected current plant configuration and operate the plant.	2.9	1

K/A Category Totals: 3 3 3 2 3 3

Group Point Total: 17

BWR SRO E ıination Outline Printed: 05/1' 02

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
202002	Recirculation Flow Control System / 1	X											K1.10 - Rod pattern	2.6	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2	X											K1.16 - Component cooling water systems	3.2	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2						X						K6.01 - A.C. electrical power	3.7	1
209001	Low Pressure Core Spray System / 2				X								K4.05 - Pump minimum flow	2.6	1
209001	Low Pressure Core Spray System / 2					X							K5.04 - Heat removal (transfer) mechanisms	2.9	1
211000	Standby Liquid Control System / 1											X	2.4.16 - Knowledge of EOP implementation hierarchy and coordination with other support procedures.	4.0	1
211000	Standby Liquid Control System / 1		X										K2.02 - Explosive valves	3.2*	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7									X			A3.06 - Maximum disagreement between flow comparator channels: Plant-Specific	3.1	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7										X		A4.04 - LPRM back panel switches, meters and indicating lights	3.2	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2											X	2.2.10 - Knowledge of the process for determining if the margin of safety, as defined in the basis of any technical specification is reduced by a proposed change, test or experiment.	3.3	1
218000	Automatic Depressurization System / 3								X				A2.02 - Large break LOCA	3.6*	1

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
223001	Primary Containment System and Auxiliaries / 5		X										K2.08 - Containment cooling air handling units: Plant-Specific	3.0*	1
223001	Primary Containment System and Auxiliaries / 5						X						K6.08 - Containment atmospheric control	3.4	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5	X											K1.06 - Recirculation system	3.2	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5							X					A1.03 - SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.8*	1
226001	RHR/LPCI: Containment Spray System Mode / 5											X	2.3.2 - Knowledge of facility ALARA program.	2.9	1
241000	Reactor/Turbine Pressure Regulating System / 3			X									K3.01 - Reactor power	4.1	1
261000	Standby Gas Treatment System / 9							X					A1.04 - Secondary containment differential pressure	3.3	1
261000	Standby Gas Treatment System / 9									X			A3.03 - Valve operation	2.9	1
262001	A.C. Electrical Distribution / 6			X									K3.03 - D.C. electrical distribution	3.2	1
262001	A.C. Electrical Distribution / 6					X							K5.02 - Breaker control	2.9	1
290001	Secondary Containment / 5				X								K4.02 - Protection against over pressurization: Plant-System	3.5	1

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
290001	Secondary Containment / 5								X				A2.04 - High airborne radiation	3.7	1

K/A Category Totals: 3 2 2 2 2 2 2 2 2 1 3 **Group Point Total:** 23

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1											X	2.2.33 - Knowledge of control rod programming.	2.9	1
214000	Rod Position Information System / 7					X							K5.01 - Reed switches	2.8	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5				X								K4.05 - Pump minimum flow protection	3.2	1
234000	Fuel Handling Equipment / 8											X	2.1.11 - Knowledge of less than one hour technical specification action statements for systems.	3.8	1
259001	Reactor Feedwater System / 2								X				A2.06 - Loss of A.C. electrical power	3.2	1
259001	Reactor Feedwater System / 2									X			A3.07 - FWRV position	3.2	1
263000	D.C. Electrical Distribution / 6			X									K3.03 - Systems with D.C. components (i.e. valves, motors, solenoids, etc.)	3.8	1
271000	Offgas System / 9										X		A4.05 - Station radioactive release rate	3.9	1
272000	Radiation Monitoring System / 7		X										K2.03 - Stack gas radiation monitoring system	2.8	1
272000	Radiation Monitoring System / 7						X						K6.03 - A.C. power	3.0	1
286000	Fire Protection System / 8	X											K1.05 - Main generator hydrogen system: Plant-Specific	3.1	1
286000	Fire Protection System / 8					X							K5.05 - Diesel operations	3.1*	1

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
290003	Control Room HVAC / 9							X					A1.04 - Control room pressure	2.8	1

K/A Category Totals: 1 1 1 1 2 1 1 1 1 1 2 **Group Point Total:** 13

Facility: Vermont Yankee

ES - 401 **Plant Systems - Tier 2 / Group 3** **Form ES-401-1**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215001	Traversing In-Core Probe / 7						X						K6.04 - Primary containment isolation system: Mark-I&II(Not-BWR1)	3.4	1
233000	Fuel Pool Cooling and Clean-up / 9				X								K4.07 - Supplemental heat removal capability	2.9	1
239001	Main and Reheat Steam System / 3											X	2.2.17 - Knowledge of the process for managing maintenance activities during power operations.	3.5	1
256000	Reactor Condensate System / 2							X					A1.10 - Condenser vacuum	3.1	1

