NRC LOIT/LOUT EXAM WEEK
Apr 14, 2000 (Fri) - Apr 21, 2000 (Fri)

	Fri Apr14	Mon Apr 17 Sim	Mon Apr 17 Plant	Tues Apr 18 Sim	Tues Apr 18 Plant	Wed Apr 19 Sim	Wed Apr 19 Plant	Thu Apr 20 Sim	Fri Apr 21 Sim
0700				Grp "B"	Grp "A"	Grp "A"		Crew "A" Scenarios 1 & 2	Crew "B" Scenario 3 0700-0900 *crew "B" can't leave until crew "D" arrives*
0730	Written Exam Front Foyer 0730-1230	NRC Introduction & Briefing		3 JPMs 5 people	1 JPM 6 people	4 JPMs for 6 people			
0800							Grp "B"		
0830		Grp "B"	Grp "A"				3 JPMs		
0900		4 JPMs for 5 people	2 JPMs for 6 people	0700-1200	0700-1200	0700- 1700	for 5 people 0800- 1700	0700-1100	Crew "A" Scenario 3 0900-1100
0930									
1000									
1030		0830-1730	0830-1630					*crew "A" can't leave until crew "C" arrives*	*crew "A" can't leave until crew "D" arrives*
1100		Lunch	Lunch			Lunch	Lunch	Lunch	Lunch
1130						***The upgrade SRO only needs 2 Sim JPMs***		Crew "B" Scenarios 1 & 2 *Sim* 1130-1530	Crew "C" Scenario 3 *Sim* 1130-1330
1200				Lunch	Lunch				
1230				Grp "A"					Crew "D" Scenarios 3 & 4 1330-1730
1300									
1330	*Give exam to the independent party for grading & exam analysis*			3 JPMs *for* 5 people					
1400									
1430									
1500				1230-1730					
1530									
1600								Crew "C" Scenario 1 *Sim* 1600-1800	
1630									
1700									
1730									
1800		***4 Sim JPMs***	***2 Plant JPMs***	***3 Sim JPMs***	***1 plant JPM***	***4 Sim JPMs***	***3 plant JPMs***	***2 scenarios***	***2 scenarios***

Sim scenarios = 4 +2 = 6; Sim JPMs 12 + 2 = 14; In-Plant JPMs 6 + 2 = 8

Crew "A"= Kelly [ISRO], Smith [ISRO], Lupa [RO]
Crew "B"= O'Connor [ISRO], Brodeur [ISRO], Nelson [RO]
Crew "C"= Semancik [ISRO], Reed [ISRO], ***Role Player***
Crew "D"= Sadler [USRO], Butler [ISRO], Sullivan [RO]

Grp "A"
Butler [ISRO], Smith [ISRO],
Sullivan [RO], Nelson [RO],
Lupa [RO], Sadler [USRO]

Grp "B"
O'Connor [ISRO], Brodeur [ISRO],
Semancik [ISRO], Reed [ISRO],
Kelly [ISRO],

Facility: Millstone Unit 3 Date of Exam: Week of **04/14-21/2000** Exam Level: **RO**

Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	
1. Emergency & Abnormal Plant Evolutions	1	3	1	4				2	3			3	16
	2	4	2	1				6	2			2	17
	3	1	1	1				0	0			0	3
	Tier Totals	8	4	6				8	5			5	36
2. Plant Systems	1	3	1	3	3	2	3	2	3	1	1	1	23
	2	1	1	2	4	2	0	1	4	1	2	2	20
	3	2	0	0	2	0	0	2	1	1	0	0	8
	Tier Totals	6	2	5	9	4	3	5	8	3	3	3	51

3. Generic Knowledge and Abilities	Cat 1	Cat 2	Cat 3	Cat 4	
	2	4	2	5	13

NOTE:

1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier totals" in each K/A category shall not be less than two)
2. Actual points 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 are related to plant specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6. * The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant specific priorities. Enter the tier totals for each category in the table above.

ES-401	PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1						Form ES-401-4	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000005 Inoperable/Stuck Control Rod / I									
000015/17 RCP Malfunctions / IV					08		When to stop a RCP on high Temperature	3.4	1
~~BW/E09; CE/A13~~; W/E09&E10 Natural Circ. / IV			01				Knowledge of the reasons for either the operating characteristics or limits associated with Natural Circ.	3.3	1
000024 Emergency Boration / I						2.4.4	Recognize indications that are entry conditions into EOP/AOPs	4.0	1
000026 Loss of Component Cooling Water / VIII				02			Operate/monitor CCP loads during a loss of CCP	3.2	1
000027 Pressurizer Pressure Control System Malfunction / III		03					Knowledge of the interrelations between a failure of PPC system and controllers/positioners	2.6	1
~~000040~~ ~~(BW/E05; CE/E05;~~ W/E12) Steam Line Rupture - Excessive Heat Transfer / IV			03				Reasons for manipulating controls required to obtain desired results during a depressurization of all SGs.	3.5	1
~~CE/A11;~~ W/E08 RCS Overcooling - PTS / IV	03						Knowledge of the annunciators/ conditions indicating signals & remedial actions associated w/ PTS event & their operational implications.	3.5	1
000051 Loss of Condenser Vacuum / IV			01				Knowledge of the reason for the effect a loss of condenser vacuum has on steam dump operation. (Basis for C-9)	2.8*	1
000055 Station Blackout / VI	02						Implications with Natural Circ during a blackout.	4.1	1
000057 Loss of Vital AC Elec. Inst. Bus / VI			01				Basis for actions contained in AOP for loss of VIAC	4.1	1
000062 Loss of Nuclear Service Water / IV				07			During a loss of SWP operate/monitor flowrates to components and sys & interactions among those components	2.9	1
000067 Plant Fire On-Site / IX	01						Knowledge of ops implications of fire classification by type as it applies to plant fire onsite	2.9	1
000068 ~~(BW/A06)~~ Control Room Evac. / VIII						2.4.27	Knowledge of fire in the plant procedure	3.0	1
000069 ~~(W/E14)~~ Loss of CTMT Integrity / V						2.4.35	Knowledge of local auxiliary operator tasks, including system implications	3.3	1
~~000074~~ (W/E06&~~E07~~) Inad. Core Cooling / IV					02		Determine and interpret adherence to FR-C.2	3.5	1
~~BW/E03 Inadequate Subcooling Margin / IV~~ **N/A MP3**									
000076 High Reactor Coolant Activity / IX					02		Corrective action for RCS High Fission product Activity	2.8	1
~~BW/A02&A03 Loss of NNI-X/Y / VII~~ **N/A MP3**									
K/A Category Totals:	3	1	4	2	3	3	Group Point Total:		16

ES-401	PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2						Form ES-401-4		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000001 Continuous Rod Withdrawal / I						2.4.11	Knowledge of abnormal condition procedures as it applies to	3.4	1
000003 Dropped Control Rod / I			06				Knowledge why demand counter reset to zero during dropped rod recovery	2.7*	1
000007 (~~BW/E02&E10; CE/E02~~) Reactor Trip - Stabilization - Recovery / I	05						Decay power (heat) as a function of time concept as it applies to a plant trip.	3.3	1
~~BW/A01 Plant Runback / I~~ **N/A MP3**									
~~BW/A04 Turbine Trip / IV~~ **N/A MP3**									
000008 Pressurizer Vapor Space Accident / III				06			Ability to operate/monitor/control Pzr level during vapor space leak.	3.6	1
000009 Small Break LOCA / III				15			Monitor/operate PORV & PORV Block Valve during a SBLOCA	3.9	1
000011 Large Break LOCA / III		02					Knowledge of interrelations of Pumps and a Large Break LOCA	2.6*	1
W/E04 LOCA Outside Containment / III					02		Adherence to procedures and plant limits during LOCA outside Ctmt	3.6	1
~~BW/E08~~; W/E03 LOCA Cooldown/Depress. / IV	02						Knowledge & implications of Post Loca C/D procedure	3.6	1
W/E11 Loss of Emergency Coolant Recirc. / IV	03						Knowledge & implications of remedial actions associated with ECA-1.1	3.6	1
W/E02 SI Termination / III	03						Annunciator/indications/remedial actions associated with SI Termination	3.5	1
000022 Loss of Reactor Coolant Makeup / II				01			Ability to operate/monitor CVCS letdown and charging during loss of CHS	3.4	1
000025 Loss of RHR System / IV									
000029 Anticipated Transient w/o Scram / I									
000032 Loss of Source Range NI / VII		01					Interrelationship between loss of SR NI & power supply including switch position	2.7	1
000033 Loss of Intermediate Range NI / VII									
000037 Steam Generator Tube Leak / III				08			Monitor/operate charging flow indicator in relation to a tube leak	3.3	1
000038 Steam Generator Tube Rupture / III									
000054 ~~(CE/E06)~~ Loss of Main Feedwater / IV					08		Determine/interpret steam/ feed flow trend recorder during loss of MFW	2.9	1
~~BW/E04~~; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / IV				03			Operate/monitor desired results during FR-H.1 implementation	3.8	1
000058 Loss of DC Power / VI									
000059 Accidental Liquid Rad Waste Rel. / IX									
000060 Accidental Gaseous Radwaste Rel. / IX				02			Operate/monitor ventilation system as it applies to a Rad release	2.9	1
000061 ARM System Alarms / VII						2.3.11	Ability to control radiation releases	2.7	1
W/E16 High Containment Radiation / IX									
~~CE/E09 Functional Recovery~~ **N/A MP3**									
K/A Category Point Totals:	4	2	1	6	2	2	Group Point Total:		17

