

**OUTLINE SUBMITTAL AND NRC COMMENTS**

**FOR THE DUANE ARNOLD EXAMINATION - NOVEMBER 2002**

Facility:		Date of Examination:		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	X	me	PP
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	X	me	PP
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	X	me	PP
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	X	me	PP
2. S I M	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	X	me	PP
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	X	me	PP
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	X	me	PP
3. W / T	a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	X	me	PP
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA.	X	me	PP
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	X	me	PP
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	X	me	PP
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	X	me	PP
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	X	me	PP
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	X	me	PP
	d. Check for duplication and overlap among exam sections.	X	me	PP
	e. Check the entire exam for balance of coverage.	X	me	PP
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	X	me	PP
a. Author		Printed Name / Signature		Date
b. Facility Reviewer (*)		Steve Brewer / Dean Curthand		7/16/02
c. NRC Chief Examiner (#)		B. PALANI / DANIEL P. PERSON		7/18/02
d. NRC Supervisor		M. Bickley / Michael Bullock		9/19/02
Note:		* Not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.		

\*\* DAVID PERSON WAS THE CHIEF EXAMINER-OF-RECORD FOR THE OUTLINE REVIEW. ORS

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	2				3	7			6	26
	2	2	1	4				3	4			3	17
	Tier Totals	6	5	6				6	11			9	43
2. Plant Systems	1	2	1	1	2	2	2	2	3	3	3	2	23
	2	2	1	1	1	1	1	1	1	1	1	2	13
	3	0	0	1	1	0	0	0	0	1	0	1	4
	Tier Totals	4	2	3	4	3	3	3	4	5	4	5	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					4		4		4		5		17

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
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.

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
295003	Partial or Complete Loss of A.C. Power / 6						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
295006	SCRAM / 1					X		AA2.02 - Control rod position	4.4*	1
295007	High Reactor Pressure / 3		X					AK2.04 - LPCS	3.3	1
295007	High Reactor Pressure / 3					X		AA2.02 - Reactor power	4.1*	1
295009	Low Reactor Water Level / 2					X		AA2.01 - Reactor water level	4.2	1
295010	High Drywell Pressure / 5				X			AA1.02 - Drywell floor and equipment drain sumps	3.6	1
295010	High Drywell Pressure / 5						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
295013	High Suppression Pool Temperature / 5		X					AK2.01 - Suppression pool cooling	3.7	1
295014	Inadvertent Reactivity Addition / 1				X			AA1.03 - RMCS: Plant-Specific	3.5	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.7	1
295015	Incomplete SCRAM / 1					X		AA2.02 - Control rod position	4.2*	1
295016	Control Room Abandonment / 7		X					AK2.02 - Local control stations: Plant-Specific	4.1*	1
295017	High Off-Site Release Rate / 9					X		AA2.03 - †Radiation levels: Plant-Specific	3.9	1
295017	High Off-Site Release Rate / 9						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1

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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
295023	Refueling Accidents / 8	X						AK1.02 - Shutdown margin	3.6	1
295023 (4)	Refueling Accidents / 8						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
295024	High Drywell Pressure / 5	X						EK1.01 - Drywell integrity: Plant-Specific	4.2*	1
295025	High Reactor Pressure / 3		X					EK2.08 - Reactor/turbine pressure regulating system: Plant-Specific	3.7	1
295026	Suppression Pool High Water Temperature / 5				X			EA1.03 - Temperature monitoring	3.9	1
295030	Low Suppression Pool Water Level / 5	X						EK1.02 - Pump NPSH	3.8	1
295030 (5)	Low Suppression Pool Water Level / 5					X		EA2.02 - Suppression pool temperature	3.9	1
295031	Reactor Low Water Level / 2						X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.3	1
295031 (6)	Reactor Low Water Level / 2					X		EA2.04 - Adequate core cooling	4.8*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.02 - Reactor water level effects on reactor power	4.3*	1
295038	High Off-Site Release Rate / 9			X				EK3.04 - †Emergency depressurization	3.9	1
500000	High Containment Hydrogen Concentration / 5						X	2.1.23 - Ability to perform specific system and integrated plant procedures during different modes of plant operation.	4.0	1

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
K/A Category Totals:		4	4	2	3	7	6	Group Point Total:	26	

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	2.1.27 - Knowledge of system purpose and/or function.	2.9	1
295004	Partial or Complete Loss of D.C. Power / 6					X		AA2.01 - Cause of partial or complete loss of D.C. power	3.6	1
295005	Main Turbine Generator Trip / 3			X				AK3.05 - Extraction steam/moisture separator isolations	2.6	1
295008	High Reactor Water Level / 2				X			AA1.03 - Main steam system: Plant-Specific	3.1	1
295012	High Drywell Temperature / 5						X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	1
295018	Partial or Complete Loss of Component Cooling Water / 8			X				AK3.03 - Securing individual components (prevent equipment damage)	3.3	1
295019	Partial or Complete Loss of Instrument Air / 8					X		AA2.02 - Status of safety-related instrument air system loads (see AK2.1-AK2.19)	3.7	1
295020	Inadvertent Containment Isolation / 5				X			AA1.02 - Drywell ventilation/cooling system	3.2	1
295021	Loss of Shutdown Cooling / 4						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
295022	Loss of CRD Pumps / 1					X		AA2.03 - CRD mechanism temperatures	3.2	1
295028	High Drywell Temperature / 5	X						EK1.01 - Reactor water level measurement	3.7	1
295029	High Suppression Pool Water Level / 5			X				EK3.03 - Reactor SCRAM	3.5	1

