Facility: WATERFORD 3	Date of Examination: 3/24/2008
Examination Level (circle one): (RO) / SRO	Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, M	2.1.23 Ability to perform specific and integrated plant procedures during all modes of plant operation.(3.9) JPM Calculate Shutdown Margin
Conduct of Operations	R, M	2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs and tables which contain performance data.(2.8) JPM Determine Time to SDC (Condensate Inv.)
Equipment Control	R, M	2.2.13 Knowledge of tagging and clearance procedures. (3.6) JPM Review an Equipment Clearance
Radiation Control	R, N	2.3.11 Ability to control radiation releases.(2.7) JPM Complete Prerequisites For GDT Release
Emergency Plan		Not selected

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

*Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ for SROs & RO retakes)
(N)ew or (M)odified from bank (> 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

Facility: WATERFORD 3	Date of Examination: 3/24/2008
Examination Level (circle one): RO /(SRO)	Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	R, M	2.1.25	Ability to obtain and interpret station reference materials such as graphs, monographs and tables which contain performance data.(3.1)
		JPM	Calculate Shutdown Margin With One Untrippable CEA
Conduct of Operations	R, N	2.1.2	Knowledge of operator responsibilities during all modes of plant operation. (4.4)
		JPM	Determine Event Notification Requirements
Equipment Control	R, M	2.3.1	Knowledge of tagging and clearance procedures. (3.8)
		JPM	Approve an Equipment Tagout
Radiation Control	P, R	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.(3.3)
		JPM	Approve Conditions For a Containment Entry at Power
Emergency Plan	R, M	2.4.44	Knowledge of emergency plan protective action recommendations. (4.0)
		JPM	Determine PARS

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

*Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ for SROs & RO retakes)
(N)ew or (M)odified from bank (> 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	RO	Operating Test No.:	1

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title	Type Code*	Safety Function
a.	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
b.	015-Perform NI Startup Channel Functional Test (RO ONLY)	S,M,L	7
c.	064-Start and Load B EDG From CR	S,M,A,	6
d.	APE068-Perform BOP Immediate Actions On CR Evacuation	S,M,A	8
e.	004-Blended Makeup To VCT Using Manual Mode	S,D,A	1
f.	026-Align LPSI Pump To Replace Containment Spray Pump	S,D,L	5
g.	013-Verify SIAS Automatic Actions -Train A	S, N, L, A ,	2
h.	071-Respond To Waste Gas Discharge High Activity	N,S,A	9
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
i.	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
j.	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
k.	062-Transfer AB SUPS From Alternate To Normal Power Supply	N	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	SRO(I)	Operating Test No.:	1

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
	System / JPM Title	Type Code*	Safety Function
a.	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
b.			
c.	064-Start and Load B EDG From CR	S,M,A,	6
d.	APE068-Perform BOP Immediate Actions On CR Evacuation	S,M,A	8
e.	004-Blended Makeup To VCT Using Manual Mode	S,D,A	1
f.	026-Align LPSI Pump To Replace Containment Spray Pump	S,D,L	5
g.	013-Verify SIAS Automatic Actions -Train A	S, N, L, A ,	2
h.	071-Respond To Waste Gas Discharge High Activity	N,S,A	9
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
i.	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
j.	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
k.	062-Transfer AB SUPS From Alternate To Normal Power Supply	N	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	***SRO (U)***	Operating Test No.:	**1**

Control Room Systems[@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

	System / JPM Title	Type Code*	Safety Function
a.	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
b.			
c.			
d.			
e.			
f.			
g.	013-Verify SIAS Automatic Actions -Train A	S, N, L, A ,	2
h.	071-Respond To Waste Gas Discharge High Activity	N,S,A	9

In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i.	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
j.	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
k.			