ES-401	PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 3						Form ES-401-4		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000028 Pressurizer Level Malfunction / II		03					Interrelations between PPL malfunctions and controllers & positioners	2.6	1
000036 ~~(BW/A08)~~ Fuel Handling Accident / VIII									
000056 Loss of Off-site Power / VI	04						Definition and implications of saturation on a loss of offsite power	3.1	1
000065 Loss of Instrument Air / VIII			03				Knowing effects on plant ops of isolating certain equipment from inst air	2.9	1
~~BW/E13&E14 EOP Rules and Enclosures~~							N/A MP3		
~~BW/A05 Emergency Diesel Actuation / VI~~							N/A MP3		
~~BW/A07 Flooding / VIII~~							N/A MP3		
~~CE/A16 Excess RCS Leakage / II~~							N/A MP3		
W/E13 Steam Generator Over-pressure / IV									
W/E15 Containment Flooding / V									
K/A Category Point Totals:	1	1	1	0	0	0	Group Point Total:		3

ES-401	PWR RO Examination Outline Plant Systems - Tier 2/Group 1											Form ES-401-4		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp	Pt
001 Control Rod Drive	03											Physical connection/cause effect on CRDM	3.4	1
001 Control Rod Drive						14						Malf and effect on location & interpretation of RTBs	4.0	1
001 Control Rod Drive										11		Manually operate/monitor determination of SDM	3.5	1
003 Reactor Coolant Pump	10											Physical connection/cause effect on RCS	3.0	1
003 Reactor Coolant Pump			02									Loss of RCPs will have effects on S/G	3.5	1
004 Chemical and Volume Control		03										Bus power supplies for charging pumps	3.3	1
004 Chemical and Volume Control				01								Design feature/interlock for oxygen control of RCS	2.8	1
004 Chemical and Volume Control						17						Malf and effect on flowpath for emergency boration	4.4	1
013 Engineered Safety Features Actuation			02									Loss/malf of ESFAS on RCS	4.3	1
013 Engineered Safety Features Actuation								04				Predict the impact of a loss of instrument bus on ESFAS	3.6	1
015 Nuclear Instrumentation				08								Design feature/interlock for Auto rod motion on signal	3.4	1
015 Nuclear Instrumentation							03					Predict/monitor changes w/NIS power indication	3.7	1
015 Nuclear Instrumentation											2.1.28	Purpose/function of major sys components/controls	3.2	1
017 In-core Temperature Monitor						01						Malf/loss of sensors/detectors and effect on ITM	2.7	1
022 Containment Cooling				03								Design feature/interlock for Auto CTMT isolation	3.6*	1
022 Containment Cooling								06				Predict/mitigate the impact of a loss of CCS Pump on CTMT	2.8	1
~~025 Ice Condenser~~ **N/A MP3**														
056 Condensate								04				Cause/effect of loss of Cond pumps on sys ops.	2.6	1
059 Main Feedwater							07					Predict/monitor parameters assoc. w/ MFP speed	2.5*	1
061 Auxiliary/Emergency Feedwater					01							Ops implications of AFW flow & RCS Ht Xfer concept	3.6	1
061 Auxiliary/Emergency Feedwater	03											Physical connection/cause effect on main steam sys.	3.5	1
068 Liquid Radwaste									02			Monitor auto ops of LWS to include auto isolation	3.6	1
071 Waste Gas Disposal					04							Ops implications of H2 to O2 flammability concept	2.5	1
072 Area Radiation Monitoring			02									Effect of a loss of ARM on Fuel handling operations	3.1	1
K/A Category Point Totals:	3	1	3	3	2	3	2	3	1	1	1	Group Point Total:		23

ES-401	PWR RO Examination Outline Plant Systems - Tier 2/Group 2											Form ES-401-4		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp. RO	Pts
002 Reactor Coolant				01								Design feature/interlock for filling & draining the RCS	2.7	1
006 Emergency Core Cooling		01										Knowledge of bus power supplies to ECCS Pumps	3.6	1
010 Pressurizer Pressure Control							06					Monitor/predict effect of H/U or C/D on pressure	3.1	1
011 Pressurizer Level Control			01									Malf of Pzr LCS effect on CVCS	3.2	1
012 Reactor Protection										05		Manually operate/monitor channel defeat controls	3.6	1
014 Rod Position Indication								03				Predict the impact of malf or ops of dropped rod on RPIs	3.6	1
016 Non-nuclear Instrumentation								01				Predict controller response to a detector failure	3.0*	1
026 Containment Spray									02			Monitor auto ops of auto cooling water supply to RSS	3.9*	1
029 Containment Purge				03								Design feature/interlocks that provide for auto purge isolation.	3.2*	1
033 Spent Fuel Pool Cooling				05								Design feature that provides for adequate SDM	3.1	1
035 Steam Generator											2.1.7	Ability to evaluate plant performance & make ops judgements based on operating characteristics	3.7	1
039 Main and Reheat Steam					08							Ops implications of the concept concerning the effects of steam removal on reactivity	3.6	1
055 Condenser Air Removal	06											Relationship between CAR and Plant Rad Monitoring	2.6	1
062 AC Electrical Distribution								09				Ability to predict the impact of exceeding current limitations	2.7	1
063 DC Electrical Distribution			01									Effect a loss of DC electrical will have on EDG	3.7*	1
064 Emergency Diesel Generator				11								Design/interlock for automatic load sequencer: safeguards	3.5	1
073 Process Radiation Monitoring											2.3.10	Perform procedures to reduce excessive levels of radiation	2.9	1
075 Circulating Water								03				Automatic signal and the effect on circ water	2.5	1
079 Station Air										01		Monitor/operate crosstie valve ops with IAS	2.7	1
086 Fire Protection					04							Hazards to people from fire type and method of protection	2.9	1
K/A Category Point Totals:	1	1	2	4	2	0	1	4	1	2	2	Group Point Total:		20

ES-401	PWR RO Examination Outline Plant Systems - Tier 2/Group 3											Form ES-401-4		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp	Pts
005 Residual Heat Removal	10											Physical connections or cause/effect relationship between RHR & CTMT Spray	3.2	1
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water							01					Predict/monitor changes in CCP due to flowrate change	2.8	1
027 Containment Iodine Removal	01											Relationship between iodine removal and CSS cmpnts	3.4*	1
028 H_2 Recombiner and Purge Control							01					Predict changes in HRPS controls with H2 concentration	3.4	1
034 Fuel Handling Equipment				02								Design feature/interlock associated with fuel movement	2.5	1
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
076 Service Water									02			Monitor auto ops of SWS emergency heat loads	3.7	1
078 Instrument Air				03								Design/interlock that provides for securing air comp on high temp	3.1*	1
103 Containment								03				Predict the impact of a phase "A"/"B" on CTMT system ops	3.5*	1
K/A Category Point Totals:	2	0	0	2	0	0	2	1	1	0	0	Group Point Total:		8

Plant Specific Priorities			
System/topic	**Recommended replacement For...**	**Reason**	**Pts**
Station Blackout Diesel Design/interlock	T2Grp3: 078 Instrument Air K4.03	SBO Diesel design/ops is vital to core covery per NUMARC-87-00	1
EOP Users Guide (OP3272)	T1Grp2: 061 Area Radiation Monitor GEN.2.3.11	MP3 has specific rules of usage & Millstone 3 Area Rad Monitor actions are minimal (None for RO and SRO refers to EPIPs only) with no auto actions tied to area radiation monitors. Question will be RO specific.	1
Plant Specific Priority Test total; (Limit 10)			2

