

Facility:		Wolf Creek		Date of Exam:		10/29/2007											
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	2	4	6	
	2	1	1	2				1	2			2	9	2	2	4	
	Tier Totals	4	4	5				4	5			5	27	4	6	10	
2. Plant Systems	1	3	3	2	3	2	2	2	2	3	3	3	28	2	3	5	
	2	1	1	1	1	0	1	1	1	1	1	1	10	0	2	3	
	Tier Totals	4	4	3	4	2	3	3	3	4	4	4	38	4	4	8	
3. Generic Knowledge and Abilities Categories				1		2		3		4		10	1	2	3	4	7
				3		3		2		2			2	2	1	2	
Note:	1.	Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).															
	2.	The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.															
	3.	Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to 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															

Wolf Creek
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 / 1						X	EA2.06	Ability to determine or interpret the following as they apply to a reactor trip: Occurrence of a reactor trip	4.5	76
026 / Loss of Component Cooling Water / 8	X						G2.1.33	Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications	4.0	77
029 / Anticipated Transient Without Scram (ATWS) / 1	X						2.4.31	Emergency Procedures / Plan Knowledge of annunciators, alarms, and indications, and use of the response instructions.	3.4	78
040 / Steam Line Rupture / 4	X						2.2.25	Equipment Control Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	79
058 / Loss of DC Power / 6	X						2.1.12	Conduct of Operations: Ability to apply technical specifications for a system	4.0	80
062 / Loss of Nuclear Service. Water / 4						X	AA2.03	Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition	2.9	81
009 / Small Break LOCA / 3			X				EK2.03	Knowledge of the interrelations between the small break LOCA and the following: S/Gs	3.0	39
011 / Large Break LOCA / 3						X	EA2.14	Ability to determine or interpret the following as they apply to a Large Break LOCA: Actions to be taken if limits for PTS are violated	3.6	40
015 / 17 / Reactor Coolant Pump Malfunctions / 4		X					AK1.05	Knowledge of the operational implications of the following concepts as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Effects of unbalanced RCS flow on in-core average temperature, core imbalance, and quadrant power tilt	2.7	41
022 / Loss of Reactor Coolant Makeup / 2	X						2.1.32	Ability to explain and apply all system limits and precautions.	3.4	42
025 / Loss of Residual Heat Removal System / 4			X				AK2.01	Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: RHR heat exchangers	2.9	43
026 / Loss of Component Cooling Water / 8						X	AA2.01	Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: Location of a leak in the CCWS	2.9	44

Wolf Creek
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#
027 / Pressurizer Pressure Control System Malfunction / 3						X	AA2.02	Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Normal values for RCS pressure	3.8	45
029 / Anticipated Transient Without Scram (ATWS) / 1					X		EA1.14	Ability to operate and monitor the following as they apply to a ATWS: Driving of control rods into the core	4.2	46
038 / Steam Generator 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	47
055 / Station Blackout / 6				X			EK3.02	Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions contained in EOP for loss of offsite and onsite power	4.3	48
056 / Loss of Off-site Power / 6				X			AK3.02	Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Actions contained in EOP for loss of offsite power	4.4	49
058 / Loss of DC Power / 6	X						2.1.32	Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.4	50
062 / Loss of Nuclear Service. Water / 4					X		AA1.02	Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water: Loads on the CCWS in the control room	3.2	51
065 / Loss of Instrument Air / 8	X						2.1.2	Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.	3.0	52
E04 / LOCA Outside Containment / 3			X				EK2.2	Knowledge of the interrelations between the (LOCA Outside Containment) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.8	53
E05 / Loss of Secondary Heat Sink / 4				X			EK3.3	Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink) Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.	4.0	54
E11 / Loss of Emergency Coolant Recirculation / 4					X		EA1.3	Ability to operate and / or monitor the following as they apply to the (Loss of Emergency Coolant Recirculation) Desired operating results during abnormal and emergency situations.	3.7	55

Wolf Creek
 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#
E12 / Uncontrolled Depressurization of all Steam Generators / 4		X					EK1.2	Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators) Normal, abnormal and emergency operating procedures associated with (Uncontrolled Depressurization of all Steam Generators).	3.5	56
K/A Category Point Totals:	3/4	3	3	3	3	3/2	Group Point Total:			24