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 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	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility:						Date of Exam:						Operating Test No.:								
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO	RX													0	1	1	0
	NOR	1												1	1	1	1
SRO-I	I/C	234 578												6	4	4	2
SRO-U2	MAJ	6												1	2	2	1
	TS	245												3	0	2	2
RO	RX		1											1	1	1	0
	NOR				1									1	1	1	1
SRO-I2	I/C		24		23 45 7									7	4	4	2
SRO-U	MAJ		6		6									2	2	2	1
	TS													2	0	2	2
RO2	RX					1								1	1	1	0
	NOR			1										1	1	1	1
SRO-I	I/C			35 78		45								6	4	4	2
SRO-U	MAJ			6		6								2	2	2	1
	TS														0	2	2
RO	RX														1	1	0
	NOR														1	1	1
SRO-I	I/C														4	4	2
SRO-U	MAJ														2	2	1
	TS														0	2	2

Instructions:

1. Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility:						Date of Exam:						Operating Test No.:											
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO	RX													0	1	1	0
	NOR	1												1	1	1	1
SRO-I	I/C	234 578												6	4	4	2
SRO-U1	MAJ	6												1	2	2	1
	TS	245												3	0	2	2
RO	RX		1											1	1	1	0
	NOR				1									1	1	1	1
SRO-I1	I/C		24		23 45 7									7	4	4	2
SRO-U	MAJ		6		6									2	2	2	1
	TS				45									2	0	2	2
RO1	RX					1								1	1	1	0
	NOR			1										1	1	1	1
SRO-I	I/C			35 78		45								6	4	4	2
SRO-U	MAJ			6		6								2	2	2	1
	TS													0	0	2	2
RO5	RX								1					1	1	1	0
	NOR						1							1	1	1	1
SRO-I	I/C						23 7		23					5	4	4	2
SRO-U	MAJ						6		6					2	2	2	1
	TS													0	0	2	2

Instructions:

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Facility:		Date of Exam:												Operating Test No.:			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO	RX								1					1	1	1	0
	NOR	1												1	1	1	1
SRO-I3	I/C	234 578							23					8	4	4	2
SRO-U	MAJ	6							6					2	2	2	1
	TS	245												3	0	2	2
RO3	RX		1											1	1	1	0
	NOR						1							1	1	1	1
SRO-I	I/C		24				23 7							5	4	4	2
SRO-U	MAJ		6				6							2	2	2	1
	TS													0	0	2	2
RO4	RX					1								1	1	1	0
	NOR			1										1	1	1	1
SRO-I	I/C			35 78		45								6	4	4	2
SRO-U	MAJ			6		6								2	2	2	1
	TS													0	0	2	2
RO	RX														1	1	0
	NOR														1	1	1
SRO-I	I/C														4	4	2
SRO-U	MAJ														2	2	1
	TS														0	2	2

Instructions:

1. Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
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3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility:	WATERFORD 3	Scenario No.: 1 Rev 1	Op Test No.: **NRC**
Examiners:		Operators:	
Initial Conditions:	• 100%, MOC, AB buses aligned to "B" side.		
	• "A" EFW pump OOS for seal replacement, "A" ACCW pump OOS for motor pm's, Condenser Air Ejector Rad Monitor OOS.		
Turnover:	• "A" Train work week with "B" train protected.		
	• Crew is to downpower to 90% power for Grid maintenance.		
Critical Task:	• Ensuring LPSI flow by actions to manually start "B" LPSI.		
	• Ensuring Containment Spray flow by manual actions to open Spray header isolation valve.		
	• RCP trip criteria during loss of sub-cooling.		
	• RCP trip criteria on loss of CCW cooling.		

Event No.	Malf. No.	Event Type*	Event Description
1		R - ATC N - BOP, SRO	Power reduction to 90%.
2	RC19A	I - ATC, SRO TS - SRO	Tcold input to "A" CPC fails LOW.
3	B-G01 LO-18A4S03-1	C –BOP, SRO	The "A" CEDM Cooling fan trips on overload.
4	RC23B	C – ATC, SRO TS – SRO	RCS leakage greater than TS limits.
5	ED05C	C – ALL TS- SRO	Loss of "A" 4160 Safety bus.
6	RC23B	M – ALL	Large break LOCA.
7	SI02D	C – BOP, SRO	"B" LPSI fails to auto start.
8	CS04B	C – BOP, SRO	CS 125B, Containment Spray Header B Isol, fails to auto open on CSAS.

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

Waterford 3 2008 NRC Scenario #1

The crew assumes the shift at 100% power with instructions to reduce power to 90% for Grid maintenance.

At approximately 95% power the Tcold instrument input to the "A" CPC fails low. The crew bypasses affected channels IAW Technical Specification requirements.