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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
295032	High Secondary Containment Area Temperature / 5					X		EA2.01 - Area temperature	3.8	1
295033	High Secondary Containment Area Radiation Levels / 9		X					EK2.02 - Process radiation monitoring system	4.1	1
295034	Secondary Containment Ventilation High Radiation / 9				X			EA1.03 - Secondary containment ventilation	3.9	1
295035	Secondary Containment High Differential Pressure / 5			X				EK3.02 - Secondary containment ventilation response	3.5	1
600000	Plant Fire On Site / 8	X						AK1.01 - Fire Classifications by type	2.8	1

K/A Category Totals: 2 1 4 3 4 3

Group Point Total: 17



Facility: DAEC

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			A3.03 - Scoop tube operation: BWR-2, 3, 4	3.0	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2										X		A4.11 - Indicating lights and alarms	3.5*	1
206000	High Pressure Coolant Injection System / 2			X									K3.01 - Reactor water level control: BWR-2, 3, 4	4.0	1
209001	Low Pressure Core Spray System / 2							X					A1.02 - Core spray pressure	3.4	1
211000	Standby Liquid Control System / 1		X										K2.02 - Explosive valves	3.2*	1
212000	Reactor Protection System / 7	X											K1.08 - Control rod and drive mechanism	3.1	1
215004	Source Range Monitor (SRM) System / 7											X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7				X								K4.01 - Rod withdrawal blocks	3.7	1
216000	Nuclear Boiler Instrumentation / 7								X				A2.11 - Heatup or cooldown of the reactor vessel	3.3	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2						X						K6.01 - Electrical power	3.5	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2									X			A3.01 - Valve operation	3.5	1

Facility: DAEC

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
218000	Automatic Depressurization System / 3							X					A1.05 - Reactor water level	4.1	1
223001	Primary Containment System and Auxiliaries / 5	X											K1.08 - Relief/safety valves	3.8	1
223001	Primary Containment System and Auxiliaries / 5										X		A4.12 - Drywell coolers/chillers	3.6	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5						X						K6.08 - Reactor protection system	3.7	1
226001 (11)	RHR/LPCI: Containment Spray System Mode / 5								X				A2.17 - †High containment / drywell temperature	3.2	1
239002	Relief/Safety Valves / 3									X			A3.08 - Lights and alarms	3.6	1
241000	Reactor/Turbine Pressure Regulating System / 3					X							K5.05 - Turbine inlet pressure vs. turbine load	2.9	1
259002	Reactor Water Level Control System / 2					X							K5.03 - Water level measurement	3.2	1
261000 (12)	Standby Gas Treatment System / 9											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
262001	A.C. Electrical Distribution / 6										X		A4.05 - Voltage, current, power, and frequency on A.C. buses	3.3	1

Facility: DAEC

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
264000	Emergency Generators (Diesel/Jet) / 6				X								K4.07 - Local operation and control	3.4	1
290001	Secondary Containment / 5								X				A2.02 - †Excessive outleakage	3.7	1

K/A Category Totals: 2 1 1 2 2 2 2 3 3 3 2

Group Point Total: 23

Facility: DAEC

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							K5.05 - Indications of pump runout: Plant-Specific	2.7	1
201002	Reactor Manual Control System / 1								X				A2.03 - Select block	2.8	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7							X					A1.02 - Status of control rod movement blocks; P-Spec(Not-BWR6)	3.5	1
204000	Reactor Water Cleanup System / 2						X						K6.07 - SBLC logic	3.5	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4	X											K1.14 - Reactor temperatures (moderator, vessel, flange)	3.6	1
214000	Rod Position Information System / 7									X			A3.03 - Verification of proper functioning/ operability	3.7	1
215002	Rod Block Monitor System / 7				X								K4.02 - Allows stepping up of rod block setpoint: BWR-3, 4, 5	3.0	1
215003	Intermediate Range Monitor (IRM) System / 7										X		A4.07 - Verification of proper functioning/ operability	3.6	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5	X											K1.04 - LPCI/RHR pumps	3.9	1
262002	Uninterruptable Power Supply (A.C./D.C.) / 6											X	2.1.27 - Knowledge of system purpose and/or function.	2.9	1
272000	Radiation Monitoring System / 7			X									K3.02 - †Station gaseous effluent release monitoring	3.8	1

Facility: DAEC

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
286000	Fire Protection System / 8		X										K2.03 - Fire detection system: Plant-Specific	2.7*	1
300000 <i>15)</i>	Instrument Air System (IAS) / 8											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1

K/A Category Totals: 2 1 1 1 1 1 1 1 1 1 1 2

Group Point Total: 13

Facility: DAEC

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
201003	Control Rod and Drive Mechanism / 1				X								K4.07 - Maintaining the control rod at a given location	3.2	1
215001	Traversing In-Core Probe / 7									X			A3.03 - Valve operation: Not-BWR1	2.6*	1
239001 16	Main and Reheat Steam System / 3											X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1
290002	Reactor Vessel Internals / 5			X									K3.03 - Reactor power	3.4	1

