

Facility:		Oyster Creek Initial NRC					Date of Exam:		02/01/16									
		Exam <i>WRC 2016</i>																
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Plant Evolutions	1	3	4	4				3	3			3	20	4	3	7		
	2	2	1	1				1	1			1	7	1	2	3		
	Tier Totals	5	5	5				4	4			4	27	5	5	10		
2. Plant Systems	1	3	2	3	2	2	3	2	3	2	2	2	26	3	2	5		
	2	1	1	1	1	1	1	1	2	1	1	1	12	0	1	3		
	Tier Totals	4	3	4	3	3	4	3	5	3	3	3	38	4	4	8		
3. Generic Knowledge & Abilities Categories					1		2		3		4		10	1	2	3	4	7
					2		3		3		2			1	2	2	2	

- Note:
1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
 2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
 3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to section D.1.b of ES-401, for guidance regarding elimination of inappropriate K/A statements.
 4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
 5. Absent a plant specific priority, only those 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.
 6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
 - 7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/A's
 8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above. If fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
 9. For Tier 3, select topics from Section 2 of the K/A Catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10CFR55.43

Oyster Creek Initial NRC Exam
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#
295031 Reactor Low Water Level / 2					X		EA2.03 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor pressure	4.2	76
295028 High Drywell Temperature / 5					X		EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell pressure	4.2	77
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA2.02 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Reactor water level	4.2	78
295038 High Off-site Release Rate / 9						X	2.1.25 - Conduct of Operations: Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	79
295006 SCRAM / 1						X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.1	80
295021 Loss of Shutdown Cooling / 4						X	2.1.32 - Conduct of Operations: Ability to explain and apply all system limits and precautions.	4.0	81
295026 Suppression Pool High Water Temp. / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	4.2	82
295018 Partial or Total Loss of CCW / 8	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Effects on component/system operations	3.5	39
295026 Suppression Pool High Water Temp. / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE : Pump NPSH	3.0	40
295003 Partial or Complete Loss of AC / 6	X						AK1.06 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Station Blackout: Plant Specific	3.8	41
295031 Reactor Low Water Level / 2		X					EK2.11 - Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: Reactor protection system	4.4	42
295028 High Drywell Temperature / 5		X					EK2.03 - Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Reactor water level indication	3.6	43
295025 High Reactor Pressure / 3		X					EK2.01 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: RPS	4.1	44
295019 Partial or Total Loss of Inst. Air / 8			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Service air isolations: Plant-Specific	3.2	45
295023 Refueling Acc Cooling Mode / 8			X				AK3.03 - Knowledge of the reasons for the following responses as they apply to	3.3	46

**Oyster Creek Initial NRC Exam
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#
							REFUELING ACCIDENTS : Ventilation Isolation		
600000 Plant Fire On-site / 8			X				AK3.04 - Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site	2.8	47
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	48
295021 Loss of Shutdown Cooling / 4				X			AA1.04 - Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING : Alternate heat removal methods	3.7	49
295006 SCRAM / 1				X			AA1.04 - Ability to operate and/or monitor the following as they apply to SCRAM : Recirculation system	3.1	50
295005 Main Turbine Generator Trip / 3					X		AA2.01 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Turbine speed	2.6	51
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA2.07 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Containment conditions/isolations	4.0	52
700000 Generator Voltage and Electric Grid Disturbances					X		AA2.05 - Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Operational status of offsite circuit.	3.2	53
295030 Low Suppression Pool Water Level / 5						X	2.4.6 - Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	3.7	54
295024 High Drywell Pressure / 5						X	2.2.37 - Equipment Control: Ability to determine operability and/or availability of safety related equipment	3.6	55
295016 Control Room Abandonment / 7						X	2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.0	56
295038 High Off-site Release Rate / 9		X					EK2.03 - Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Plant ventilation systems	3.6	57
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			X				AK3.05 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Reduced loop operating requirements: Plant-Specific	3.2	58
K/A Category Totals:	3	4	4	3	3/4	3/3	Group Point Total:	20/7	