Facility:		Date of Exam:	Exam Level: RO	
Category	K/A #	Topic	Imp.	Pts
Conduct of Operations	2.1.23	Ability to perform specific system & integrated plant procedures	3.9/4.0	1
	2.1.30	Ability to locate/operate components including local control	3.9/3.4	1
	Total			**2**
Equipment Control	2.2.2	Manipulate the console controls as rqrd to operate between S/D & designated power levels	4.0/3.5	1
	2.2.11	Knowledge of the process for controlling temporary changes	2.5/3.4*	1
	2.2.22	Knowledge of LCO and safety limits	3.4/4.1	1
	2.2.23	Ability to track LCOs	2.6/3.8	1
	Total			**4**
Radiation Control	2.3.1	Knowledge of 10CFR20 and related facility rad control requirements	2.6/3.0	1
	2.3.4	Knowledge of radiation exposure limits & contamination control including permissible levels in excess of those authorized	2.5/3.1	1
	Total			**2**
Emergency Procedures and Plan	2.4.5	Knowledge of the organization of the OP network for Ops, AOPs & EOPs	2.9/3.6	1
	2.4.6	Knowledge of symptom based EOP mitigation strategy	3.1/4.0	1
	2.4.50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual	3.3/3.3	1
	2.4.24	Knowledge of Loss of Cooling Water procedures	3.3/3.7	1
	2.4.35	Knowledge of PEO actions during EOPs to include geography & sys implications.	3.3/3.5	1
	Total			**5**
Tier 1 Target Point Total (RO/SRO)				**13**

Facility: Millstone Unit 3 Date of Exam: Week of **04/14-21/2000** Exam Level: **SRO**

Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	7	1	5				2	5			4	24
	2	3	2	1				5	4			1	16
	3	1	0	1				1	0			0	3
	Tier Totals	11	3	7				8	9			5	43
2. Plant Systems	1	2	1	2	1	1	2	2	4	2	1	1	19
	2	0	1	1	5	2	0	1	3	0	1	3	17
	3	2	0	0	1	0	0	1	0	0	0	0	4
	Tier Totals	4	2	3	7	3	2	4	7	2	2	4	40

3. Generic Knowledge and Abilities	Cat 1	Cat 2	Cat 3	Cat 4	
	3	6	2	6	17

NOTE:

1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier totals" in each K/A category shall not be less than two)
2. Actual points 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 are related to plant specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6. * The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant specific priorities. Enter the tier totals for each category in the table above.

ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1							Form ES-401-3	
E/APE 1 / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000001 Continuous Rod Withdrawal / I						2.4.11	Knowledge of abnormal condition procedures as it applies	3.6	1
000003 Dropped Control Rod / I			06				Knowledge why demand counter reset to zero during dropped rod recovery	3.0	1
000005 Inoperable/Stuck Control Rod / I					03		Interpret/determine Rqrd actions if more than 1 rod is stuck/inoperable	4.4	1
000011 Large Break LOCA / III		02					Knowledge of interrelations of Pumps and a Large Break LOCA	2.7*	1
W/E04 LOCA Outside Containment / III					02		Adherence to plant procedures and plant limitations during LOCA outside Ctmt	4.2	1
W/~~E01~~/**E02** SI Termination / III	03						Annunciator/indications/remedial actions associated with SI Termination	3.8	1
000015/17 RCP Malfunctions / IV					08		When to secure a RCP on high bearing temperature	3.5	1
~~BW/E09; CE/A13;~~ W/E09&E10 Natural Circ. / IV			01				Knowledge of the reasons for either the operating characteristics or limits associated with Natural Circ.	3.6	1
000024 Emergency Boration / I						2.4.4	Recognize indications that are entry conditions into EOP/AOPs	4.0	1
000026 Loss of Component Cooling Water / VIII				02			Operate/monitor CCP loads during a loss of CCP	3.3	1
000029 Anticipated Transient w/o Scram / I	01						Ops implication of the concept behind Rx nucleonics & thermo hydraulic behavior	3.1	1
000040 (~~BW/E05; CE/E05~~; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV			03				Reasons for manipulating controls required to obtain desired results during a depressurization of all SGs.	3.7	1
~~CE/A11~~; W/E08 RCS Overcooling - PTS / IV	02						Knowledge of the EOP concepts associated w/ PTS event & their operational implications	4.0	1
000051 Loss of Condenser Vacuum / IV			01				Basis for C-9 setpoint	3.1*	1
000055 Station Blackout / VI	02						Operational implications associated with Natural circ during a blackout.	4.4	1
000057 Loss of Vital AC Elec. Inst. Bus / VI			01				Basis for actions contained in AOP for loss of VIAC	4.4	1
000059 Accidental Liquid Rad Waste Rel. / IX	05						Ops implications of calculations for offsite dose release due to accidental release	3.6	1
000062 Loss of Nuclear Service Water / IV				07			Operate/monitor flowrates to components and sys & interactions among those components	3.0	1
000067 Plant Fire On-Site / IX	01						Knowledge of ops implications of fire classification by type as it applies	2.9	1
000068 (~~BW/A06~~) Control Room Evac. / VIII						2.4.27	Knowledge of fire in the plant procedure	3.5	1
000069 (W/E14) Loss of CTMT Integrity / V						2.4.21	Knowledge of the parameters & logic used to assess CSF	4.3	1
~~000074~~ (W/E06~~&E07~~) Inad. Core Cooling / IV					02		Determine and interpret adherence to FR-C.2	4.1	1
~~000074~~ (W/E06~~&E07~~) Inad. Core Cooling / IV	02						Ops implications of potential consequences of uncovering the core	4.8	1
000076 High Reactor Coolant Activity / IX					02		Corrective action for RCS High Fission product Activity	3.4	1
K/A Category Totals:	7	1	5	2	5	4	Group Point Total:		**24**

ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2							Form ES-401-3	
E/APE 1 / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000007 9 ~~(BW/E02&E10; CE/E02)~~ Reactor Trip - Stabilization - Recovery / I	05						Decay power (heat) as a function of time concept as it applies to a plant trip.	3.8	1
~~BW/A01 Plant Runback / I~~ **N/A MP3**									
~~BW/A04 Turbine Trip / IV~~ **N/A MP3**									
000008 Pressurizer Vapor Space Accident / III				06			Ability to operate/monitor/control Pzr level during vapor space leak.	3.6	1
000009 Small Break LOCA / III				15			Monitor/operate PORV & PORV Block Valve during a SBLOCA	4.1	1
~~BW/E08~~; W/E03 LOCA Cooldown - Depress. / IV	02						Knowledge & implications of Post Loca C/D procedure	4.1	1
W/E11 Loss of Emergency Coolant Recirc. / IV	03						Knowledge & implications of remedial actions associated with ECA-1.1	4.0	1
000022 Loss of Reactor Coolant Makeup / II				01			Ability to operate/monitor CVCS letdown and charging during loss of CHS	3.3	1
000025 Loss of RHR System / IV									
000027 Pressurizer Pressure Control System Malfunction / III		02					Knowledge of the interrelations between a failure of PPC system and controllers/positioners	2.8	1
000032 Loss of Source Range NI / VII		01					Interrelationship between loss of SR NI & power supply including switch position	3.1	1
000033 Loss of Intermediate Range NI / VII					10		Determine & interpret T.S. limit if both IR detectors have failed	3.8	1
000037 Steam Generator Tube Leak / III									
000038 Steam Generator Tube Rupture / III			06				Knowledge of reasons for EOP actions on a Tube Rupture	4.5	1
000054 ~~(CE/E06)~~ Loss of Main Feedwater / IV					08		Determine/interpret steam/ feed flow trend recorder during loss of MFW	3.3	1
~~BW/E04~~; W/E05 Inadequate Heat Transfer - Loss of Secondary heat Sink / IV				03			Operate/monitor desired results during FR-H.1 implementation	4.2	1
000058 Loss of DC Power / VI					03		Determine & Interpret DC loads lost impact on ability to operate/monitor	3.9	1
000060 Accidental Gaseous Radwaste Rel. / IX				02			Operate/monitor ventilation system as it applies to a Rad release	3.1	1
000061 ARM System Alarms / VII						2.3.11	Ability to control radiation releases	3.2	1
W/E16 High Containment Radiation / IX					02		Adherence to procedures and operations within limits	3.3	1
000065 Loss of Instrument Air / VIII									
~~CE/E09 Functional Recovery~~ **N/A MP3**									
K/A Category Point Totals:	3	2	1	5	4	1	Group Point Total:		**16**