Wolf Creek
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#
E03 / LOCA Cooldown and Depressurization / 4	X						2.1.33	Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	82
E06 / Degraded Core Cooling / 4						X	EA2.2	Ability to determine and interpret the following as they apply to the (Degraded Core Cooling) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	4.1	83
E08 / Pressurized Thermal Shock / 4	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	84
E13 / Steam Generator Overpressure / 4						X	EA2.2	Ability to determine and interpret the following as they apply to the (Steam Generator Overpressure) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.4	85
001 / Continuous Rod Withdrawal / 1	X						2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	57
028 / Pressurizer Level Control Malfunction / 2		X					AK1.01	Knowledge of the operational implications of the following concepts as they apply to Pressurizer Level Control Malfunctions: PZR reference leak abnormalities	2.8	58
051 / Loss of Condenser Vacuum / 4						X	AA2.02	Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Conditions requiring reactor and/or turbine trip	3.9	59
037 / Steam Generator Tube Leak / 3				X			AK3.07	Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: Actions contained in EOP for steam generator tube leak	4.2	60
E03 / LOCA Cooldown and Depressurization / 4				X			EK3.3	Knowledge of the reasons for the following responses as they apply to the Post LOCA Cooldown and depressurization: Manipulation of controls required to obtain desired operating results during abnormal and emergency situations	3.9	61

Wolf Creek
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#
E02 / SI Termination / 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	62
E07 / Saturated Core Cooling / 4						X	EA2.2	Ability to determine and interpret the following as they apply to the (Saturated Core Cooling) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.3	63
E08 / Pressurized Thermal Shock / 4					X		EA1.1	Ability to operate and / or monitor the following as they apply to the (Pressurized Thermal Shock) Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.8	64
E14 / High Containment Pressure / 5			X				EK2.1	Knowledge of the interrelations between the (High Containment Pressure) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.4	65
K/A Category Point Total:	4	1	1	2	1	4	Group Point Total:			13

Wolf Creek
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#
003 Reactor Coolant Pump	X											2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	86
005 Residual Heat Removal									X			A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: RHR pump/motor malfunction	3.1	87
008 Component Cooling Water									X			A2.07	Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of high or low CCW flow rate and temperature; the flow rate at which the CCW standby pump will start	2.8	88
059 Main Feedwater	X											2.4.30	Emergency Procedures / Plan Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	89
006 ECCS	X											2.1.33	Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications	4.0	90
003 Reactor Coolant Pump			X									K2.01	Knowledge of bus power supplies to the following: RCPS	3.1	1
003 Reactor Coolant Pump	X											2.1.27	Conduct of Operations: Knowledge of system purpose and or function.	2.8	2
004 Chemical and Volume Control			X									K2.05	Knowledge of bus power supplies to the following: MOVs	2.7	3
004 Chemical and Volume Control					X							K4.16	Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: Temperature at which the temperature control valve automatically diverts flow from the demineralizer to the VCT; reason for this diversion	2.6	4
005 Residual Heat Removal							X					K6.03	Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger	2.5	5
006 Emergency Core Cooling							X					K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Core flood tanks (accumulators)	3.4	6

Wolf Creek
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#
007 Pressurizer Relief/Quench Tank										X		A3.01	Ability to monitor automatic operation of the PRTS, including: Components which discharge to the PRT	2.7	7
008 Component Cooling Water										X		A3.03	Ability to monitor automatic operation of the CCWS, including: All flow rate indications and the ability to evaluate the performance of this closed-cycle cooling system.	3.0	8
008 Component Cooling Water		X										K1.05	Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: Sources of makeup water	3.0	9
010 Pressurizer Pressure Control						X						K5.01	Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables	3.5	10
012 Reactor Protection									X			A2.04	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: Erratic power supply operation	3.1	11
013 Engineered Safety Features Actuation			X									K2.01	Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control	3.6	12
013 Engineered Safety Features Actuation						X						K5.01	Knowledge of the operational implications of the following concepts as they apply to the ESFAS: Definitions of safety train and ESF channel	2.8	13
022 Containment Cooling											X	A4.04	Ability to manually operate and/or monitor in the control room: Valves in the CCS	3.1	14
026 Containment Spray											X	A4.01	Ability to manually operate and/or monitor in the control room: CSS controls	4.5	15
039 Main and Reheat Steam		X										K1.05	Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: T/G	2.5	16
059 Main Feedwater								X				A1.03	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Power level restrictions for operation of MFW pumps and valves.	2.7	17
061 Auxillary/Emergency Feedwater				X								K3.02	Knowledge of the effect that a loss or malfunction of the AFW will have on the following: S/G	4.2	18