**Oyster Creek Initial NRC Exam
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#
500000 High CTMT Hydrogen Conc. / 5					X		EA2.04 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Combustible limits for wetwell	3.3	83
295029 High Suppression Pool Water Level / 5						X	2.2.42 - Equipment Control: Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	4.6	84
295022 Loss of CRD Pumps / 1						X	2.2.37 - Equipment Control: Ability to determine operability and / or availability of safety related equipment.	4.6	85
295033 High Secondary Containment Area Radiation Levels / 9	X						EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection	3.9	59
295035 Secondary Containment High Differential Pressure / 5		X					EK2.01 - Knowledge of the interrelations between SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE and the following: Secondary containment ventilation	3.6	60
295002 Loss of Main Condenser Vac / 3			X				AK3.04 - Knowledge of the reasons for the following responses as they apply to LOSS OF MAIN CONDENSER VACUUM : Bypass valve closure	3.4	61
295010 High Drywell Pressure / 5				X			AA1.02 - Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE : Drywell floor and equipment drain sumps	3.6	62
295020 Inadvertent Cont. Isolation / 5 & 7					X		AA2.03 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION : Reactor power	3.7	63
295034 Secondary Containment Ventilation High Radiation / 9						X	2.4.45 - Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm.	4.1	64
295029 High Suppression Pool Water Level / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH SUPPRESSION POOL WATER LEVEL : Containment integrity	3.4	65
K/A Category Totals:	2	1	1	1	1/1	1/2	Group Point Total:	7/3	

Oyster Creek Initial NRC Exam
 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#
212000 RPS			X									3.3	6
262002 UPS (AC/DC)				X								3.1	7
215005 APRM / LPRM				X								2.6	8
239002 SRVs					X							2.6	9
211000 SLC					X							2.7	10
215003 IRM						X						3.0	11
261000 SGTS						X						2.9	12
218000 ADS							X					3.4	13

Oyster Creek Initial NRC Exam
 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#
223002 PCIS/Nuclear Steam Supply Shutoff							X					3.5	14
262001 AC Electrical Distribution								X				3.2	15
205000 Shutdown Cooling								X				2.5	16
209001 LPCS									X			3.7	17
215004 Source Range Monitor									X			3.6	18
400000 Component Cooling Water										X		3.1	19
263000 DC Electrical Distribution										X		2.7	20
205000 Shutdown Cooling											X	3.8	21
264000 EDGs											X	4.2	22

Oyster Creek Initial NRC Exam
 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#
215005 APRM / LPRM						X						3.1	23
212000 RPS	X											3.5	24
400000 Component Cooling Water								X				2.9	25
259002 Reactor Water Level Control			X									3.8	26
K/A Category Totals:	3	2	3	2	2	3	2	3/3	2	2	2/2	Group Point Total: 26/5	

Oyster Creek Initial NRC Exam
 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 #	
201006 RWM								X				A2.07 - Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWH) (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RWM hardware/software failure: P-Spec	2.8	91
233000 Fuel Pool Cooling/Cleanup											X	2.4.45 - Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	92
245000 Main Turbine Gen. / Aux.											X	2.1.7 - Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	93
245000 Main Turbine Gen. / Aux.	X											K1.01 - Knowledge of the physical connections and/or cause- effect relationships between MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS and the following: A. C. electrical distribution	3.2	27
259001 Reactor Feedwater		X										K2.01 - Knowledge of electrical power supplies to the following: Reactor feedwater pump(s): Motor-Driven-Only	3.3	28
226001 RHR/LPCI: CTMT Spray Mode			X									K3.03 - Knowledge of the effect that a loss or malfunction of the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE will have on following: Containment/drywell/suppression chamber components, continued operation with elevated pressure and/or temperature and/or level	2.9	29
201003 Control Rod and Drive Mechanism				X								K4.05 - Knowledge of CONTROL ROD AND DRIVE MECHANISM design feature(s) and/or interlocks which provide for the following: Rod position indication	3.2	30
214000 RPIS					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to ROD POSITION INFORMATION SYSTEM : Reed switches	2.7	31
234000 Fuel Handling Equipment						X						K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the FUEL HANDLING EQUIPMENT: Reactor manual control system: Plant-Specific	2.8	32