After the affected RPS channels are bypassed the "A" CEDM Cooling fan trips on overload. Starting the standby fan IAW the Off-normal procedure, OP-901-102, CEA or CEDMCS Malfunction, restores cooling flow.

When CEDM cooling has been restored an RCS leak ramping to 5 GPM to containment will be initiated. The operators should identify by leakrate indication trends or when the annunciator L-20, Containment Leakage High, annunciates. Actions are IAW OP-901-111 Reactor Coolant System Leak.

Once the crew has identified the leak and evaluated the TS implications there will be a loss of the "A" 4160V Safety Bus due to lockout which prevents the EDG from supplying the bus. Actions to stabilize IAW OP-901-310, Loss of Train A Safety Bus should be carried out. The bus will not be recovered during the scenario.

When the operators have restored CCW flows, initiated actions to rack out the faulted breakers and started to evaluate Technical specification implications then the RCS leak becomes a Large Break LOCA resulting in a Reactor trip and full ESFAS actuation.

When SIAS actuates the "B" LPSI pump will fail to auto start, manual actions will be successful.

When CSAS actuates CS 125B, Containment Spray Header B Isol, fails to auto open. Manual board actions to open are successful.

EOP flowpath is OP-902-000, STANDARD POST TRIP ACTIONS to OP-902-002, LOSS OF COOLANT ACCIDENT RECOVERY

Scenario Event Description
NRC Scenario 2

Facility:	WATERFORD 3	Scenario No.:	2	Op Test No.:	**NRC**
Examiners:		Operators:			

Initial Conditions:
- ~60% power, MOC, AB buses aligned to "B" side.
- "A EFW pump OOS for seal replacement, "A" ACCW pump OOS for motor pm, the Condenser air ejector Radiation Monitor is OOS.

Turnover:
- The "A" main feed pump outboard pump bearing vibration is elevated shortly after being placed in service and the crew needs to reduce power to <55% and remove the pump from service.

Critical Task:
- Ensuring Reactivity control post trip by actions to initiate Diverse Trip.
- Ensuring feedwater to at least one SG utilizing Auxiliary Feedwater.

Event No.	Malf. No.	Event Type*	Event Description
1		R – ATC N – BOP	Normal downpower to remove "A" Main feed pump from service due to high vibration.
2	MS09B	I – BOP, SRO	Steam Generator Steam Flow instrument fails HIGH.
3	FW12A	I – BOP, SRO	"A" Main feedwater pump vibration increases requiring manually tripping
4	RD02A72	C – ALL TS – SRO	Dropped Regulating group CEA, #72.
5	CV12A2	I – ATC, SRO TS - SRO	VCT level inst., VCV-ILT-0227, fails LOW.
6	FW03B	M - ALL	Second main feed pump trips, reactor fails to auto or manually trip. Diverse Scram successful.
7	FW05	C – BOP, SRO	"AB" EFW pump trips on overspeed, "B" EFW pump fails to start, manual start successful.

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

Waterford 3 2008 NRC Scenario #2

The crew assumes the shift at ~60% power with elevated vibrations on the "A" FWPT outboard pump bearing which had just been placed in service. The crew is directed to reduce power and take the "A" FWPT OOS.

During the downpower the Steam Flow input to the FWCS #2 fails high requiring the ATC to take manual control of the #2 SG feedwater control.

When the reactivity manipulation has been satisfied the vibrations on the "A" Main feed pump worsen and require the crew to trip the pump.

After the plant is stabilized then a regulating group CEA drops into the core. OP-901-102, CEA or CEDMCS Malfunction is entered and the CEA can be recovered.

When the CEA has been recovered the VCT level instrument, CVC-ILT-0227, fails low, causing the charging pump suction to shift to the RWSP. The crew implements OP-901-113, Volume Control Tank Makeup Control Malfunction.

After the crew completes the actions for the VCT level instrument failure the "B" FWPT trips and the crew attempts a manual Rx trip which is unsuccessful and the crew must utilize the Diverse Reactor Trip. If the crew doesn't manually trip the auto trips are also not successful.

Post-trip the "AB" EFW pump trips on overspeed when started and the "B" EFW pump failed to auto start.