K/A Category Totals: 0 0 1 1 0 0 0 0 1 0 1

Group Point Total: 4

**Generic Knowledge and Abilities Outline (Tier 3)**

Printed: 07/18/2002

**BWR SRO Examination Outline**

Form ES-401-5

**Facility:** DAEC

Generic Category	KA	KA Topic	Imp.	Points
<b>Conduct of Operations</b>		2.1.30 Ability to locate and operate components, including local controls.	3.4	1
	18	2.1.32 Ability to explain and apply system limits and precautions.	3.8	1
	19	2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
	17	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
<b>Category Total:</b>				<b>4</b>
<b>Equipment Control</b>		2.2.22 Knowledge of limiting conditions for operations and safety limits.	4.1	1
		2.2.33 Knowledge of control rod programming.	2.9	1
		2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity.	3.2*	1
	21	2.2.21 Knowledge of pre and post maintenance operability requirements.	3.5	1
<b>Category Total:</b>				<b>4</b>
<b>Radiation Control</b>	22	2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
		2.3.9 Knowledge of the process for performing a containment purge.	3.4	1
		2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1
	23	2.3.8 Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
<b>Category Total:</b>				<b>4</b>

**Generic Knowledge and Abilities Outline (Tier 3)**

Printed: 07/18/2001

**BWR SRO Examination Outline**

Form ES-401-5

**Facility:** DAEC

Generic Category	KA	KA Topic	Imp.	Points
<b>Emergency Plan</b>	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	3.6	1
	2.4.6	Knowledge symptom based EOP mitigation strategies.	4.0	1
	2.4.14	Knowledge of general guidelines for EOP flowchart use.	3.9	1
	2.4.18	Knowledge of the specific bases for EOPs.	3.6	1
	2.4.1	Knowledge of EOP entry conditions and immediate action steps.	4.6	1

**Category Total: 5**

**Generic Total: 17**



Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	2	2				2	3			2	13
	2	3	3	3				4	3			3	19
	3	1	0	1				0	1			1	4
	Totals Tier	6	5	6				6	7			6	36
2. Plant Systems	1	2	2	2	2	3	2	2	2	4	4	3	28
	2	2	2	1	2	1	1	2	2	2	2	2	19
	3	1	0	1	1	0	0	0	0	1	0	0	4
	Tier Totals	5	4	4	5	4	3	4	4	7	6	5	51
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					3		3		3		4		13
<p>Note:</p> <ol style="list-style-type: none"> <li>1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.</li> <li>2. Actual point totals must match those specified in the table.</li> <li>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.</li> <li>4. Systems/evolutions within each group are identified on the associated outline.</li> <li>5. The shaded areas are not applicable to the category tier.</li> </ol>													

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295005	Main Turbine Generator Trip / 3			X				AK3.05 - Extraction steam/moisture separator isolations	2.5	1
295006	SCRAM / 1					X		AA2.02 - Control rod position	4.3*	1
295007	High Reactor Pressure / 3		X					AK2.04 - LPCS	3.2	1
295007	High Reactor Pressure / 3					X		AA2.02 - Reactor power	4.1*	1
295009	Low Reactor Water Level / 2					X		AA2.01 - Reactor water level	4.2	1
295010	High Drywell Pressure / 5				X			AA1.02 - Drywell floor and equipment drain sumps	3.6	1
295014	Inadvertent Reactivity Addition / 1				X			AA1.03 - RMCS: Plant-Specific	3.5	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.4	1
295024	High Drywell Pressure / 5	X						EK1.01 - Drywell integrity: Plant-Specific	4.1	1
295025	High Reactor Pressure / 3		X					EK2.08 - Reactor/turbine pressure regulating system: Plant-Specific	3.7	1
295031	Reactor Low Water Level / 2						X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.2	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.02 - Reactor water level effects on reactor power	4.1*	1
500000	High Containment Hydrogen Concentration / 5						X	2.1.23 - Ability to perform specific system and integrated plant procedures during different modes of plant operation.	3.9	1

**BWRK Examination Outline**

Printed: 07/002

Facility: DAEC

ES - 401

**Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1**

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
	K/A Category Totals:	2	2	2	2	3	2			13
								Group Point Total:		

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

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	2.1.27 - Knowledge of system purpose and/or function.	2.8	1
295003	Partial or Complete Loss of A.C. Power / 6						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	3.1	1
295008	High Reactor Water Level / 2				X			AA1.03 - Main steam system: Plant-Specific	3.1	1
295012	High Drywell Temperature / 5						X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	1
295013	High Suppression Pool Temperature / 5		X					AK2.01 - Suppression pool cooling	3.6	1
295016	Control Room Abandonment / 7		X					AK2.02 - Local control stations: Plant-Specific	4.0*	1
295017	High Off-Site Release Rate / 9					X		AA2.03 - †Radiation levels: Plant-Specific	3.1	1
295018	Partial or Complete Loss of Component Cooling Water / 8			X				AK3.03 - Securing individual components (prevent equipment damage)	3.1	1
295019	Partial or Complete Loss of Instrument Air / 8					X		AA2.02 - Status of safety-related instrument air system loads (see AK2.1-AK2.19)	3.6	1
295020	Inadvertent Containment Isolation / 5				X			AA1.02 - Drywell ventilation/cooling system	3.2	1
295022	Loss of CRD Pumps / 1					X		AA2.03 - CRD mechanism temperatures	3.1	1
295026	Suppression Pool High Water Temperature / 5				X			EA1.03 - Temperature monitoring	3.9*	1
295028	High Drywell Temperature / 5	X						EK1.01 - Reactor water level measurement	3.5	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295029	High Suppression Pool Water Level / 5			X				EK3.03 - Reactor SCRAM	3.4	1
295030	Low Suppression Pool Water Level / 5	X						EK1.02 - Pump NPSH	3.5	1
295033	High Secondary Containment Area Radiation Levels / 9		X					EK2.02 - Process radiation monitoring system	3.8	1
295034	Secondary Containment Ventilation High Radiation / 9				X			EA1.03 - Secondary containment ventilation	4.0	1
295038	High Off-Site Release Rate / 9			X				EK3.04 - †Emergency depressurization	3.6	1
600000	Plant Fire On Site / 8	X						AK1.01 - Fire Classifications by type	2.5	1