Oyster Creek Initial NRC Exam
 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 #
201002 RMCS							X					2.8	33
202001 Recirculation								X				3.1	34
290003 Control Room HVAC									X			3.3	35
204000 RWCU										X		2.9	36
233000 Fuel Pool Cooling/Cleanup											X	2.7	37
271000 Off-gas								X				2.5	38
K/A Category Totals:	1	1	1	1	1	1	1	2/1	1	1	1/2	Group Point Total: 12/3	

Facility: Oyster Creek Initial NRC Exam Date: 02/01/16						
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.40	Knowledge of refueling administrative requirements			3.9	94
	2.1.26	Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).	3.4	66		
	2.1.1	Knowledge of conduct of operations requirements.	3.8	67		
	Subtotal			2		1
2. Equipment Control	2.2.7	Knowledge of the process for conducting special or infrequent tests.			3.6	95
	2.2.17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, coordination with the transmission system operator.			3.8	99
	2.2.14	Knowledge of the process for controlling equipment configuration or status.	3.9	68		
	2.2.35	Ability to determine Technical Specification Mode of Operation.	3.6	69		
	2.2.12	Knowledge of surveillance procedures.	3.7	75		
	Subtotal			3		2
3. Radiation Control	2.3.11	Ability to control radiation releases.			4.3	96
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	98
	2.3.14	Knowledge of radiation or containment hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	70		

	2.3.13	Knowledge of Radiological Safety Procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high radiation areas, aligning filters, etc.	3.4	71		
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personell monitoring equipment, etc.	2.9	74		
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.			4.4	97
	2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.			4.4	100
	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable fire fighting equipment usage.	3.1	72		
	2.4.4	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.5	73		
	Subtotal			2		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/2	Question 33: 201002 A1.05 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Local reactor power	Unable to develop discriminating question at the appropriate license level. Randomly resampled 201002 A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: CRD drive water flow
1/1	Question 40: 295026 EK1.02 - Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE : Steam Condensation	Unable to develop discriminating question at the appropriate license level and avoid testing GFES knowledge. Randomly resampled EK1.01 - Knowledge of the operational implications of the following concepts as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE : Pump NPSH
1/1	Question 41: 295003 AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Effect of battery discharge rate on capacity	Unable to avoid overlap with question 20. Randomly resampled AK1.06 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Station Blackout: Plant Specific
1/1	Question 46: 295023 AK3.02 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS : Interlocks associated with fuel handling equipment	Unable to avoid overlap with question 32. Randomly resampled AK3.03 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS : Ventilation Isolation
1/2	Question 61: 295002 AK3.03 - Knowledge of the reasons for the following responses as they apply to LOSS OF MAIN CONDENSER VACUUM : Reactor feedpump turbine trip: Plant-Specific	Specified relationship does not exist. Randomly resampled AK3.04 - Knowledge of the reasons for the following responses as they apply to LOSS OF MAIN CONDENSER VACUUM : Bypass valve closure
3	Question 67 2.1.17 - Ability to make accurate, clear, and concise verbal reports	Unable to develop discriminating question at the appropriate license level. Randomly resampled 2.1.1 - Knowledge of conduct of operations requirements.
3	Question 73 2.4.40 - Knowledge of the SRO's responsibilities in emergency plan implementation	Unable to develop a question at the appropriate license level. Randomly resampled 2.4.4 - Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