EOP flowpath is OP-902-000, STANDARD POST TRIP ACTIONS, OP-902-006, LOSS OF MAIN FEEDWATER RECOVERY.

Scenario Event Description
NRC Scenario 3

Facility:	WATERFORD 3	Scenario No.:	3	Op Test No.:	**NRC**
Examiners:		Operators:			

Initial Conditions:	• 25% power, MOC, AB buses aligned to "B" side.
Turnover:	• Plant startup is in progress after being off-line for 2 days.
Critical Task:	• Preventing RCS repressurization by actions to stabilize RCS temperature using the non-ESD SG. • Isolating the SG with ESD. • Tripping two RCP's when SIAS actuates with low RCS pressure. • Emergency borate or actuate SIAS due to uncontrolled cooldown. • Controlling RCS make-up to prevent RCS overpressure.

Event No.	Malf. No.	Event Type*	Event Description
1		R – ATC N – BOP, SRO	Raising power from 25%.
2	RX14A	I – ATC, SRO	Controlling Pressurizer Pressure channel fails HIGH.
3	NI01F	I – ATC, SRO TS – SRO	Safety Channel B ENI middle detector fails HIGH.
4	CC01A	C – BOP, SRO TS – SRO	"A" CCW pump trip.
5	SG01A	C – ATC/BOP/ SRO TS - SRO	SGTL ramp from 0 – 5 gpm over 10 minutes on SG #1.
6	MS13A	M – ALL	ESDE on #1 SG outside containment, upstream of MSIV.
7	EGO5	C – BOP, SRO	Exciter Field Breaker fails to auto open post trip.

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

Waterford 3 2008 NRC Scenario #3

The crew assumes the shift at 25% power during a plant startup from a short notice outage. The crew is to continue the startup to 100% using OP-010-004, Power Operations.

During the up-power the controlling Pressurizer Pressure channel fails high which will cause heater output to go to zero and the in-service spray valve(s) will open. Operators take action IAW OP-901-120, Pressurizer Pressure Control Malfunction to select the operable channel and reset heaters.

After pressurizer pressure has been restored then there will be a failure of Safety Channel B ENI middle detector. Operators diagnose the failure and bypass appropriate channels IAW Technical Specifications.

When appropriate channels are bypassed there will then be a trip of the "A" CCW pump on overload. Restoration actions will be IAW OP-901-510, Component Cooling Water System Malfunction.

While CCW restoration actions are on-going there will be a steam generator tube leak ramp in from 0-5 gpm over ~10 minutes on the #1 SG. Once identified operator actions are IAW OP-901-202, Steam Generator Tube Leakage or High Activity when primary to secondary leakage is identified.

Once the crew determines the shutdown requirements of the tube leakage then an ESDE will be initiated on the #1 Steam Generator, outside containment but upstream of the MSIV. It will ramp in slowly requiring the operators to manually trip and address the uncontrolled cooldown by either Emergency boration or initiation of SIAS.

Post trip the exciter field breaker fails to open requiring manual operator action by the *BOP* to open.

EOP flowpath is OP 902-000, SPTA's to OP 902-008, Safety Function Recovery.

Facility:	WATERFORD 3		Scenario No.:	4	Op Test No.: **NRC**
Examiners:			Operators:		

Initial Conditions:	• 5 % power, MOC, AB buses aligned to "B" side.
Turnover:	• Plant startup in progress, no equipment OOS.
Critical Task:	• Ensuring HPSI availability by manually closing in "B" EDG breaker.
	• Ensuring HPSI flow by manually starting "B" HPSI pump.
	• Securing 2 RCP's with SIAS and low RCS pressure.
	• Securing RCP's with no seal cooling flow within 3 minutes.

Event No.	Malf. No.	Event Type*	Event Description
1		R - ATC N – BOP, SRO	Power increase.
2	AI-04A303-1	C – ATC/ SRO	Letdown TCV fails closed in auto
3	HV06B	C – BOP, SRO TS – SRO	Compressor failure on "B" Chiller
4	CV01B	C – ATC/ SRO TS - SRO	Running charging pump (B) trips.
5	DI-02A07S19-0	C – ATC, SRO	RCP Seal Water TCV fails closed requiring manual Rx trip and tripping affected RCP.
6	RC23A ED01A-D	M – ALL	SBLOCA w/LOOP during the trip.
7	EG12A1 EG09A EG08B	C – BOP, SRO	"A" EDG starts but "A" EDG breaker fails to close and does not manually close, "B" EDG fails to start, manual actions are successful to start "B" EDG and it loads onto the bus.
8	SI02B	C – ATC/BOP / SRO	"B" HPSI fails to auto start. Will manually start.