SHADED - indicates questions that are SRO Only

ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 3						Form ES-401-3		
E/APE 1 / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Pts
000028 Pressurizer Level Malfunction / II									
000036 ~~(BW/A08)~~ Fuel Handling Accident / VIII				04			Operate/monitor fuel handling equipment during a Fuel Handling incident	3.7	1
000056 Loss of Off-site Power / VI	04						Definition of saturation implications on a Loss of offsite	3.2	1
~~BW/E13&E14 EOP Rules and Enclosures~~ **N/A MP3**									
~~BW/A05 Emergency Diesel Actuation / VI~~ **N/A MP3**									
~~BW/A07 Flooding / VIII~~ **N/A MP3**									
~~CE/A16 Excess RCS Leakage / II~~ **N/A MP3**									
W/E13 Steam Generator Over-pressure / IV			02				Knowledge of reasons for EOP responses during SG overpressure	3.3	1
W/E15 Containment Flooding / V									
K/A Category Point Totals:	1	0	1	1	0	0	Group Point Total:		3

SHADED - Indicates SRO Only

ES-401	PWR SRO Examination Outline Plant Systems - Tier 2/Group 1	Form ES-401-3

System 1 / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp	Pts
001 Control Rod Drive						14						Malf and effect on location & interpretation of RTBs	4.1	1
001 Control Rod Drive										11		Manually operate/monitor determination of SDM	4.1	1
003 Reactor Coolant Pump	10											Physical connection/cause effect on RCS	3.2	1
004 Chemical and Volume Control		03										Bus power supplies for charging pumps	3.5	1
013 Engineered Safety Features Actuation								04				Predict the impact of a loss of instrument bus on ESFAS	4.2	1
013 Engineered Safety Features Actuation											2.1.12	Ability to apply Tech. Specs. For ESFAS	4.0	1
014 Rod Position Indication								03				Predict the impact of mlf/ops of dropped rod on RPIs	4.1	1
015 Nuclear Instrumentation							01					Predict/monitor changes associated w/ NIS calibration due to heat balance	3.8	1
017 In-core Temperature Monitor						01						Malf/loss of sensors/detectors and effect on ITM	3.0	1
022 Containment Cooling				03								Design feature/interlock for Auto CTMT isolation	4.0	1
022 Containment Cooling								06				Predict/mitigate the impact of a loss of CCS Pump on CTMT	3.2	1
~~025 Ice Condenser~~ **N/A MP3**														
026 Containment Spray									02			Monitor auto ops of cooling water supply to RSS	4.2*	1
056 Condensate								04				Cause/effect of loss of Cond pumps on sys ops.	2.8*	1
059 Main Feedwater							07					Predict/monitor parameters assoc. w/ MFP speed	2.6*	1
061 Auxiliary/Emergency Feedwater	03											Physical connection/cause effect on main steam sys.	3.9	1
063 DC Electrical Distribution			01									Effect a loss of DC electrical will have on EDG	4.1	1
068 Liquid Radwaste									02			Monitor auto ops of LWS to include auto isolation	3.6	1
071 Waste Gas Disposal					04							Ops implications of H2 to O2 flammability concept	3.1	1
072 Area Radiation Monitoring			02									Effect of a loss of ARM on Fuel handling operations	3.5	1
K/A Category Point Totals:	2	1	2	1	1	2	2	4	2	1	1	Group Point Total:		**19**

SHADED- indicates SRO Only

ES-401	PWR SRO Examination Outline Plant Systems - Tier 2/Group 2											Form ES-401-3		
System 1 / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Pts
002 Reactor Coolant				01								Design feature/interlock for **filling & draining the RCS**	3.0	1
006 Emergency Core Cooling		01										Knowledge of bus power supplies to **ECCS Pumps**	3.9	1
010 Pressurizer Pressure Control											2.1.33	Ability to recognize indications for sys ops which are entries into T.S.	4.0	1
011 Pressurizer Level Control			01									Malf of Pzr LCS effect on **CVCS**	3.4	1
012 Reactor Protection										05		Manually operate/monitor channel defeat controls	3.6	1
016 Non-nuclear Instrumentation								01				Predict controller response to a detector failure	3.1*	1
027 Containment Iodine Removal														
028 H_2 Recombiner and Purge Control							01					Predict changes in HRPS controls with H2 concentration	3.8	1
029 Containment Purge				03								Design feature/interlocks that provide for auto purge isolation.	3.5	1
033 Spent Fuel Pool Cooling				05								Design feature that provides for adequate SDM	3.3	1
034 Fuel Handling Equipment				02								Design feature/interlock associated with fuel movement	3.3	1
035 Steam Generator											2.1.7	Ability to evaluate plant performance & make ops judgements based on operating characteristics	4.4	1
039 Main and Reheat Steam					08							Ops implications of the concept concerning **the effects of steam removal on reactivity**	3.6	1
055 Condenser Air Removal														
062 AC Electrical Distribution								09				Ability to predict the impact of exceeding current limitations	3.0*	1
064 Emergency Diesel Generator				11								Design/interlock for automatic load sequencer: safeguards	4.0	1
073 Process Radiation Monitoring											2.3.10	Perform procedures to reduce excessive levels of radiation	3.3	1
075 Circulating Water														
079 Station Air														
086 Fire Protection					04							Hazards to people from fire type and method of protection	3.5*	1
103 Containment								03				Predict the impact of a phase "A"/"B" on CTMT system ops	3.8*	1
K/A Category Point Totals:	0	1	1	5	2	0	1	3	0	1	3	Group Point Total:		17

SHADED - Indicates SRO Only

ES-401	PWR SRO Examination Outline Plant Systems - Tier 2/Group 3											Form ES-401-3		
System 1 / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp	Pts
005 Residual Heat Removal	10											Physical connections or cause/effect relationship between RHR & CTMT Spray	3.4*	1
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water							01					Predict/monitor changes in CCP due to flowrate change	2.9	1
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
076 Service Water	05											Cause/effect relationship between service water and EDG	4.0	1
078 Instrument Air				03								Design/interlock that provides for securing air comp on high temp	3.3*	1
K/A Category Point Totals:	2	0	0	1	0	0	1	0	0	0	0	Group Point Total:		4

SHADED - Indicates SRO Only

Plant Specific Priorities			
System/Topic	**Recommended replacement For...**	**Reason**	**Pts**
Station Blackout Diesel Design/interlock	T2Grp3: 078 Instrument Air K4.03	SBO Diesel design/ops is vital to core covery per NUMARC-87-00	1
EOP Users Guide (OP3272)	T1Grp2: 061 Area Radiation Monitor GEN.2.3.11	MP3 has specific rules of usage & Millstone 3 Area Rad Monitor actions are minimal (None for RO and SRO refers to EPIPs only) with no auto actions tied to area radiation monitors. Question will be SRO specific.	1
Plant Specific Priority Test total; (Limit 10)			**2**

Facility: Millstone Unit 3		Date of Exam: Week of 6/30/97		Exam Level: **SRO**
Category	K/A 1	Topic	Imp.	Pts
Conduct of Operations	2.1.2	Knowledge of operator responsibilities during all modes of operation	3.0/4.0	1
	2.1.23	Ability to perform specific system & integrated plant procedures	3.9/4.0	1
	2.1.30	Ability to locate/operate components including local control	3.9/3.4	1
	Total			**3**
Equipment Control	2.2.10	Knowledge for determining if the margin to safety as defined in Tech Spec Basis is reduced by a proposed change test or experiment	1.9/3.3	1
	2.2.11	Knowledge of the process for controlling temporary changes	2.5/3.4*	1
	2.2.22	Knowledge of LCO and safety limits	3.4/4.1	1
	2.2.23	Ability to track LCOs	2.6/3.8	1
	2.2.24	Ability to analyze the effects of maintenance activities on LCO status	2.6/3.8	1
	2.2.26	Knowledge of Refueling Admin requirements	2.5/3.7	1
	Total			**6**
Radiation Control	2.3.1	Knowledge of 10CFR20 and related facility rad control requirements	2.6/3.0	1
	2.3.4	Knowledge of radiation exposure limits & contamination control including permissible levels in excess of those authorized	2.5/3.1	1
	Total			**2**
Emergency Procedures and Plan	2.4.5	Knowledge of the organization of the OP network for Ops, AOPs & EOPs	2.9/3.6	1
	2.4.6	Knowledge of symptom based EOP mitigation strategy	3.1/4.0	1
	2.4.24	Knowledge of Loss of Cooling Water procedures	3.3/3.7	1
	2.4.35	Knowledge of local auxiliary operator tasks during emergency operations	3.3/3.5	1
	2.4.18	Knowledge of specific bases for EOPs	2.7/3.6	1
	2.4.41	Knowledge of EAL Thresholds & Classifications	2.3/4.1	1
	Total			**6**
Tier 1 Target Point Total (RO/SRO)				**17**