1/1	Question 55 2.2.38 - Equipment Control: Knowledge of conditions and limitations in the facility license.	Unable to develop a question at the appropriate license level. Randomly resampled 2.2.37 - Ability to determine operability and/or availability of safety related equipment
1/1	Question 57 295038 - EK2.11 - Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: MSIV leakage control: Plant-Specific	The specified relationship does not exist. Randomly resampled 295038 EK2.03 - Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Plant ventilation systems
1/1	Question 44 295025 - EK2.10 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: SPDS/ERIS/CRIDS/GDS: Plant-Specific	Unable to avoid overlap with question 62. Randomly resampled EK2.01 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: RPS
1/1	Question 79 295038 High Off-site Release Rate / 9 - 2.1.31 - Conduct of Operations: Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	Unable to develop a question at the appropriate license level. Randomly resampled 2.1.25 - Conduct of Operations: Ability to interpret reference materials, such as graphs, curves, tables, etc.
3/3	Question 98 2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibly, access to locked high radiation areas, aligning filters, etc	Unable to develop a question at the appropriate license level. Randomly resampled 2.3.14 -

Facility: <u>Oyster Creek</u>		Date of Examination: 2/2016
Examination Level: RO		Operating Test Number: NRC 2016
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Perform Week 4 of 680.4.007, Safety Related Equipment Verification KA 2.1.29 (4.1) Procedure 680.4.007
Conduct of Operations	P, R	Calculate Identified Leak Rate KA 2.1.20 (4.6) Procedure 351.2 (11-1 NRC)
Equipment Control	N, R	Explain RPS Manual Scram Circuit Using Prints KA 2.2.41 (3.5) GE 237E566
Emergency Plan	N, R	Actions for External Security Threats KA 2.4.28 (3.2) Procedure ABN-41
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)		

Facility: <u>Oyster Creek</u>		Date of Examination: 2/2016
Examination Level: SRO		Operating Test Number: NRC 2016
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Review a Completed Pre-Critical Checkoff KA 2.1.23 (4.4) Procedure 201
Conduct of Operations	P, R	Review Request to Allow LPRM (input into APRM) Bypass (11-1 NRC) KA 2.1.9 (4.5) Procedure 403
Equipment Control	N, R	Explain RPS Manual Scram Circuit Using Prints and Determine Technical Specification Requirements for RPS Manual Scram Pushbutton KA 2.2.41 (3.9) GE 237E566
Radiation Control	D, R	Authorize Emergency Exposures KA 2.3.4 (3.7) EP-AA-113
Emergency Plan	N, R	Actions for External Security Threats and EAL determination KA 2.4.41 (4.6) Procedure ABN-41
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes & Criteria:		
(C)ontrol room, (S)imulator, or Class(R)oom		
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)		
(N)ew or (M)odified from bank (≥ 1)		
(P)revious 2 exams (≤ 1 ; randomly selected)		

Facility: <u>Oyster Creek</u>		Date of Examination: 2/2016	
Exam Level: RO/SRO-I/SRO-U		Operating Test No.: NRC 2016	
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 Control Rod Exercising Test (Or a rod sequence exchange) – uncoupled Rod KA 201003 A2.02 (3.7/3.8) ABN-6	N, S, A	1	
b. Sequential Loss of Service water KA 400000 K1.01 (3.2/3.3)ABN-18	N, S, A	8	
c. Place Second RWCU Pump in Service (RO Only) KA 204000 A4.01 (3.1/3.0) Procedure 303	M, S	2	
d. Partial MSIV Stroke Test KA 239001 A4.01 (4.2/4.0) Procedure 602.4.004	N, S, A	3	
e. Cool Down the RPV Using IC Tube Side Vents KA 295021 AA1.04 (3.7/3.7) SP-15	D, S, A, EN	4	
f. Place H2/O2 Monitoring in Service KA 500000 EA1.01 (3.4/3.3) SP-39	D, S, L	5	
g. Startup of the Turbine Building Ventilation System KA 288000 A4.01 (3.1/2.9) Procedure 328	D, S, A, L	9	
h. APRM Gain Adjustment 215005 A4.03 (3.2/3.3) 202.1-9	D, S	7	
In-Plant Systems (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i. Vent the Scram Air Header KA 295037 EA1.05 (3.9/4.0) SP21	P, R, E 2012 NRC	1	
j. Startup EDG 1 for Peaking Operation KA 264000 K4.07 (3.3/3.4) Procedure 341	D	6	
k. Line up to Vent the Torus through the Hardened Vent KA 295024 EA1.14 (3.4/3.5) SP-35	P, E 2012 NRC	5	