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

Waterford 2008 NRC Scenario #4

The crew assumes the shift at ~5% power during plant startup, MOC, with the "AB" busses aligned to the "B" side.

The crew is to continue with plant startup IAW OP-010-003 Plant Startup and OP-010-004 Power Operations.

During the preparations to raise power the Letdown TCV controller fails in auto causing the valve to close resulting in high letdown temperature and auto bypass of the ion exchangers. Operator actions to take manual control are successful.

When Letdown has been stabilized the "B" Chiller fails due to compressor oil pump failure. The crew assesses, enters CCW TS actions until the "AB" Chiller can be aligned for operation.

After required actions are complete the running charging pump, "B", trips. The crew takes actions IAW OP-901-112 Charging or Letdown Malfunction.

When charging and Letdown actions are complete the RCP 1A Seal Cooler isolation valve closes and will not reopen. The crew takes actions IAW OP-901-510 Component Cooling Water System Malfunction which will require the Rx and then the RCP to be tripped.

On the trip a SBLOCA develops and there is a loss of Off-Site power. The "A" side EDG starts but the output breaker fails to close and cannot be manually closed in by the operator. The "B" side EDG fails to start but will start when the operator attempts to start from the control panel and then restores power to the "B" safety busses.

The "B" HPSI pump does not auto start and the operator must take action to manually start.

EOP flowpath- OP 9002-000, SPTA's to OP 902-002, LOCA Recovery

Facility: Waterford 3 2008 NRC Exam Date of Exam: 3/24/2008

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 & Abnormal Plant Evolutions	1	3	3	3				3	3			3	18	3	3	6
	2	2	1	1				2	2			1	9	2	2	4
	Tier Totals	5	4	4				5	5			4	27	5	5	10
2. Plant Systems	1	3	2	3	3	2	2	2	2	4	3	2	28	3	2	5
	2	1	0	0	1	1	1	1	2	1	1	1	10	0 / 2	1	3
	Tier Totals	4	2	3	4	3	3	3	4	5	4	3	38	5	3	8
3. Generic Knowledge and Abilities Categories		1		2		3		4					10	1	2	3	4	7
		2		3		3		2						2	2	2	1	

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 ES-401, Attachment 2, 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.
	8.	On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) 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

Waterford 3 2008 NRC Exam
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
007 / Reactor Trip - Stabilization - Recovery / 1						X	EA2.02	Ability to determine or interpret the following as they apply to a reactor trip: Proper actions to be taken if the automatic safety functions have not taken place	4.6	76
025 / Loss of RHR System / 4						X	AA2.05	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Limitations on LPI flow and temperature rates of change	3.5	77
026 / Loss of Component Cooling Water / 8						X	AA2.03	Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition	2.9	78
027 / Pressurizer Pressure Control System Malfunction / 3	X						2.4.30	Emergency Procedures / Plan Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	79
038 / Steam Gen. Tube Rupture / 3	X						2.4.49	Emergency Procedures / Plan Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	80
E06 / Loss of Main Feedwater / 4	X						2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	81
007 / Reactor Trip - Stabilization - Recovery / 1				X			EK3.01	Knowledge of the reasons for the following as the apply to a reactor trip: Actions contained in EOP for reactor trip	4.0	39
008 / Pressurizer Vapor Space Accident / 3		X					AK1.02	Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Change in leak rate with change in pressure	3.1	40
009 / Small Break LOCA / 3			X				EK2.03	Knowledge of the interrelations between the small break LOCA and the following: S/Gs	3.0	41
011 / Large Break LOCA / 3	X						2.4.50	Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	42
015 / 17 / RCP Malfunctions / 4		X					AK1.04	Knowledge of the operational implications of the following concepts as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Basic steady state thermodynamic relationship between RCS loops and S/Gs resulting from unbalanced RCS flow	2.9	43