K/A Category Totals: 0 0 0 1 0 1 1 0 0 0 1 **Group Point Total:** 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 05/16/2002

BWR SRO Examination Outline

Form ES-401-5

Facility: Vermont Yankee

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
	2.1.28	Knowledge of the purpose and function of major system components and controls.	3.3	1
	2.1.29	Knowledge of how to conduct and verify valve lineups.	3.3	1
	2.1.23	Ability to perform specific system and integrated plant procedures during different modes of plant operation.	4.0	1
			Category Total:	**5**
Equipment Control	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.1	1
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
	2.2.27	Knowledge of the refueling process.	3.5	1
	2.2.11	Knowledge of the process for controlling temporary changes.	3.4*	1
			Category Total:	**4**
Radiation Control	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.	3.1	1
	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
			Category Total:	**4**

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 05/16/2002

BWR SRO Examination Outline

Form ES-401-5

Facility: Vermont Yankee

Generic Category	KA	KA Topic	Imp.	Points
Emergency Plan	2.4.8	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.	3.7	1
	2.4.11	Knowledge of abnormal condition procedures.	3.6	1
	2.4.15	Knowledge of communications procedures associated with EOP implementation.	3.5	1
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.	3.6	1

Category Total: 4

Generic Total: 17

Facility: Vermont Yankee Date of Examination: Aug 12, 2002

Examination Level (circle one): RO / SRO Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Short Term Information	JPM - Respond to an NRC "Credible Threat" Notification.
		K&A-2.1.15, RO-2.3, SRO-3.0
	Fuel Handling	JPM – Determine if Fuel Handling Can Continue With Inoperable SRMs.
		K&A-2.1.9, RO-2.5, SRO-4.0
A.2	Surveillance Testing	JPM – Review Completed Surveillance and Take Action for Out of Spec Data
		K&A-2.2.12, RO-3.0, SRO-3.4
A.3	Knowledge of Significant Radiation Hazards	JPM – Locate and Determine Radiological Conditions for Inspection of Valve
		K&A-2.3.10, RO-2.9, SRO-3.3
A.4	Emergency Action Levels and Classifications	JPM – Classify an Event Based Upon Simulated Plant Conditions
		K&A-2.4.41, RO-2.3, SRO-4.1

Facility: Vermont Yankee Date of Examination: Aug 12, 2002
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. SLC/SLC Initiation with failed pump and squib valve	D, A, S	1
b. MS/MSIV Slow Closure	D, S	5
c. Radiation Monitoring/Protective Action Recommendation	M, A, S, L	9

B.2 Facility Walk-Through

a. DC/Transfer DC-3A to DC-1	D	6
b. RHR/Alternate Shutdown	N, R, L	4

* 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: Vermont Yankee Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: *Reactor Power – 85% with all equipment operable.*

Turnover: *A reactor downpower is underway, utilizing OP-0105, for a rod pattern exchange. Reactor power is to be reduced to 80% using Recirc. Reactor Engineering is to be notified at 80% power and will provide further guidance at that time.*

Event No.	Malf. No.	Event Type*	Event Description
1	NA	R, N - SRO	Continue power reduction IAW OP-0105
2	NM05A	I - SRO	APRM fails upscale
3	ED03A	R, C – SRO	Loss of Bus 1 due to bus fault.
4	RR01A	M - SRO	Small break LOCA
5	FW08C HP01	M, C – SRO	Scram, Loss of Feedwater and HPCI failure
6	RC01	C, M – SRO	RCIC trip, RPVED on low level
			Per disussions w/facility, modified event 5 to include failure of RCIC Flow controller. See attached Scenario Outline, Rev. 1 Todd Zik 7/1/02

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

Facility: Vermont Yankee Scenario No.: 1 Op-Test No.: 1 Rev. 1

Examiners: _____ Operators: _____

Initial Conditions: *Reactor Power – 85% with all equipment operable.*

Turnover: *A reactor downpower is underway, utilizing OP-0105, for a rod pattern exchange. Reactor power is to be reduced to 80% using Recirc. Reactor Engineering is to be notified at 80% power and will provide further guidance at that time.*

Event No.	Malf. No.	Event Type*	Event Description
1	NA	R, N - SRO	Continue power reduction IAW OP-0105
2	NM05A	I - SRO	APRM fails upscale
3	ED03A	R, C – SRO	Loss of Bus 1 due to bus fault.
4	RR01A	M - SRO	Small break LOCA
5	FW08C HP01 RC03	M, C – SRO	Scram, Loss of Feedwater and HPCI failure, RCIC Flow Controller failure.
6	RC01	M – SRO	RCIC trip, RPVED on low level

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