K/A Category Totals: 3 3 3 4 3 3

Group Point Total: 19

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295021	Loss of Shutdown Cooling / 4						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
295023	Refueling Accidents / 8	X						AK1.02 - Shutdown margin	3.2	1
295032	High Secondary Containment Area Temperature / 5					X		EA2.01 - Area temperature	3.8*	1
295035	Secondary Containment High Differential Pressure / 5			X				EK3.02 - Secondary containment ventilation response	3.3	1

K/A Category Totals: 1 0 1 0 1 1

Group Point Total: 4

Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

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										K2.02 - Scram valve solenoids	3.6*	1
201002	Reactor Manual Control System / 1			X									K3.01 - Ability to move control rods	3.4	1
201002	Reactor Manual Control System / 1								X				A2.03 - Select block	2.9	1
202002	Recirculation Flow Control System / 1									X			A3.03 - Scoop tube operation: BWR-2, 3, 4	3.1	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2										X		A4.11 - Indicating lights and alarms	3.7*	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2											X	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
206000	High Pressure Coolant Injection System / 2			X									K3.01 - Reactor water level control: BWR-2, 3, 4	4.0	1
209001	Low Pressure Core Spray System / 2							X					A1.02 - Core spray pressure	3.2	1
211000	Standby Liquid Control System / 1		X										K2.02 - Explosive valves	3.1*	1
212000	Reactor Protection System / 7	X											K1.08 - Control rod and drive mechanism	3.0	1
215003	Intermediate Range Monitor (IRM) System / 7										X		A4.07 - Verification of proper functioning/ operability	3.6	1

Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215004	Source Range Monitor (SRM) System / 7											X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7											X	A4.03 - APRM back panel switches, meters and indicating lights	3.2	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7				X								K4.01 - Rod withdrawal blocks	3.7	1
216000	Nuclear Boiler Instrumentation / 7								X				A2.11 - Heatup or cooldown of the reactor vessel	3.2	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2						X						K6.01 - Electrical power	3.4	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2									X			A3.01 - Valve operation	3.5	1
218000	Automatic Depressurization System / 3							X					A1.05 - Reactor water level	4.1*	1
223001	Primary Containment System and Auxiliaries / 5	X											K1.08 - Relief/safety valves	3.6	1
223001	Primary Containment System and Auxiliaries / 5											X	A4.12 - Drywell coolers/chillers	3.5	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5						X						K6.08 - Reactor protection system	3.5	1



Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
239002	Relief/Safety Valves / 3									X			A3.08 - Lights and alarms	3.6	1
241000	Reactor/Turbine Pressure Regulating System / 3					X							K5.05 - Turbine inlet pressure vs. turbine load	2.8	1
259001	Reactor Feedwater System / 2					X							K5.02 - Water hammer	2.5	1
259002	Reactor Water Level Control System / 2					X							K5.03 - Water level measurement	3.1	1
261000	Standby Gas Treatment System / 9											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	2.5	1
264000	Emergency Generators (Diesel/Jet) / 6				X								K4.07 - Local operation and control	3.3	1
264000	Emergency Generators (Diesel/Jet) / 6									X			A3.04 - Operation of the governor control system on frequency and voltage control	3.1	1

K/A Category Totals: 2 2 2 2 3 2 2 2 4 4 3

Group Point Total: 28

Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1				X								K4.07 - Maintaining the control rod at a given location	3.2	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7							X					A1.02 - Status of control rod movement blocks; P-Spec(Not-BWR6)	3.4	1
202001	Recirculation System / 1		X										K2.03 - Recirculation system valves	2.7*	1
204000	Reactor Water Cleanup System / 2						X						K6.07 - SBLC logic	3.3	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4	X											K1.14 - Reactor temperatures (moderator, vessel, flange)	3.6	1
214000	Rod Position Information System / 7									X			A3.03 - Verification of proper functioning/ operability	3.5	1
215002	Rod Block Monitor System / 7				X								K4.02 - Allows stepping up of rod block setpoint: BWR-3, 4, 5	2.9	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5	X											K1.04 - LPCI/RHR pumps	3.9	1
226001	RHR/LPCI: Containment Spray System Mode / 5								X				A2.17 - †High containment / drywell temperature	3.2	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5							X					A1.06 - Suppression pool level	3.3	1
245000	Main Turbine Generator and Auxiliary Systems / 4										X		A4.12 - Generator output voltage	2.6	1

Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
256000	Reactor Condensate System / 2									X			A3.05 - Lights and alarms	3.0	1
262001	A.C. Electrical Distribution / 6										X		A4.05 - Voltage, current, power, and frequency on A.C. buses	3.3	1
262002	Uninterruptable Power Supply (A.C./D.C.) / 6											X	2.1.27 - Knowledge of system purpose and/or function.	2.8	1
272000	Radiation Monitoring System / 7			X									K3.02 - †Station gaseous effluent release monitoring	3.1	1
286000	Fire Protection System / 8		X										K2.03 - Fire detection system: Plant-Specific	2.5*	1
290001	Secondary Containment / 5								X				A2.02 - †Excessive outleakage	3.5	1
290003	Control Room HVAC / 9					X							K5.03 - Temperature control	2.6	1
300000	Instrument Air System (IAS) / 8											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	1

K/A Category Totals: 2 2 1 2 1 1 2 2 2 2 2

Group Point Total: 19

Facility: DAEC

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-2

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			A3.03 - Valve operation: Not-BWR1	2.5*	1
233000	Fuel Pool Cooling and Clean-up / 9				X								K4.03 - Maintenance of adequate pool temperature	2.8	1
234000	Fuel Handling Equipment / 8	X											K1.04 - †Reactor manual control system: Plant-Specific	3.3	1
290002	Reactor Vessel Internals / 5			X									K3.03 - Reactor power	3.3	1

K/A Category Totals: 1 0 1 1 0 0 0 0 0 1 0 0

Group Point Total: 4

**Generic Knowledge and Abilities Outline (Tier 3)**

Printed: 07/18/2002

**BWR RO Examination Outline**

Form ES-401-5

**Facility:** DAEC

Generic Category	KA	KA Topic	Imp.	Points
<b>Conduct of Operations</b>	2.1.30	Ability to locate and operate components, including local controls.	3.9	1
	2.1.32	Ability to explain and apply system limits and precautions.	3.4	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
<b>Category Total:</b>				<b>3</b>
<b>Equipment Control</b>	2.2.22	Knowledge of limiting conditions for operations and safety limits.	3.4	1
	2.2.33	Knowledge of control rod programming.	2.5	1
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	2.8	1
<b>Category Total:</b>				<b>3</b>
<b>Radiation Control</b>	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
<b>Category Total:</b>				<b>3</b>
<b>Emergency Plan</b>	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	2.9	1
	2.4.6	Knowledge symptom based EOP mitigation strategies.	3.1	1
	2.4.14	Knowledge of general guidelines for EOP flowchart use.	3.0	1
	2.4.18	Knowledge of the specific bases for EOPs.	2.7	1
<b>Category Total:</b>				<b>4</b>
<b>Generic Total:</b>				<b>13</b>

## ES-301-1 SRO Administrative Topics Outline

ES-301	Administrative Topics Outline	Form ES-301-1 Equivalent
Facility: <b>DAEC</b>		Date of Examination: <b>18 November, 2002</b>
Examination Level (circle one): RO <b>(SRO)</b>		Operating Test Number:
Administrative Topic/Subject Description	Describe method of evaluation: 1. One Administrative JPM, OR 2. TWO Administrative Questions	
A.1	Determine reportability (Group 1 isolation)  2.1.14-02 2.5/3.3	One Administrative JPM making reportability determination for a Group 1 Isolation.
	Coil for Relay C71A-K3C opens. Review fuse removal request and determine if logic has functioned correctly.  2.1.24 32.8/3.1	One Administrative JPM to determine if fuse removal is correct and if control room indications are appropriate. Control room indication will not be consistent with the logic.
A.2	Core alterations – determine actions for a misplaced fuel bundle during core re-load.  2.2.27-01 2.6/3.5	One Administrative JPM with one follow up question. Errors are made in the fuel move and who authorizes changes to fuel moving question.
A.3	Gain Access to a High Rad Area  2.3.1-04 2.6/3.0	JPM/Questions. The JPM will be administered when the operator enters the RCA. It will test the operator's knowledge of the requirements for entry into a High Radiation Area.  Note: Used on 2000 NRC Exam
A.4	Dispatch an operator into the plant when the TSC/OSC are not activated.  2.4.38-02 2.2/4.0	One Administrative JPM that requires the SRO to send an operator in the plant during EPIP conditions without the TSC/OSC being activated. EIPs require a briefing by the OSM on various conditions.

## ES-301-1 RO Administrative Topics Outline

ES-301	Administrative Topics Outline	Form ES-301-1 Equivalent
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Facility: <b>DAEC</b>		Date of Examination: <b>18 November, 2002</b>
Examination Level (circle one): <b>RO</b> /SRO		Operating Test Number:
Administrative Topic/Subject Description	Describe method of evaluation: 1. One Administrative JPM, OR 2. TWO Administrative Questions	
A.1	Perform an APRM gain adjust IAW STP3.0.0-01  2.1.7-02    3.7/4.4	One Administrative JPM to determine APRM gains are not IAW STP. Then requires them to adjust APRM GAFs into specification.
	Coil for Relay C71A-K3C opens. Finds relay in electrical prints and discuss logic.  2.1.24-xx    2.8/3.1	One Administrative JPM to determine where in the electrical prints K71A-K3C is located, how to de-energize what it is connected to, and are conditions as expected?
A.2	Respond to a RBM Rod Block annunciator and safety limit violation  2.2.22 -XX    3.4/4.1	One Administrative JPM to determine the plant has violated a T.S. safety limit based on an OFFICIAL 3D CASE in response to RBM Rod Block.
A.3	Gain Access to a High Rad Area  2.3.1-04    2.6/3.0	JPM/Questions. The JPM will be administered when the operator enters the RCA. It will test the operator's knowledge of the requirements for entry into a High Radiation Area.  Note: Used on 2000 NRC Exam.
A.4	Plant tour with a visitor when the plant evacuation alarm sounds.  2.4.39-xx    3.3/3.1	One Administrative JPM performed in plant with evaluator as a visitor receiving a plant tour. The plant evacuation alarm sounds with High Rad conditions in the RB. The visitor must be escorted to the appropriate location and the candidate must report to his designated ERO location without going thorough the Reactor Building.