Waterford 3 2008 NRC Exam
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
022 / Loss of Rx Coolant Makeup / 2					X		AA1.03	Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Makeup: PZR level trend	3.2	44
025 / Loss of RHR System / 4	X						2.1.23	Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	45
026 / Loss of Component Cooling Water / 8	X						2.2.22	Equipment Control Knowledge of limiting conditions for operations and safety limits.	3.4	46
027 / Pressurizer Pressure Control System Malfunction / 3					X		AA1.05	Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: Transfer of heaters to backup power supply	3.3	47
029 / ATWS / 1			X				EK2.06	Knowledge of the interrelations between the and the following an ATWS: Breakers, relays, and disconnects	2.9	48
038 / Steam Gen. Tube Rupture / 3		X					EK1.01	Knowledge of the operational implications of the following concepts as they apply to the SGTR: Use of steam tables	3.1	49
040 / Steam Line Rupture - Excessive Heat Transfer / 4			X				AK2.01	Knowledge of the interrelations between the Steam Line Rupture and the following: Valves	2.6	50
054 / Loss of Main Feedwater / 4					X		AA1.01	Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): AFW controls, including the use of alternate AFW sources	4.5	51
056 / Loss of Off-site Power / 6						X	AA2.37	Ability to determine and interpret the following as they apply to the Loss of Offsite Power: ED/G indicators for the following: voltage, frequency, load, load-status, and closure of bus tie breakers	3.7	52
057 / Loss of Vital AC Inst. Bus / 6				X			AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital ac electrical instrument bus	4.1	53
058 / Loss of DC Power / 6				X			AK3.02	Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Actions contained in EOP for loss of dc power	4.0	54
062 / Loss of Nuclear Svc. Water / 4						X	AA2.02	Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The cause of possible SWS loss	2.9	55

Waterford 3 2008 NRC Exam
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
065 / Loss of Instrument Air / 8						X	AA2.05	Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to commence plant shutdown if instrument air pressure is decreasing	3.4	56
K/A Category Point Totals:	3/3	3	3	3	3	3/3	Group Point Total:			18/6

Waterford 3 2008 NRC Exam
Written Examination Outline
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
003 / Dropped Control Rod / 1						X	AA2.01	Ability to determine and interpret the following as they apply to the Dropped Control Rod: Rod Position Indication to actual Rod Position	3.9	82
005 / Inoperable/Stuck Control Rod / 1	X						2.2.25	Equipment Control Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	83
028 / Pressurizer Level Malfunction / 2	X						2.4.31	Emergency Procedures / Plan Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	84
068 / Control Room Evac. / 8						X	AA2.07	Ability to determine and interpret the following as they apply to the Control Room Evacuation: PZR level	4.3	85
003 / Dropped Control Rod / 1						X	AA2.03	Ability to determine and interpret the following as they apply to the Dropped Control Rod: Dropped rod, using in-core/ex-core instrumentation, in-core or loop temperature measurements	3.6	57
005 / Inoperable/Stuck Control Rod / 1		X					AK1.05	Knowledge of the operational implications of the following concepts as they apply to Inoperable / Stuck Control Rod: Calculation of minimum shutdown margin	3.3	58
036 / Fuel Handling Accident / 8					X		AA1.01	Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: Reactor building containment purge ventilation system	3.3	59
060 / Accidental Gaseous RadWaste Rel. / 9					X		AA1.02	Ability to operate and / or monitor the following as they apply to the Accidental Gaseous Radwaste: Ventilation system	2.9	60
061 / ARM System Alarms / 7			X				AK2.01	Knowledge of the interrelations between the Area Radiation Monitoring (ARM) System Alarms and the following: Detectors at each ARM system location	2.5	61
074 / Inad. Core Cooling / 4						X	EA2.04	Ability to determine or interpret the following as they apply to a Inadequate Core Cooling: Relationship between RCS temperature and main steam pressure	3.7	62
A13 / Natural Circ. / 4		X					AK1.2	Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations) Normal, abnormal and emergency operating procedures associated with (Natural Circulation Operations).	3.2	63