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all five SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for RO / SRO-I / SRO-U
A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $\geq 1 / \geq 1 / \geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$

Possible Pairings:

- A - alone
- B - alone
- C Then D
- E Then F
- G Then H

Facility: <u>Oyster Creek</u>	Scenario No.: <u>Scenario-1</u>	Op-Test No.: <u>NRC 2016</u>
Examiners: _____	Operators: _____	_____
_____	_____	_____
_____	_____	_____
<p>Initial Conditions:</p> <ul style="list-style-type: none"> • 100% power • Containment Spray system 1 Tagged out of service for Maintenance • Containment Spray system 2 protected • Risk is Yellow <p>Turnover:</p> <ul style="list-style-type: none"> • Lower power to 95% using recirculation flow IAW 1001.22-3, Core Maneuvering Daily Instruction Sheet. • Following the power reduction Backwash B North Condenser IAW procedure 323.6 		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R- ATC, SRO	Lower reactor power with recirc. 301.2 Reactor Recirculation system
2	N/A	N- BOP, SRO	Backwash the Condenser 323.6 Backwashing condensers
3	BKR- CRD002	C- ATC, SRO TS- SRO	CRD Pump Trip RAP-H7c, Charg wtr press lo T.S 3.4
4	MAL- ICS002A	C- BOP, SRO SRO- T.S	IC Tube Leak EMG-3200.12, Radioactivity Release Control T.S. 3.8
5	MAL- NSS012E	C- ATC, SRO	GEMAC Reference Leg Leak ABN-17, Feedwater system abnormal conditions
6	MAL- TCS010	C- BOP, SRO	EPR Fails low ABN-9, Electric Pressure regulator Malfunction

7	BKR-CRD001	C-ALL	Respond to 'B' CRD pump to trip and Responds to an HCU accumulator failure ABN-1, Reactor Scram EMG-3200.01a EOP RPV-No ATWS
8	SRV-NSS001C	M-ALL	MSIV's close and Safety Valve Lifts after Scram EMG-3200.02 Primary Containment Control
9	BKR-CNS008	C-BOP, SRO	Trip of Containment Spray Pump EMG-3200.02 Primary Containment Control
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Oyster Creek	Scenario No.: Scenario 1	Op-Test No.: NRC 2016
2. Malfunctions after EOP entry (1-2) Events 8,9	2	
3. Abnormal events (2-4) Events 5,6,7	3	
4. Major transients (1-2) Event 8	1	
5. EOPs entered/requiring substantive actions (1-2) Primary Containment/ RPV Control No-ATWS	2	
6. EOP contingencies requiring substantive actions (0-2)	0	
7. EOP Critical tasks (2-3)	2	
CRITICAL TASK DESCRIPTIONS:		
CT-1.0 Given an isolable leak outside the Reactor Building, the crew must isolate the leak, in accordance with Rad Release control.		
CT-2.0 Given a loss of all CRD, the crew must insert a manual reactor scram in accordance with ABN-1.		
CT-3.0 The crew must initiate containment spray to restore and maintain <281°f or when containment pressure exceeds 12 psig IAW Primary Containment Control.		