## ES-301-2 SRO-U Walk-Through Outline

ES-301      Control Room System and Facility Walk-Through Test Outline      Form ES-301-2 Equivalent

Facility: <b>DAEC</b>		Date of Examination: <b>18 November, 2002</b>	
Examination Level (circle one): RO / SRO(I) / <b>SRO(U)</b>		Operating Test Number:	
<b>B.1 Control Room Systems</b>			
System / JPM Title	Type Code*	Safety Function	
a. SLO/ Recirc power reduction/ Recirc MG lube oil high temperature alarm/Recirc pump trip/Scram  202002-xx	(N)(S)(A)	1 Reactivity Control	
b. Perform required actions for HPCI rapid start for level control.  206000-15	(D)(S)(L)(A)	4 Heat Removal from Core (ESF)	
c. SBDG STP shutdown from fully loaded/Bus overcurrent alarm/manual rapid shutdown of SBDG and trip.  264000-xx	(N)(S)(A)	6 Electrical	
d.			
e.			
f.			
g.			
<b>B.2 Facility Walk-Through</b>			
a. Manually Initiate CARDOX  286000-03      Note: Used on the 2000 NRC Exam	(D), (R), (A) (AOP)	8 Plant Service Systems	
b. Reset a control building chiller after trip  290003-01	(D)(R)	9 Radioactivity Release	
c.			
* 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			

3	Alternate path
2	New
1	Low Power
3	EOP/AOP
2	RCA



## ES-301-2 SRO-I Walk-Through Outline

ES-301      Control Room System and Facility Walk-Through Test Outline      Form ES-301-2 Equivalent

Facility: <b>DAEC</b>		Date of Examination: <b>18 November, 2002</b>
Examination Level (circle one): RO / <b>SRO(I)</b> SRO(U)		Operating Test Number:
<b>B.1 Control Room Systems</b>		
System / JPM Title	Type Code*	Safety Function
a. SLO/ Recirc power reduction/ Recirc MG lube oil high temperature alarm/Recirc pump trip/Scram  202002-xx	(N)(S)(A)	1 Reactivity Control
b. Rapid Restart of the RPF following a reactor scram  259001-11    Note: Used on the 2000 NRC Exam	(D)(S)(L)	2 Reactor Water Inventory Control
c. Install EOP Defeat 5 to depressurize the reactor  239001-02    Note: Used on the 2000 NRC Exam	(D)(S)(L)	3 Reactor Pressure Control
d. Perform required actions for HPCI rapid start for level control.  206000-15	(D)(S)(L)(A)	4 Heat Removal from Core (ESF)
e. Containment venting irrespective of radioactive release (alternate path hard pipe vent)  295024-06	(D)(S)(L)(A)	5 Containment Integrity
f. SBDG STP shutdown from fully loaded/Bus overcurrent alarm/manual rapid shutdown of SBDG and trip.  264000-xx	(N)(S)(A)	6 Electrical
g. Perform required actions for repeated manual scram.  212000-10	(D)(S)	7 Instrumentation
<b>B.2 Facility Walk-Through</b>		
a. Manually Initiate CARDOX  286000-03    Note: Used on the 2000 NRC Exam	(D), (R), (A) (AOP)	8 Plant Service Systems
b. Reset a control building chiller after trip  290003-01	(D)(R)	9 Radioactivity Release
c. Shift 250 VDC battery chargers  263000-01	(D)	6 Electrical
* 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		

5	Alternate path
2	New
4	Low Power
3	EOP/AOP
2	RCA

## ES-301-2 RO Walk-Through Outline

ES-301      Control Room System and Facility Walk-Through Test Outline      Form ES-301-2 Equivalent