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
A16 / Excess RCS Leakage / 2	X						2.1.14	Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.	2.5	64
E09 / Functional Recovery				X			EK3.4	Knowledge of the reasons for the following responses as they apply to the (Functional Recovery) RO or SRO function as a within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.	3.3	65
K/A Category Point Total:	1/2	2	1	1	2	2/2	Group Point Total:			9/4

Waterford 3 2008 NRC Exam
Written Examination Outline
Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
010 Pressurizer Pressure Control	X											2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	86
012 Reactor Protection									X			A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Incorrect channel bypassing	3.7	87
059 Main Feedwater									X			A2.05	Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Rupture in MFW suction of discharge line	3.4	88
063 DC Electrical Distribution	X											2.4.4	Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	89
076 Service Water									X			A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Service water header pressure	3.1	90
003 Reactor Coolant Pump		X										K1.08	Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: Containment isolation	2.7	1
004 Chemical and Volume Control						X						K6.26	Knowledge of the operational implications of the following concepts as they apply to the CVCS: Methods of pressure control of solid plant (PZR relief and water inventory)	3.8	2
005 Residual Heat Removal			X									K2.03	Knowledge of bus power supplies to the following: RCS pressure boundary motor-operated valves	2.7	3
006 Emergency Core Cooling											X	A4.01	Ability to manually operate and/or monitor in the control room: Pumps	4.1	4
006 Emergency Core Cooling										X		A3.03	Ability to monitor automatic operation of the ECCS, including: ESFAS-operated valves	4.1	5
007 Pressurizer Relief/Quench Tank	X											2.1.32	Conduct of operations: Ability to explain and apply all system limits and precautions.	3.4	6

Waterford 3 2008 NRC Exam
Written Examination Outline
Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
008 Component Cooling Water					X							K4.07	Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: Operation of the CCW swing-bus power supply and its associated breakers and controls	2.6	7
010 Pressurizer Pressure Control				X								K3.01	Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: RCS	3.8	8
012 Reactor Protection							X					K6.06	Knowledge of the effect of a loss or malfunction of the following will have on the RPS: Sensors and detectors	2.7	9
013 Engineered Safety Features Actuation					X							K4.12	Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following: Safety Injection block	3.7	10
022 Containment Cooling									X			A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Fan motor thermal overload/high-speed operation	2.6	11
022 Containment Cooling					X							K4.05	Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Containment cooling after LOCA destroys ventilation ducts	2.6	12
026 Containment Spray	X											2.1.30	Conduct of Operations: Ability to locate and operate components, including local controls	3.9	13
026 Containment Spray		X										K1.01	Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: ECCS	4.2	14
039 Main and Reheat Steam						X						K5.01	Knowledge of the operational implications of the following concepts as the apply to the MRSS: Definition and causes of steam/water hammer	2.9	15
059 Main Feedwater				X								K3.03	Knowledge of the effect that a loss or malfunction of the MFW will have on the following: S/GS	3.5	16
059 Main Feedwater										X		A3.02	Ability to monitor automatic operation of the MFW, including: Programmed levels of the S/G	2.9	17
061 Auxillary/Emergency Feedwater			X									K2.02	Knowledge of bus power supplies to the following: AFW electric drive pumps	3.7	18

Waterford 3 2008 NRC Exam
Written Examination Outline
Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
062 AC Electrical Distribution								X				A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: Significance of D/G load limits	3.4	19
063 DC Electrical Distribution				X								K3.01	Knowledge of the effect that a loss or malfunction of the dc electrical system will have on the following: ED/G	3.7	20
063 DC Electrical Distribution		X										K1.03	Knowledge of the physical connections and/or cause-effect relationships between the dc electrical system and the following systems: Battery charger and battery	2.9	21
064 Emergency Diesel Generator									X			A2.09	Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Synchronization of the ED/G with other electric power supplies	3.1	22
064 Emergency Diesel Generator											X	A4.07	Ability to manually operate and/or monitor in the control room: Transfer ED/G (with load) to grid	3.4	23
073 Process Radiation Monitoring						X						K5.03	Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Relationship between radiation intensity and exposure limits	2.9	24
076 Service Water										X		A3.02	Ability monitor automatic operation of the SWS, including: Emergency Heat Loads	3.7	25
078 Instrument Air											X	A4.01	Ability to manually operate and/or monitor in the control room: Pressure gauges	3.1	26
103 Containment										X		A3.01	Ability to monitor automatic operation of the containment system, including: Containment isolation	3.9	27
103 Containment								X				A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature, and humidity	3.7	28
K/A Category Point Totals:	2/2	3	2	3	3	2	2	2	2/3	4	3	Group Point Total:			**28/5**