Wolf Creek
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#
061 Auxillary/Emergency Feedwater		X										K1.05	Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: Condensate system	2.6	19
062 AC Electrical Distribution				X								K3.03	Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: DC system	3.7	20
062 AC Electrical Distribution	X											2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	3.1	21
063 DC Electrical Distribution										X		A3.01	Ability to monitor automatic operation of the dc electrical system, including: Meters, annunciators, dials, recorders, and indicating lights	2.7	22
064 Emergency Diesel Generator									X			A2.16	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: Loss of offsite power during full-load testing of ED/G	3.3	23
073 Process Radiation Monitoring					X							K4.01	Knowledge of PRM system design feature(s) and/or interlocks which provide for the following: Release termination when radiation exceeds setpoint	4.0	24
076 Service Water								X				A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SWS controls including: Reactor and turbine building closed cooling water temperatures.	2.6	25
078 Instrument Air											X	A4.01	Ability to manually operate and/or monitor in the control room: Pressure gauges	3.1	26
078 Instrument Air	X											2.4.50	Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	27
103 Containment					X							K4.04	Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Personnel access hatch and emergency access hatch	2.5	28
K/A Category Point Totals:	6	3	3	2	3	2	2	2	4	3	3	Group Point Total:			33

Wolf Creek
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#
045 Main Turbine Generator	X											2.4.31	Emergency Procedures / Plan Knowledge of annunciators, alarms, and indications, and use of the response instructions.	3.4	91
068 Liquid Radwaste									X			A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of automatic isolation	3.3	92
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 the ARM and PRM Systems	2.6	93
001 Control Rod Drive										X		A3.04	Ability to monitor automatic operation of the CRDS, including: Radial imbalance	3.5	29
002 Reactor Coolant											X	A4.08	Ability to manually operate and/or monitor in the control room: Safety parameter display systems	3.4	30
015 Nuclear Instrumentation							X					K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the NIS: Discriminator/compensation circuits	2.6	31
017 In-core Temperature Monitor				X								K3.01	Knowledge of the effect that a loss or malfunction of the ITM system will have on the following: Natural circulation indications	3.5	32
027 Containment Iodine Removal			X									K2.01	Knowledge of bus power supplies to the following: Fans	3.1	33
034 Fuel Handling Equipment								X				A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fuel Handling System operating the controls including: Water level in the refueling canal	2.9	34
035 Steam Generator									X			A2.06	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: Small break LOCA	4.5	35

Wolf Creek
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#
041 Steam Dump/Turbine Bypass Control					X							K4.11	Knowledge of SDS design feature(s) and/or interlock(s) which provide for the following: T-ave./T-ref. program	2.8	36
068 Liquid Radwaste						X						K1.07	Knowledge of the physical connections and/or cause effect relationships between the Liquid Radwaste System and the following systems: Sources of liquid wastes for LRS	2.7	37
072 Area Radiation Monitoring	X											2.1.28	Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	3.2	38
K/A Category Point Totals:	2	1	1	1	1	0	1	1	3	1	1	Group Point Total:			13

Facility:	Wolf Creek	Date of Exam:	10/29/2007			
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.6	Ability to supervise and assume a management role during plant transients and upset conditions.			4.3	94
	2.1.20	Ability to execute procedure steps.			4.2	95
	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	3.0	66		
	2.1.31	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.	4.2	67		
	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component STATUS	3.0	68		
	Subtotal			3		2
2. Equipment Control	2.2.33	Knowledge of control rod programming.			2.9	96
	2.2.29	Knowledge of SRO fuel handling responsibilities.			3.8	97
	2.2.30	Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.5	69		
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	70		
	2.2.12	Knowledge of surveillance procedures.	3.0	71		
	Subtotal			3		2
3. Radiation Control	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.			3.3	98
	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements	2.6	72		
	2.3.2	Knowledge of facility ALARA program.	2.5	73		
	Subtotal			2		1
4. Emergency Procedures / Plan	2.4.6	Knowledge symptom based EOP mitigation strategies.			4.0	99
	2.4.9	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.			3.9	100
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.	3.5	74		
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	2.9	75		
	Subtotal			2		2
Tier 3 Point Total				10		7