Facility: <b>DAEC</b>		Date of Examination: <b>18 November, 2002</b>
Examination Level (circle one): <b>RO</b> / SRO(I) / SRO(U)		Operating Test Number:
<b>B.1 Control Room Systems</b>		
System / JPM Title	Type Code*	Safety Function
a. SLO/ Recirc power reduction/ Recirc MG lube oil high temperature alarm/Recirc pump trip/Scram  202002-xx	(N)(S)(A)	1 Reactivity Control
b. Rapid Restart of the RPF following a reactor scram  259001-11    Note: Used on the 2000 NRC Exam	(D)(S)(L)	2 Reactor Water Inventory Control
c. Install EOP Defeat 5 to depressurize the reactor  239001-02    Note: Used on the 2000 NRC Exam	(D)(S)(L)	3 Reactor Pressure Control
d. Perform required actions for HPCI rapid start for level control.  206000-15	(D)(S)(L)(A)	4 Heat Removal from Core
e. Containment venting irrespective of radioactive release (alternate path hard pipe vent)  295024-06	(D)(S)(L)(A)	5 Containment Integrity
f. SBDG STP shutdown from fully loaded/Bus overcurrent alarm/manual rapid shutdown of SBDG and trip.  264000-xx	(N)(S)(A)	6 Electrical
g. Perform required actions for repeated manual scram.  212000-10	(D)(S)	7 Instrumentation
<b>B.2 Facility Walk-Through</b>		
a. Manually Initiate CARDOX  286000-03    Note: Used on the 2000 NRC Exam	(D), (R), (A) (AOP)	8 Plant Service Systems
b. Reset a control building chiller after trip  290003-01	(D)(R)	9 Radioactivity Release
c. Shift 250 VDC battery chargers  263000-01	(D)	6 Electrical
* 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		

5	Alternate path
2	New
4	Low Power
3	EOP/AOP
2	RCA

<b>Facility:</b>  <b>DAEC</b>	<b>Scenario No.: 1</b>  (ESG 5) Significantly Modified	<b>Op-Test No.:</b>  <b>2002 ILC EXAM</b>	
<b>Examiners:</b>		<b>Operators:</b>  <b>ALL</b>	

**Initial Condition:** Reactor startup in progress at approximately 9% power. EHC Pressure Set is at 940 psig. IRM F has failed downscale and is bypassed.

**Turnover:**

Event No.	Malf. No.	Event Type*	Event Description
1		N (RO)	Transfer the MODE switch to RUN.
2		N (BOP)	Place a RWCU bed in service.
3		R (RO)	Withdraw control rods to approximately 12% power.
4		I/C (SRO)	Two "C" main steam line high flow DPIS will fail low, due to equalizing valve found open.
5		I/C (RO) N (RO)	Control rod 22-39 will not move with normal drive water pressure.
6		I/C (RO) N (RO)	The in-service CRD pump trips, requiring a start of the other CRD pump.
7		I/C (BOP)	The HPCI Turbine will receive a spurious initiation signal.
8		M (ALL)	The HPCI Steam line will break in the Steam Tunnel. The crew will enter EOP 3 and EOP 1 to scram the reactor prior to exceeding a Max-Safe temperature in an area.
9		I/C (BOP)	The steam leak in the steam tunnel will result in an incomplete Group 6 isolation. High Steam Tunnel temperature will close the MSIVs and reactor pressure must be controlled with RCIC or SRVs without a continuous nitrogen supply.
10		I/C (BOP)	When placing RHR in Torus Cooling mode, the BOP operator will recognize that the flow indicator for the "B" loop does not indicate flow.

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

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

<b>Facility:</b>  <b>DAEC</b>	<b>Scenario No.: 2</b>  (ESG 7)	<b>Op-Test No.:</b>  <b>2002 ILC EXAM</b>
<b>Examiners:</b>		<b>Operators:</b>  <b>ALL</b>

**Initial Condition:** The plant is operating at 70% power in preparation for MSIV testing.

**Turnover:**

Event No.	Malf. No.	Event Type*	Event Description
1		I/C (RO)	Shortly after the crew takes control of the plant, the "C" APRM will slowly fail upscale resulting in a half scram.
2		N (BOP)	Operators perform MSIV Trip Closure Time Check, STP 3.6.1.3-03.
3		I/C (BOP)	"A" Outboard MSIV will not indicate full closed. The crew should declare CV-4413 inoperable and comply with Tech Spec 3.6.1.3.A, which requires the inboard MSIV to be closed and deactivated in 8 hours.
4		I/C (RO)	While the OSS is researching the MSIV LCO, the B Feed Reg Valve controller begins to fail closed. Operators will take manual control and restore RPV level.
5		I/C (BOP)	Air in-leakage into the Main Condenser results in Main Condenser High Backpressure
6		R (RO)	In response to the condenser backpressure, the crew will reduce reactor power in accordance with IPOI 4 fast power reduction.
7		I/C (SRO)	The air in-leakage will increase to the point where a manual reactor scram should be performed.
8		M (ALL)	Control Rods fail to insert. Operators perform EOP ATWS. Control rods may be manually driven for a short while, but other RIPs are unsuccessful until the scram air header is vented. RPV level is lowered to < +87". If Power/Level control conditions exist, RPV level should continue to be lowered.  EOP-2 is entered on high Torus Water Temperature. Torus Cooling should be maximized. When RPV level is lowered < 64", Torus Cooling capability will be lost.
9		I/C (RO)	RWCU fails to isolate when SBLC is initiated. Operators should manually close the isolation valves or bypass the filter demins.
10		I/C (BOP)	ATWS pressure control is a problem because the Turbine Bypass valves fail to operate.