Facility: <u>Oyster Creek</u>	Scenario No.: <u>Scenario 2</u>	Op-Test No.: <u>NRC 2016</u>
Examiners: _____	Operators: _____	_____
_____	_____	_____
_____	_____	_____

Initial Conditions:

- 100% power
- Air Compressor #3 is tagged OOS
- EDG #2 Out of service

Turnover:

- Diesel Generator #2 has been out of service for 2 days due to failure to start during the load test. It is scheduled to be returned to service the next day. The diesel load test for #1 diesel is due next shift. Fire diesel #1 is out of service until next shift for quarterly PMs.
- Swap RBCCW pumps IAW 309.2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N- BOP, SRO	Swap RBCCW pumps
2	MAL- RCU013 VLV- RCU001	C- BOP, SRO TS- SRO	RWCU isolable leak (failure of one isolation valve) EMG-3200.11, Secondary Containment Control T.S. 3.5
3	MAL- EDS004B	C-All TS- SRO	Loss of VMCC 1B2 ABN-51, Loss of VMCC 1B2 T.S. 3.7
4	MAL- CRD001A	C- ATC, SRO	CRD Flow Control Failure ABN-6, Control Rod Malfunctions
5	MAL- OGS003 MAL- CFW017	R- ATC, SRO C- BOP	OFF-Gas Deflagration/ with condenser vacuum leak ABN-25, OFF-Gas Deflagration ABN-14, Loss of Condenser Vacuum

6	MAL- GEA005A, B	C- ALL	Loss of Stator Cooling ABN-11 Loss of Generator Stator Cooling ABN-1 Reactor Scram
7	ATWS.CAE	M- ALL	Electric ATWS EMG-3200.01B RPV control-With ATWS
8	MAL- TCS006D-I	C- BOP, SRO	Failure of Turbine Bypass Fails EMG-3200.01B, RPV control w/atws
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Oyster Creek		Scenario No.: Scenario 2	Op-Test No.: NRC 2016
1. Malfunctions after EOP entry (1-2) Events 7,8		2	
2. Abnormal events (2-4) Events 3,4,5,6		4	
3. Major transients (1-2) Event 7		1	
4. EOPs entered/requiring substantive actions (1-2) RPV Control No-ATWS		1	
5. EOP contingencies requiring substantive actions (0-2) RPV Control With ATWS		1	
6. EOP Critical tasks (2-3)		4	
CRITICAL TASK DESCRIPTIONS:			
CT- Given a failure to scram, the crew must terminate and prevent injection in accordance with EOP SP-17.			
CT- Given a failure to scram, the crew must recommence injection to the reactor in accordance with EOP SP-19.			
CT - Given a failure to scram, the crew must vent the scram air header in accordance with EOP SP-21.			
CT - Given an isolable leak from RWCU, the crew must isolate the RWCU system in accordance with secondary Containment Control			

Facility: Oyster CreekScenario No.: Scenario 3Op-Test No.: NRC 2016

Examiners: _____ Operators: _____

Initial Conditions:

- 97% power
- Main Generator voltage control is in Manual
- Containment Spray system 1 OOS and is in day 2 of a 7 day LCO for heat exchanger cleaning.
- Containment Spray system 2 is protected
- Risk is Yellow

Turnover:

- Place the AVR in automatic service IAW 336.1, section 8, starting on step 8.2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP, SRO	Return the AVR to service. 336.1 24 KV main generator electric system
2	MAL- NSS025E	R-ATC, SRO C-BOP TS-SRO	EMRV Spuriously opens ABN-40, Stuck open EMRV T.S 4.5.L
3	MAL- CRD013_3 403	C-ATC SRO	CRD high temperature alarm RAP-H5c CRD Hi Temp
4	MAL- EDS003C	C-BOP SRO TS-SRO	Trip of 1A3 ABN-46, Loss of 1A3 T.S -3.7
5	MAL- RBC001A MAL- RBC001B	C-ALL	RBCCW Pump Trip Leads to Reactor Scram ABN-19 RBCCW failure response
6	MAL- NSS017A	M-ALL	LOCA in Primary Containment EMG-3200.02 Primary Containment Control
7	VLV- CNS005	C-BOP, SRO	Containment Spray Fails to Swap to DW Spray Mode EMG-SP29 Initiation of the containment Spray system for Drywell Sprays