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
028 Hydrogen Recombiner and Purge Control	X											2.1.32	Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.8	91
035 Steam Generator									X			A2.03	Ability to (a) predict the impacts of the following mal-functions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Pressure/level transmitter failure	3.6	92
075 Circulating Water									X			A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of circulating water pumps	2.7	93
001 Control Rod Drive		X										K1.05	Knowledge of the physical connections and/or cause-effect relationships between the CRDS and the following systems: NIS and RPS	4.5	29
016 Non-nuclear Instrumentation						X						K5.01	Knowledge of the operational implication of the following concepts as they apply to the NNIS: Separation of control and protection circuits	2.7	30
017 In-core Temperature Monitor										X		A3.01	Ability to monitor automatic operation of the ITM system including: Indications of normal, natural, and interrupted circulation of RCS	3.6	31
028 Hydrogen Recombiner and Purge Control											X	A4.01	Ability to manually operate and/or monitor in the control room: HRPS controls	4.0	32
056 Condensate System	X											2.1.32	Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.4	33
068 Liquid Radwaste							X					K6.10	Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System : Radiation monitors	2.5	34
071 Waste Gas Disposal									X			A2.05	Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Power failure to ARM and PRM systems	2.5	35
072 Area Radiation Monitoring					X							K4.01	Knowledge of ARM system design feature(s) and/or interlock(s) which provide for the following: Containment ventilation isolation	3.3	36

Waterford 3 2008 NRC Exam
Written Examination Outline
Plant Systems – Tier 2 Group 2

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
075 Circulating Water									X			A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the Circulating Water System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Safety features and relationship between condenser vacuum, turbine trip, and steam dump	2.5	37
086 Fire Protection								X				A1.03	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire doors	2.7	38
K/A Category Point Totals:	1/1	1	0	0	1	1	1	1	2/2	1	1	Group Point Total:			10/3

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Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.10	Knowledge of conditions and limitations in the facility license.			3.9	94
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.			3.8	95
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	2.9	66		
	2.1.12	Ability to apply technical specifications for a system.	2.9	67		
	Subtotal			2		2
2. Equipment Control	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.			3.7	96
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations.			3.6	97
	2.2.26	Knowledge of refueling administrative requirements.	2.5	68		
	2.2.27	Knowledge of the refueling process.	2.6	69		
	2.2.23	Ability to track limiting conditions for operations.	2.6	70		
	Subtotal			3		2
3. Radiation Control	2.3.2	Knowledge of facility ALARA program.			2.9	98
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.			3.3	99
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	71		
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	72		
	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements	2.6	73		
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.			3.6	100
	2.4.15	Knowledge of communications procedures associated with EOP implementation	3.0	74		
	2.4.18	Knowledge of the specific bases for EOPs.	2.7	75		
	Subtotal			2		1
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2 / 1	026 G2.4.30	Q #13. Importance less than 2.5 for RO. Randomly reselected 026 G2.1.30
1 / 2	003 AA2.03	Q #82. Same KA as #57 on RO exam. Randomly reselected 003 AA2.01
2 / 1	012 A2.02	Q #87. Overlap with RO #48. Randomly selected 012 A2.03
2 / 1	013 K4.22	Q #10. Not applicable to facility. Randomly selected 013 K4.12
2 / 1	076 A1.02	Q #25. No RBCCW at facility, and also topic overlap with SRO #90. Randomly selected 076 A3.02
2 / 2	001 K1.09	Q #29. No credible tie between systems. Randomly selected 001 K1.05
2 / 2	071 A2.08	Q #35. Topic selected not suitable for RO level test item. Randomly selected 071 A2.05.
2 / 2	075 K2.03	Q #37. Excessive selection of simple power supply topics. Randomly reselected 075 A2.03
2 / 1	007 G2.2.22	Q #6. No LCOs or technical specifications associated with system/component. Randomly reselected G2.1.32