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

<b>Facility:</b>  <b>DAEC</b>	<b>Scenario No.: 3</b>  (ESG 9)	<b>Op-Test No.:</b>  <b>2002 ILC EXAM</b>
<b>Examiners:</b>		<b>Operators:</b>  <b>SRO-I</b>

**Initial Condition:** The plant is at 75% power. The "B" SBDG is running for its monthly operability test

**Turnover:**

<b>Event No.</b>	<b>Malf. No.</b>	<b>Event Type*</b>	<b>Event Description</b>
1		N (BOP)	IAW STP 3.8.1-04, the BOP operator secures the running SBDG.
2		I/C (RO) N (RO)	While the BOP is securing the EDG, an LPRM fails upscale. This will require the crew to bypass the LPRM and make an operability call on the LPRMs APRMs.
3		R (RO)	The SOC requests a power increase of 60 MWE.
4		I/C (BOP)	An accident in the plant damages PDIS 2245, a HPCI Steam Line Flow Instrument. This causes an isolation of the HPCI outboard valves, requiring entry into TS 3.3.6.1, Condition A, and they will also declare HPCI inoperable in accordance with TS 3.5.1, Conditions F.
5		I/C (RO)	The "A" Recirc MG develops an oil leak, which will trip the Recirc pump. The pump trip will place the plant in the Buffer region and the crew will follow the guidance provided in AOP 255.2 and STP 3.4.1-02, to monitor the RPV for instabilities.
6		M (ALL)  M (ALL) I/C (BOP)	A LOCA begins. The stresses placed on the Recirc system from the trip result in a leak inside the Primary Containment.  When the crew scrams the plant, an open circuit transfer results in the loss of condensate and feed. With HPCI unavailable and RCIC unable to maintain RPV level, ALC and ED are performed.
7		I/C (RO)	RCIC flow controller fails to operate in automatic mode. RCIC speed can be manually controlled.
8		I/C (BOP)	Two ADS SRVs fail to open during ED.

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

<b>Facility:</b>	<b>Scenario No.: BACKUP</b>	<b>Op-Test No.:</b>	
<b>DAEC</b>	<b>(ESG 12) Significantly Modified</b>	<b>2002 ILC EXAM</b>	

<b>Examiners:</b>		<b>Operators:</b>	
		<b>AS NEEDED</b>	

**Initial Condition:** The plant is operating at 90% power. HPCI is in day 9 of 14, it has been repaired but is awaiting the operability testing. There is no other inoperable equipment

**Turnover:**

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO)	1C05 operator will lower reactor load by 60 MWe.
2		N (BOP)	The BOP operator will startup the RHRSW and ESW Systems for chlorination of the service water pits.
3		I/C (RO) N (RO)	Rod Drift due to loss of position indication. Insert a substituted value in RWM.
4		I/C (BOP)	XFV-4642A alarms and indicates dual. The BOP operator will investigate to determine if the Xfv is isolated. The SRO will determine that this is a reportable event. The SRO must also make an operability determination of the valve.
5		I/C (BOP)	Fuel Pool Rad monitor fails causing a Group 3 B isolation
6		I/C (RO)	1C05B losses alarm power and does not alarm the Group 3
		M (ALL)	A grid disturbance will result in a degraded grid voltage.
7		I/C (BOP)	The "A" EDG will start, but not load on to the bus.
		M (ALL)	The scram will cause a small LOCA to occur inside the PC requiring Torus and D/W sprays.
		I/C (BOP)	When directed to install defeat 4, the BOP will determine that it will not work

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

Comments on Duane Arnold Examination outline (11-18-2002 test)

1. Comment In the SRO administrative outline JPM A.1.b (Review a fuse removal request) and JPM A.2 (Determine action for a misplaced fuel bundle) are reversed. Review of a fuse removal request is an Equipment Control item or an A.2 topic. Determine the action for a misplaced fuel bundle is a Conduct of Operations or A.1 topic.

Resolution The two JPMs will be switched.

- 2 Comment In the RO administrative outline JPM A.1.b (Evaluate a RBM alarm using a 3D core monitoring) and JPM A.2 (Determine action necessary to de-energize a relay) are reversed. Determining the action necessary to de-energize a relay is an Equipment Control item or an A.2 topic. Evaluating a RBM alarm using a 3D core monitoring is a Conduct of Operations or A.1 topic.

Resolution The two JPMs will be switched.

3. Comment For JPM A.2 (Determine action for a misplaced fuel bundle) the present K/A is (2.2.27) Knowledge of the refueling process. Take a look at K/As 2.2.26 Knowledge of refueling administrative requirements and K/As 2.2.26 Knowledge of new and spent fuel movement procedures to see if one of these K/As is more appropriate.

Resolution Licensee will evaluate K/A. Will be looked at again when actual JPM is submitted

4. Comment Also for JPM A.2 (Determine action for a misplaced fuel bundle) the outline indicates a scripted question will be asked in this JPM. Questions should only be asked as follow-up to an observed issue during the performance of a JPM.

Resolution No prescribed question will be planned.

4. Comment On the SRO written outline some of the K/As of SRO only questions are the same as the K/As on the RO written outline (295021-2.4.50, 215004-2.4.49, 216000-A2, 261000-2.2.25, 290001-A2, 2.1.7). Be sure SRO only and RO questions are different and written at correct level.

Resolution Licensee will do.

5. Comment On the SRO written outline some of the K/As (216000-A2, 226001-A2, 290001-A2, 201002-A2) on SRO only questions are not tied to CFR 55.43, be sure the question written is something required of an SRO as called out in a lesson plan or procedure.

Resolution Licensee will do.

6. Comment On the RO written outline K/A 261000-2.2.25 is a technical specification bases question, be sure what is asked it clearly at OR level.

Resolution Licensee will do.

*Bruce Palagj*

*9-18-02*