8	RUN FLD.CAE NOLEVEL. CAE	M-ALL	RPV level flashing EMG-3200.08A RPV flooding-No ATWS
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Oyster Creek	Scenario No.: Scenario 3	Op-Test No.: NRC 2016
1. Malfunctions after EOP entry (1-2) Events 7,8	2	
2. Abnormal events (2-4) Events 2,4,5	3	
3. Major transients (1-2) Event 6,8	2	
4. EOPs entered/requiring substantive actions (1-2) RPV control No-ATWS, Primary Containment	2	
5. EOP contingencies requiring substantive actions (0-2) ED No-ATWS, RPV Flooding No-ATWS	2	
6. EOP Critical tasks (2-3)	2	
CRITICAL TASK DESCRIPTIONS:		
<p>CT-1.0 Given a failed open EMRV, the crew will need to take action to close the EMRV in accordance with ABN-40, Stuck open EMRV.</p> <p>CT-2.0 Given a LOCA in Primary Containment with challenges to RPV level control, the crew must implement EOP SP-58, Feed and Condensate System and/or EOP SP-60, Core Spray operation, to restore RPV water level.</p> <p>CT-3.0 Given a LOCA in Primary Containment with Drywell parameters degrading beyond the capacity of the Containment Spray system, the crew will perform an Emergency Depressurization of the Reactor.</p>		

Facility: Oyster Creek Scenario No.: Scenario (Spare) Op-Test No.: NRC 2016

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at <5% power during a reactor startup. Turbine warming is inprog

Turnover: Raise Reactor Power with Control rods

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R-ATC, SRO	Raise Reactor Power with Rods 302.1 Control Rod Drive System
2	MAL-CRD005_1431	C-ALL	Control Rod Drifts Out ABN-6 Control Rod Malfunctions
3	MAL-NIS021A	I-ATC, SRO TS-SRO	APRM Fails High 403 LPRM-APRM system operations T.S. 3.1.1
4	LOA-EDS137	C-BOP, SRO TS-SRO	Loss of VACP-1 ABN-58 Instrument Power Failures T.S. 3.7
5	ANN-L-4f	C-BOP, SRO TS-SRO	Respond to trip of Control Room Vent Fan B 331.1 Control Room HVAC T.S. 3.17.B
6	MAL-EDS001a	C-All	Loss of Bus 1A Causes a Reactor Scram ABN-1 Reactor Scram
7	MAL-RPS006 MAL-RPS005	C-All	ATWS - Rods Insert With ARI EMG-3200.01B RPV control with ATWS

8	MAL-ICS 003A VLV- ICS005 VLV- ICS006	M-All	Steam Leak into Reactor Building From unisolable Isolation Condenser EMG-3200.02 Secondary Containment Control
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Oyster Creek	Scenario No.: Scenario 4	Op-Test No.: NRC 2016
1. Malfunctions after EOP entry (1-2) Events 8,9	2	
2. Abnormal events (2-4) Events 2,4	2	
3. Major transients (1-2) Event 8	1	
4. EOPs entered/requiring substantive actions (1-2) RPV Control No-ATWS	1	
5. EOP contingencies requiring substantive actions (0-2) Emergency Depressurize No-ATWS, Secondary Containment	2	
6. EOP Critical tasks (2-3)	2	
CRITICAL TASK DESCRIPTIONS:		
<p>CT-1.0 Given a drifting control rod which fails to remain inserted with RMCS, the crew must scram the control rod in accordance with ABN-6.</p> <p>CT-2.0 Given an un-isolable steam leak into the Reactor Building, the crew must Anticipate Reactor Blowdown and/or Emergency Depressurize the Reactor when two maximum safe parameters are challenged.</p> <p>CT-3.0 Given a Reactor Scram with rods failing to insert, the crew must manually initiate ARI to insert control rods, in accordance with EOP RPV-with ATWS.</p>		