SHADED- Indicates SRO Only

Facility: Millstone 3	Date of Examination: April 17-21, 2000
Exam Level (circle one): RO / SRO(I)	Operating Test No.: Set 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. #26 Test Start Emergency Diesel (41.7 / 45.5 to 45.8)	D, S	6
b. #141 Manual Makeup (41.7 / 45.5 to 45.8)	M, S	2
c. #136 (Previous NRC Exam) Swap RHR Trains (41.7 / 45.5 to 45.8)	D, L, S	4.1
d. #48 Manual Main Steamline Isolation (41.7 / 45.5 to 45.8)	D, A, S	4.2
e. #50a (Previous NRC Exam) RCS Pressure Control (41.5 / 43.5/ 45.3 / 45.13)	D, A, S	3
f. #51C E-0 Immediate Actions, Reactor Fails to Trip (41.10 / 43.5 / 45.13)	D, A, S	1
g. New Radiation Monitor Alarm - Place SLCRS in Service (41.2 to 41.9 / 45.7 to 45.8)	N, S	9

B.2 Facility Walk-Through

a. #65 Align Charging Pump Mechanically (43.5 / 45.13)	D, R	2
b. #95 Energize a VIAC (41.7 / 45.5 /45.6)	D	6
c. #91 Loss of Instrument Air (41.10 / 43.5 to 45.13)	M, A	8

*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

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

Facility: Millstone 3	Date of Examination: April 17-21, 2000
Exam Level (circle one): RO / SRO(I)	Operating Test No.: Set 2

B.1 Control Room Systems

System / JPM Title			Type Code*	Safety Function
a.	#50a	(Previous NRC Exam) RCS Pressure Control (41.5 / 43.5 / 45.3 / 45.13)	D, A, S	3
b.	#51C	E-0 Immediate Actions, Reactor Fails to Trip (41.10 / 43.5 / 45.13)	D, A, S	1
c.	New	Radiation Monitor Alarm - Place SLCRS in Service (41.2 to 41.9 / 45.7 to 45.8)	N, S	9
d.	#108	(Previous NRC Exam) Energize Emergency Bus from SBO Diesel (41.7 / 45.5 / 45.6)	D, S	6
e.	#36	RCS Cooldown using Atmospheric Dumps (41.7 / 45.5 / 45.6)	M, S	4.2
f.	New	Lineup RHR for Injection Mode (41.7 / 45.5 to 45.8)	N, L, S	4.1
g.	#73	Raise Accumulator Pressure (41.7 / 45.5 to 45.8)	D, S	2

B.2 Facility Walk-Through

a.	#16	Spent Fuel Pool Makeup (41.5 / 43.5 / 45.3 / 45.13)	D, A, R	8
b.	#83	(Previous NRC Exam) Local CTMT Isolation Phase "B" (41.7 / 45.5 / 45.6)	D, R	5
c.	#15a	Local Start of Emergency Diesel (41.7 / 45.5 / 45.6)	D, A	6

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

Facility: Millstone 3	Date of Examination: April 17-21, 2000
Exam Level (circle one): SRO(U)	Operating Test No.: SRO(U)-1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. #136 (Previous NRC Exam) Swap RHR Trains (41.7 / 45.5 to 45.8)	D, L, S	4.1
b. #48 (ESF) Manual Main Steamline Isolation (41.7 / 45.5 to 45.8)	D, A, S	4.2
c.		
d.		
e.		
f.		
g.		

B.2 Facility Walk-Through

a. #65 Align Charging Pump Mechanically (43.5 / 45.13)	D, R	2
b. #95 Energize a VIAC (41.7 / 45.5 / 45.6)	D	6
c. #91 Loss of Instrument Air (41.10 / 43.5 to 45.13)	M, A	8

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

Facility: Millstone 3 Date of Examination: April 17 -21, 2000

Examination Level: **RO** Operating Test Number: RO-1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Use the Plant Process Computer (GEN.2.1.19)	JPM Use the plant process computer to verify NIS calibration vs. plant calorimetric calculation. (45.12)
	Interpret Station Tables (GEN.2.1.25)	JPM Use table to determine CVCS makeup pot Setting. (41.10 / 43.5 to 45.12)
A.2	Tagging Procedures (GEN.2.2.13)	JPM Tag placement verification. (41.10 / 45.13)
A.3	ALARA (GEN.2.3.2)	JPM Review RWP prior to RCA entry. (41.12 / 43.4 / 45.9 / 45.10)
A.4	RO Respon-sibility in E-Plan (GEN.2.4.39) (Previous NRC Exam).	Question #1 Reporting location during evacuation alarm. (45.11)
		Question #2 Where to report when called in during emergency event.

Facility: Millstone 3		Date of Examination: April 17-21, 2000
Examination Level: **SRO**		Operating Test Number: **Set 1**
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Accurate, clear, concise Logs (GEN.2.1.18)	JPM Make an entry into the shift manager's log. (45.12 / 45.13)
	Non-nuclear safety procedures (GEN.2.1.26)	JPM Respond to an oil spill using COP 200.5 OIL, HAZARDOUS MATERIAL, HAZARDOUS WASTE, MIXED WASTE CONTINGENCY PLAN. (41.10 / 45.12)
A.2	Surveillance procedures (GEN.2.2.12)	JPM Review a completed controlled leakage surveillance. (41.10 / 45.13)
A.3	CTMT Purge Process (GEN.2.3.9) (Previous NRC Exam)	JPM Line up for a CTMT Purge. (43.4 / 45.10)
A.4	E-Plan Actions (GEN.2.4.44)	JPM Provide initial protective action recommendations after an event is classified. (43.5 / 45.11)

Facility: Millstone 3		Dates of Examination: April 18-21, 2000
Examination Level (circle one): **SRO**		Operating Test Number: **Set 2**
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Non-Nuclear Safety Procedures (GEN.2.1.26)	JPM Respond to steam leak using COP 200.4 SIGNIFICANT PLANT LEAKS. (41.10 / 45.12)
	Apply Tech Specs (GEN.2.1.12)	JPM Apply Technical Specifications for a leaky PORV. (43.2 / 43.5 / 45.3)
A.2	SRO Fuel Handling Responsibility (GEN.2.2.29)	JPM Fuel handling accident responsibilities. (43.6 / 45.12)
A.3	Perform Procedures to Reduce Levels of Radiation (GEN.2.3.10).	JPM Start CTMT air filtration system. (43.4 / 45.10)
A.4	SRO E-Plan Responsibility (GEN.2.4.40)	JPM Shift Manager actions upon receipt of a classifiable event. (45.11)

Content Page

Simulator Sample Plan

1) Proposed Week Schedule

2) Proposed Crew Listing

3) Exam package Sets

   Exam A/B (Scenarios 1, 2, 3)
   Exam C (Scenarios 1, 3)
   Exam D (Scenarios 3,4)
   Exam E (Extra Scenarios 5,6)

4) Scenario description & Attributes Check List

   Scenarios

   1. New
   2. New
   3. New
   4. New
   5. New
   6. New

NRC LOIT/LOUT EXAM WEEK
Apr 14, 2000 (Fri) - Apr 21, 2000 (Fri)

	Fri Apr14	Mon Apr 17 Sim	Mon Apr 17 Plant	Tues Apr 18 Sim	Tues Apr 18 Plant	Wed Apr 19 Sim	Wed Apr 19 Plant	Thu Apr 20 Sim	Fri Apr 21 Sim
0700				Grp "B"	Grp "A"	Grp "A"		Crew "A" Scenarios	Crew "B" Scenario
0730	Written Exam	NRC Introduction				4 JPMs		1 & 2	3
0800	Front Foyer	& Briefing		3 JPMs	1 JPM	for	Grp "B"		0700-0900
0830	0730-1230	Grp "B"	Grp "A"	5 people	6 people	6 people	3 JPMs		*crew "B" can't leave until crew "D" arrives*
0900		4 JPMs	2 JPMs	0700-1200	0700-1200	0700- 1700	for	0700-1100	Crew "A" Scenario
0930		for	for				5 people		3
1000		5 people	6 people				0800- 1700		0900-1100
1030		0830-1730	0830-1630					*crew "A" can't leave until crew "C" arrives*	*crew "A" can't leave until crew "D" arrives*
1100		Lunch	Lunch			Lunch	Lunch	Lunch	Lunch
1130						***The upgrade SRO only needs 2 Sim JPMs***		Crew "B" Scenarios	Crew "C" Scenario
1200				Lunch	Lunch			1 & 2	3
1230				Grp "A"				*Sim*	*Sim*
1300								1130-1530	1130-1330
1330	*Give exam*			3 JPMs					Crew "D" Scenarios
1400	*to the*			*for*					3 & 4
1430	*independent*			5 people					1330-1730
1500	*party*								
1530	*for grading*			1230-1730					
1600	*&*							Crew "C" Scenario	
1630	*exam analysis*							1	
1700								*Sim*	
1730								1600-1800	
1800		***4 Sim JPMs***	***2 Plant JPMs***	***3 Sim JPMs***	***1 plant JPM***	***4 Sim JPMs***	***3 plant JPMs***	***2 scenarios***	***2 scenarios***

Sim scenarios = 4 +2 = 6; Sim JPMs 12 + 2 = 14; In-Plant JPMs 6 + 2 = 8

Crew "A"= Kelly [ISRO], Smith [ISRO], Lupa [RO]
Crew "B"= O'Connor [ISRO], Brodeur [ISRO], Nelson [RO]
Crew "C"= Semancik [ISRO], Reed [ISRO], ***Role Player***
Crew "D"= Sadler [USRO], Butler [ISRO], Sullivan [RO]

Grp "A"
Butler [ISRO], Smith [ISRO],
Sullivan [RO], Nelson [RO],
Lupa [RO], Sadler [USRO]

Grp "B"
O'Connor [ISRO], Brodeur [ISRO],
Semancik [ISRO], Reed [ISRO],
Kelly [ISRO],

Proposed Exam Position Assignments for Y2K NRC LOIT EXAM

Crew "A"	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Lupa- RO	RO	BOP	BOP	n/a
Smith- ISRO	US	RO	US	n/a
Kelly- ISRO	BOP	US	RO	n/a

Crew "B"	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Nelson- RO	RO	BOP	BOP	n/a
Brodeur- ISRO	US	RO	US	n/a
O'Connor- ISRO	BOP	US	RO	n/a

Crew "C"	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Seamcik- ISRO	US	n/a	RO	n/a
Reed- ISRO	RO	n/a	US	n/a
Role Player	BOP	n/a	BOP	n/a

Crew "D"	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Sullivan- RO	n/a	n/a	RO	BOP
Butler- ISRO	n/a	n/a	US	RO
Sadler- USRO	n/a	n/a	BOP	US

Definitions:

RO	Reactor Operator Candidate
ISRO	Instant Senior Reactor Operator
USRO	upgrade Senior reactor Operator candidate (already holds RO license on MP3)
RO position	Primary side Reactor Operator (Lead RO position)
BOP position	Balance of Plant Operator (secondary side)
US position	Unit Supervisor
SM position	Shift Manager
STA	Shift Technical Advisor (normally non-licensed individual)

SECTION 3
EXAM OVERVIEW

Title: Station Blackout
ID Number: Y2K NRC-1 Revision: 0 **[NEW]**

1. Purpose:

   This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief:

   The crew will take the shift with the plant at 100% power and middle of life conditions. The "B" MDAFW Pump will be out of service for routine oil change. The pump is expected back within the next 8 hrs.

   Shortly after turnover, the controlling channel of Pzr Level will fail low. Letdown will isolate and the crew will need to enter AOP3571, Instrument Failure Response, to address the instrument problem. The RO will need to restore letdown and the SRO will need to address Tech Specs.

   Once letdown restoration is commenced & tech specs addressed, the "A" SG controlling NR level channel will fail to 0% over 60 seconds. The BOP will need to diagnose a problem. Once identified, the crew will re-enter AOP 3571, Instrument Failure response to shift channels to a functioning channel.

   Upon shifting to a functional channel and restoring level to 50%, ISO New England will call requiring a 300 MWE Rapid Downpower due to a fire in a transformer on the Montville line (*recent event at MP3*). The crew will need to enter AOP-3575, Rapid Downpower, and commence ramping down power.

   Once the evaluators are satisfied with the reactivity manipulation, a failure of offsite power will occur. Both emergency diesels will fail to auto or manually start to provide emergency power to 34C/34D. The crew will exit E-0 and enter ECA-0.0 to address the complete loss of AC Power. The TDAFW Pump will have failed to auto start and will need to be manually started by the BOP **[critical task]**. Once equipment has been placed in PTL, the PEOs will be successful in starting the "B" EDG. The service water pump associated with the "B" EDG will fail to auto start requiring the RO to manually start the other service water pump in the train **[critical task]**. The crew should move ahead in ECA-0.0 and ultimately transition to ECA-0.1, Loss of All AC Recovery without SI. The scenario will terminate upon implementing ECA-0.1. The event should be classified as either an ALERT C-1 (if power was lost for <15 min) or SAE (power lost for >15 min)

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 1.0 hour(s)

Lesson Title: Station Blackout

ID Number: Y2KNRC-1 Revision: 0 **[NEW]**

Assessor: J. William Côté Concurrence: _____

QUALITATIVE ATTRIBUTES

___Y__1. The scenario summary clearly states the objectives of the scenario.

___Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__3. The scenario consists mostly of related events.

___Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

___Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__6. The events are valid with regard to physics and thermodynamics.

___Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

__N/A_8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

__Y___9. The simulator modeling is not altered.

_____10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

Lesson Title: Station Blackout

ID Number: Y2KNRC-1 Revision: 0 **[NEW]**

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 5

Pzr level channel, SG NR Level channel, station blackout, TDAFW Pump auto start failure, Service water pump auto start failure.

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 2

TDAFW Pump auto start failure, Service water pump auto start failure.

03. Abnormal Events (AE)-2 to 4 required — Total 3

Pzr level channel, SG NR Level channel, Rapid down power

04. Major Transients (MT)-1 to 2 required — Total 2

Loss of offsite AC, Station blackout

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 2

E-0, Rx Trip or Safety Injection, ECA-0.0, Loss of all AC Power

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 1

ECA-0.0, Loss of all AC Power

07. Critical Task (CT) - 2 to 3 required — Total 2

TDAFW Pump manual start, Service Water pump man start after EDG start.

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total_60_

09. EOP run time: — Total_20_

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

for failed instruments

SECTION 3
EXAM OVERVIEW

Title: TURBINE TRIP & LARGE BREAK LOCA
ID Number: Y2K NRC-2 Revision: 0 [**NEW**]

1. Purpose:
   This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief:
   The crew will take the shift at ~27% power BOL conditions with orders maintain power while awaiting primary and secondary chemistry results. The "A" MDAFW Pump will be out of service for routine oil change. The pump is expected back within the next 8 hrs.

   Shortly after turnover, A Power Range NI will fail high. This will cause a rapid inward rod motion which can only be stopped by going to manual on Rod Control. The crew will need to enter AOP 3571, Instrument Failure Response to address the failed NI. The crew should take actions to remove the NI channel from service, trip bistables and address Tech Specs for the failed channel.

   Prior to placing rod control back into automatic control a Turbine Trip will occur. The crew should enter AOP 3550, Turbine Trip, to address the problem. Within AOP 3550 the crew will encounter a step that says if rods are in manual and power is greater than 25 % insert rods and lower power to between 20-25% power. AOP 3550 will include a power change and associated system manipulations.

   Once plant conditions have stabilized and AOP 3550 actions have slowed, the Earthquake Annunciator will alarm followed by a loss of Offsite power and a Large Break LOCA. Upon the Loss of offsite Power the "A" & "B" EDG will fail to auto start. The BOP will need to manually start the EDGs from the control room and manually close the associated output breakers **[critical task]**. The CTMT Depressurization signal will not automatically actuate the required equipment and the system will need to be manually activated by the control room team **[critical task]** as they progress through E-0, Reactor Trip or Safety Injection. Upon exiting E-0 the crew will need to address the red path on P-1 and determine that FR-P.1, Response to Imminent Pressurized Thermal Shock, does not apply. They will need to address the orange path on CTMT and implement FR-Z.1, Response to High CTMT Pressure. Upon completing the FRs the crew will transition to E-1, Loss of Reactor or Secondary Coolant. The crew should progress through E-1 and transition to ES-1.3, Transition to Cold Leg Recirculation when RWST level reaches 520,000 gallons. The scenario will end upon transition to ECA-1.3

   The event should be classified as an ALERT C-1 based on Barrier Reference Table criteria.

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 1.0 hour(s)

Lesson Title: TURBINE TRIP & LARGE BREAK LOCA

ID Number: Y2KNRC-2 Revision: 0 **[NEW]**

Assessor: J. William Côté Concurrence: _____

QUALITATIVE ATTRIBUTES

___Y__1. The scenario summary clearly states the objectives of the scenario.

___Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__3. The scenario consists mostly of related events.

___Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

___Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__6. The events are valid with regard to physics and thermodynamics.

___Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

___Y__8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__9. The simulator modeling is not altered.

_____10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

Lesson Title: TURBINE TRIP & LARGE BREAK LOCA

ID Number: Y2KNRC-2 Revision: 0 [**NEW**]

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 7

PR Channel, Turbine trip, Loss of offsite, large break LOCA, auto start failure of edgs, auto close failure of edg output breakers, ctmt depressurization auto actuate failure

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 4

large break LOCA, auto start failure of edgs with auto close failure of edg output breakers, ctmt depressurization auto actuate failure

03. Abnormal Events (AE)-2 to 4 required — Total 2

PR Channel, Turbine trip,

04. Major Transients (MT)-1 to 2 required — Total 2

Loss of offsite, large break LOCA

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 2

E-0, reactor trip or Safety Injection, E-1, Loss of Reactor or Secondary Coolant, FR-Z.1, Response to High CTMT Pressure

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 1

FR-Z.1, Response to High CTMT Pressure

07. Critical Task (CT) - 2 to 3 required — Total 2

Supply AC Power, Actuate Ctmt Depressurization System

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total_60__

09. EOP run time: — Total__30_

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

PR channel failure

SECTION 3
EXAM OVERVIEW

Title: DROPPED ROD, LOSS OF HEAT SINK & VAPOR SPACE LEAK
ID Number: Y2K NRC-3 Revision: 0 **[NEW]**

1. Purpose:

   This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief: *(This session was written with an upgrade candidate & the role player on the BOP)*

   The crew will take the shift with the plant at 100% power and middle of life conditions. The "B" MDAFW Pump will be out of service for routine oil change. The pump is expected back within the next 8 hrs.

   Shortly after turnover, a Tcold instrument will fail high. This should cause rapid inward rod motion that can only be stopped by going to "MAN" on rod control SEL Switch. The crew should enter AOP 3571, Instrument Failure Response, to address the situation. Actions should include removing the instrument from service, addressing tech specs and restoring rod control.

   As the operator attempts to restore rods to the previous position, one will drop. The crew should utilize AOP 3552, Rod Control Malfunction, to recover the dropped rod. Upon investigation, the crew will be informed that the rod cannot be recovered in less than 1 hr. The crew will then be directed by the Duty Officer to lower power to less than the Tech Spec required within the next 30 minutes. The crew should utilize AOP 3571, Rapid Downpower, to execute the downpower.

   Upon the evaluators cue, a rod control urgent failure alarm will occur and several rods will drop. The crew should respond by manually tripping reactor. Upon the reactor trip the TDAFW Pump will trip. The "A" MDAFW Pump will start and fail to deliver any water. The crew should transition to FR-H.1, Response to a Loss of Heat Sink, to address the problem. The crew will discover the discharge valve on the "A" MDAFW Pump closed and be required to open it. Once established, AFW flow will be less than 530 gpm (min required for heat sink) due to high SG Pressures. The crew will utilize the associated RNO and exit FR-H.1 based on Wide Range levels increasing and Core Exit Temperatures decreasing **[critical task]**.

   Once in ES-0.1, Rx Trip Response, a leak in the Pzr Vapor space will commence. The crew will need to identify the lowering pressure situation and determine that safety injection is required and manually actuate it **[critical task]**. The crew should return to E-0, Rx Trip or Safety Injection, and commence actions. While performing actions of E-0 the leak will increase in size requiring transition to FR-Z.1, Response to High CTMT Pressure. The goal is to test the EOP users guide and implementation of status trees. Performance of E-0 not required for credit.

   The session will terminate upon transition to FR-Z.1. The events should be classified as an ALERT-C1 based on either RCS Barrier Failure, Heat sink RED or Uncontrolled RCS Pressure drop with a rise in CTMT Pressure.

3. Plant/Simulator differences that may affect the scenario are: NONE
4. Duration of Exam: 1.2 hour(s)

Lesson Title: DROPPED ROD, LOSS OF HEAT SINK & VAPOR SPACE LEAK

ID Number: Y2KNRC-3 Revision: 0 [**NEW**]

Assessor: J. William Côté Concurrence: _____

QUALITATIVE ATTRIBUTES

___Y__1. The scenario summary clearly states the objectives of the scenario.

___Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__3. The scenario consists mostly of related events.

___Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

___Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__6. The events are valid with regard to physics and thermodynamics.

___Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

___Y__8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__9. The simulator modeling is not altered.

_____10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

Lesson Title: DROPPED ROD, LOSS OF HEAT SINK & VAPOR SPACE LEAK

ID Number: Y2KNRC-3 Revision: 0 **[NEW]**

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 5

    Tcold inst. fail, dropped rod, another dropped rod requiring Rx trip, loss of heat sink, Pzr Manway leak

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 2

    loss of heat sink, Pzr Manway leak

03. Abnormal Events (AE)-2 to 4 required — Total 3

    Tcold inst. fail, dropped rod, another dropped rod, downpower power due to inability to recover rod

04. Major Transients (MT)-1 to 2 required — Total 3

    dropped rod requiring Rx trip, loss of heat sink requiring FR-H.1, Pzr Manway leak requiring SI initiation

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 2

    E-0, Rx Trip or Safety Injection, Fr-H.1, Loss of Heat Sink, ES-0.1, Rx Trip Response

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 1

    Fr-H.1, Loss of Heat Sink

07. Critical Task (CT) - 2 to 3 required — Total 2

    Establish AFW Flow in FR- H.1 , Manually initiate Safety Injection.

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total 70

09. EOP run time: — Total 20

10. Technical Specifications are exercised during the scenario. — (Y/N) Y

    During Tcold inst. fail and during Rod recovery.

SECTION 3
EXAM OVERVIEW

Title: LOSS OF MFP, RCP SEAL FAILURE

ID Number: Y2K NRC-4 Revision: 0 [**NEW**]

1. Purpose:

This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief:

The crew will take the shift at ~27% power BOL conditions with orders maintain power while awaiting primary and secondary chemistry results.

Shortly after turnover, a trip of the running MFP will occur. The crew will be able to manually start the Motor Driven MFW Pump. This should place a transient on the feed station that will take about 10 minutes to settle out.

Once the feed station appears to be under control the running CHS Pump will trip. Upon the start *(using either the associated ARP or AOP 3506, Loss of all CHS Pumps)* of the standby CHS Pump, the mechanical shock will cause the "D" RCP #1 seal to begin to degrade. The crew will initially utilize ARP for the seal leakage high alarm. The seal will degrade to a point where the ARP will instruct the crew to remove the RCP from service using AOP 3554, Stopping a RCP at Power. Once the RCP has been stopped and the #1 seal isolated the crew will need to lower power to take the plant off line. The crew will need to lower power IAW OP 3204, At Power Operations, and transition to OP3206, Plant Shutdown.

Upon evaluators cue, the #2 seal on the "D" RCP will fail and a Small Break LOCA will occur on the "D" loop. The crew will need to Manually Trip the Plant from the MB4 or MB7 Trip Switch, and manually actuate SI **[critical task]** . The AFW Pumps will not auto start upon the SI signal and will need to be manually started **[critical task]**. The crew should progress through E-0, Reactor Trip or Safety Injection, and transition to E-1, Loss of Reactor or Secondary Coolant. The session will terminate during actions of E-1 when the crew demonstrated the understanding that the transition to ES-1.2.

The scenario should be classified as an ALERT C-1 based on Barrier reference Table.

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 1.25 hour(s)

Lesson Title: LOSS OF MFP, RCP SEAL FAILURE

ID Number: Y2KNRC-4 Revision: 0 **[NEW]**

Assessor: J. William Côté Concurrence: _____

QUALITATIVE ATTRIBUTES

___Y__1. The scenario summary clearly states the objectives of the scenario.

___Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__3. The scenario consists mostly of related events.

___Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

___Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__6. The events are valid with regard to physics and thermodynamics.

___Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

___Y__8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__9. The simulator modeling is not altered.

_____10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

Lesson Title: LOSS OF MFP, RCP SEAL FAILURE

ID Number: Y2KNRC-4 Revision: 0 [**NEW**]

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 7

Trip of the running MFP, Trip of the running CHS Pump, RCP seal leak, complete RCP seal failure, Small Break LOCA, Auto Rx Trip failure, Auto SI initiate failure, AFW Pump auto start failure

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 3

Auto Rx Trip failure, Auto SI initiate failure, AFW Pump auto start failure

03. Abnormal Events (AE)-2 to 4 required — Total 2

Trip of the running MFP, RCP seal leak & Removal of RCP from Service

04. Major Transients (MT)-1 to 2 required — Total 2

Rx Trip due to SBLOCA, Plant SI initiation

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 1

E-0, Rx Trip or Safety injection, E-1, Response to a Loss of Reactor or Secondary Coolant.

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 0

07. Critical Task (CT) - 2 to 3 required — Total 3

Manually trip the Reactor, Manually actuate SI, Manual start of AFW Pumps

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total_60__

09. EOP run time: — Total_20_

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

Loss of CHS Pump, Removal of RCP from service at power.

SECTION 3
EXAM OVERVIEW

Title: LOSS OF SERVICE WATER WITH A STEAM BREAK
ID Number: Y2K NRC-5 Revision: 0 [**NEW**]

1. Purpose:

   This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief:

   The crew will take the shift with the plant at 100% power and middle of life conditions. The "B" MDAFW Pump will be out of service for routine oil change. The pump is expected back within the next 8 hrs.

   Shortly after turnover, PT505 will fail to 0. This will cause a rapid inward rod motion and loss of the steam dump capability. The crew should enter AOP 3571, Instrument Failure Response, to address the problem.

   Upon completion of actions for the failed channel a loss of the "B" Train of Service Water will occur. The crew should enter AOP 3560, Loss of Service Water to address the problem. AOP 3560 will have the crew transition to AOP 3561, Loss of RPCCW, where the crew will need to perform actions of attachment "B" to align components to deal with no service water cooling. When the Duty Officer is consulted he will instruct the crew to commence a downpower at ½% minute utilizing AOP 3575, Rapid Downpower. *(a different boration flowpath from the other guides is used & more of the procedure is utilized).* During the downpower electrical maintenance will call and report they have found and corrected the problem with the "D" Service Water Pump. They recommend a start of the pump {the primary lockout relay was not reset completely}. Once the service water pump is running, the crew will attempt to complete AOP 3561, Loss of RPCCW, and be ordered to stop the downpower (must be stopped greater than 50% power for the next event).

   Upon examiners cue an automatic generator trip will occur. The reactor will fail to trip automatically and the MB4 trip switch will fail to manually trip the reactor. The BOP will need to trip the reactor from either MB7 trip switch or 32B&N **[critical task]**. Upon the trip of the turbine the low set safety on the "B" SG will open and fail to reseat. This will commence an uncontrolled depressurization and rapid cooling of the RCS requiring a safety injection which will fail to automatically initiate. The RO will need to manually initiate SI **[critical task]**. The crew should progress through E-0, Rx Trip or Safety Injection, transition to E-2, Faulted SG, to isolate the SG **[critical task]** then to E-1, Loss of Rx or Secondary Coolant. The scenario will terminate when the crew transitions to E-1, Loss of Rx or Secondary Coolant.

   The scenario should be classified as an ALERT C-1 based on either Unisolable Steam line break outside CTMT or Failure of automatic Reactor trip with a Manual trip successful.

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 1.1 hour(s)

Lesson Title: LOSS OF SERVICE WATER WITH A STEAM BREAK

ID Number: Y2K NRC-5 Revision: 0 **[NEW]**

Assessor: J. William Côté Concurrence: _____

QUALITATIVE ATTRIBUTES

___Y__1. The scenario summary clearly states the objectives of the scenario.

___Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

___Y__3. The scenario consists mostly of related events.

___Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

___Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

___Y__6. The events are valid with regard to physics and thermodynamics.

___Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

___Y__8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

___Y__9. The simulator modeling is not altered.

_____10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

___Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

___Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

___Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

___Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

Lesson Title: LOSS OF SERVICE WATER WITH A STEAM BREAK

ID Number: Y2K NRC-5 Revision: 0 **[NEW]**

Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 6

PT505 fail, Trip of "B" Train Service Water, Main generator Trip, Rx fail to auto trip, "B" SG low set safety lift, Auto SI fail.

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 3

Rx fail to auto trip, "B" SG low set safety lift, Auto SI fail.

03. Abnormal Events (AE)-2 to 4 required — Total 2

PT505 fail, Trip of "B" Train Service Water

04. Major Transients (MT)-1 to 2 required — Total 2

Main Generator Trip requiring Rx trip, SG stuck open safety requiring Plant SI.

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 2

E-0, rx Trip or Safety Injection, E-2, Faulted SG.

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 0

07. Critical Task (CT) - 2 to 3 required — Total 3

Manual trip of Reactor, Manual actuate SI, Isolate Faulted SG

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total_65__

09. EOP run time: — Total_30__

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__

During 505 failure & during Service Pump failure

SECTION 3
EXAM OVERVIEW

Title: INADVERTENT SI
ID Number: Y2K NRC-6 Revision: 0 **[NEW]**

1. Purpose:

   This category of the operating test implements item 1-8 and 11-13 identified in 10CFR55.45(a). This is the most performanced based category of the operating test and is used to evaluate the applicants ability to safely operate the plant's systems under dynamic, integrated conditions. (ES-301-B.3)

2. Exercise brief: *(This session was written with an upgrade candidate and/or role player on the BOP)*

   The crew will take the shift with the plant at 100% power and middle of life conditions. The "B" MDAFW Pump will be out of service for routine oil change. The pump is expected back within the next 8 hrs.

   Shortly after turnover a SG Steam flow instrument will fail low. The crew should take manual control of the Main Feed System and enter AOP 3571, Instrument Failure Response to address the failed instrument and select another channel for control.

   Once the feed system is returned to normal operation a Pzr Pressure instrument will fail high. The crew will need to take manual control of the Pzr Master Pressure controller and stop the plant depressurization. The crew will enter AOP 3571, Instrument Failure Response, to address the problem. Once another channel is selected for control, Tech Specs addressed and bistable tripping is in progress, a second Pzr pressure instrument will fail. This low failure combine with the previously tripped bistables will actuate a reactor trip and inadvertent safety injection. The crew will transition to E-0. Reactor Trip or Safety Injection. The crew will have 10 minutes to verify that the PORVs are available and capable of passing water through them **(FSAR operator credited action)**. The crew will continue through E-0 and transition to ES-1.1, SI Termination, where they will have a total of 60 minutes from event initiation to establish letdown and Pressure control **(FSAR operator credited action)**. The crew may utilize the yellow path FR-I.1, Response to high Pzr Level, if they believe it to be required.

   Once the crew establishes letdown and stops the pressure swings associated with the cycling PORVs, a leak will develop in a PORV. The leak will be of sufficient magnitude that it will require implementation of the Foldout Page and SI to be reinitiated **[critical task]**. The crew should return to E-1, Response to a loss of Reactor or Secondary Coolant. The scenario will terminate when the crew transitions to E-1.

   The events should be classified as an ALERT- C1 based on Barrier reference Table criteria

3. Plant/Simulator differences that may affect the scenario are: NONE

4. Duration of Exam: 1.0 hour(s)

Lesson Title: INADVERTENT SI

ID Number: Y2K NRC-6 Revision: 0 [**NEW**]

Assessor: *J. William Côté* Concurrence: _____

QUALITATIVE ATTRIBUTES

__Y__1. The scenario summary clearly states the objectives of the scenario.

__Y__2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

__Y__3. The scenario consists mostly of related events.

__Y__4. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunctions(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the event termination point

__Y__5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

__Y__6. The events are valid with regard to physics and thermodynamics.

__Y__7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

__Y__8. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

__Y__9. The simulator modeling is not altered.

__Y__10. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure functional fidelity is maintained while running the scenario.

__Y__11. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered IAW Section D.4 of ES301

__Y__12. All individual operator competencies can be evaluated, as verified using form ES-301-6.

__Y__13. Each operator will be significantly involved in the minimum number of transients and events specified on Form ES-301-5. (Form submitted with simulator scenarios).

__Y__14. Level of difficulty is appropriate to support licensing decisions for each crew position.

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Note: Following criteria list scenario traits that are numerical (QUANTITATIVE) in nature.

01. Total Malfunctions (TM) - Include EM's- 5 to 8 required — Total 4
    SG Steam flow inst fail, Pzr Pressure inst fail, Inadvertent Safety Injection, PORV Leak

02. Malf's after EOP entry (EM's)- 1 to 2 required — Total 1
    PORV Leak

03. Abnormal Events (AE)-2 to 4 required — Total 2
    SG Steam flow inst fail, Pzr Pressure inst fail,

04. Major Transients (MT)-1 to 2 required — Total 2
    Inadvertent Safety Injection, PORV Leak requiring reinitiating of SI after SI was terminated.

05. EOP's (EU) entered/requiring substantive actions 1 to 2 required — Total 2
    E-0, rx Trip or Safety Injection, ES-1.1, SI Termination

06. EOP Contingencies requiring substantive actions [ECAs/FRs](EC) 0 to 2 required — Total 0

07. Critical Task (CT) - 2 to 3 required* — Total 1
    manual actuation of SI equipment

08. Approximate Scenario Run Time: 45 to 60 min. (One scenario may approach 90 minutes) — Total_60_

09. EOP run time: — Total_30_

10. Technical Specifications are exercised during the scenario. — (Y/N)__Y__
    during initial Pzr Press inst fail.