--	--	--

Facility: Wolf Creek		Date of Examination: 10/2007
Examination Level (circle one): RO		Operating Test Number: NRC
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	NR	Perform a manual QPTR calculation
Conduct of Operations	NR	Determine RCS boration required to reach Cold Shutdown conditions
Equipment Control	NR	Identify clearance boundaries for safety related equipment
Radiation Control	MR	Determine Stay Time for work to be performed
Emergency Plan	NA	
<p>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.</p>		
<p>*Type Codes & Criteria:</p> <ul style="list-style-type: none"> (C)ontrol room Class(R)oom (D)irect from bank (≤ 3 for ROs; \leq for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1; randomly selected) (S)imulator 		

Facility: Wolf Creek		Date of Examination: 10/2007
Examination Level (circle one): SRO		Operating Test Number: NRC
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	NR	Perform/review a manual QPTR calculation and identify action IAW Technical Specifications.
Conduct of Operations	NR	Determine RCS boration required to reach Cold Shutdown conditions
Equipment Control	NR	Review clearance boundaries for approval of work on safety related equipment
Radiation Control	MR	Review a radioactive release permit for approval
Emergency Plan	NR	Classify event and perform Protective Action Recommendations
<p>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.</p>		
<p>*Type Codes & Criteria:</p> <ul style="list-style-type: none"> (C)ontrol room Class(R)oom (D)irect from bank (≤ 3 for ROs; \leq for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1; randomly selected) (S)imulator 		

Facility:	Wolf Creek	Date of Examination:	10/2007
Exam Level (circle one):	RO / SRO(I) / SRO (U)	Operating Test No.:	NRC
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.	001 – Rod Control Perform actions to maintain AFD in target band (When rods are moved, continuous rod withdrawal will require tripping reactor)	NAS	1
b.	004 - CVCS Transfer from the NCP to a CCP	DAS	2
c.	008 – Component Cooling Water System Restore CCW to the RCP's following isolation	DAS	8
d.	003 – RCP Start an RCP (Modify bank JPM to require trip of the RCP shortly after start; vibration or temperature problem)	MASL	4P
e.	103 – Containment Manual CISA and CPIS isolation	DAS	5
f.	E05 – Loss of Secondary Heat Sink Restore AFW flow; recover from RCS Bleed and Feed (PORV fails to close, must close block valve)	NAS	4S
g.	016 – Non-Nuclear Instrumentation Respond to a loss of Instrument Bus NN04 (RO ONLY)	NS	7
h.	064 – EDG Manually start, synchronize, and load EDG NE02	DS	6
In-Plant Systems [®] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
i.	103 – Containment Locally close all valves which receive a CISB	DER	5
j.	078 – Instrument Air Shift lead air dryer trains	D	8

<p>k. 006 – ECCS Align alternate cooling to CCP/SIP</p>	<p>DER</p>	<p>3</p>
<p>@ 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.</p>		
<p>* Type Codes</p>	<p>Criteria for RO / SRO-I / SRO-U</p>	
<p>(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator</p>	<p>4-6 / 4-6 / 2-3 $\leq 6 / \leq 6 / \leq 3$ $\geq 2 / \geq 2 / \geq 1$ $\geq 1 / \geq 1 / \geq 1$ $\geq 4 / \geq 3 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 2 / \geq 2 / \geq 1$</p>	

Facility:	Wolf Creek	Scenario No.:	1	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____
Initial Conditions: _____					
65% power, load reduction in progress to remove "B" Main Feed Pump from service					
"A" MDAFW Pump OOS. Return to service expected in 1 day. 1 PORV inoperable due to control circuitry failure. (Either) Block Valve closed with power removed.					
Turnover:					
"B" MFP has high vibration. Reduce power and remove from service					
Simulator setup: IC 33, RUN, Push CLOSE on BB HIS-8000A (PORV Block Valve), Run Scenario file: 2007NRC01.scn. Place "A" MDAFP in P-T-L and hang DNO tag. Hang DNO tag on BB HIS-8000A.					
Event No.	Malf. No.	Event Type*	Event Description		
1 T=0	N/A	R-ATC N-BOP, SRO	Reduce power from 65% to 60%		
2 T+20	N/A	N-BOP	Stop "B" MFP		
3 T+32		I-ATC, SRO TS-SRO	Controlling PZR level instrument fails low. Letdown isolates; manual restoration required.		
4 T+52		I-BOP, SRO TS-SRO	"B" SG Level Instrument fails low, manual control of SG level required.		
5 T+60		C-ATC C-BOP TS-SRO	Component Cooling Water System (CCW) Leak in the "B" Train Safety Loop. Requires removing "B" Train CCW and ECCS pumps from service. (PRA)		
6 T+75		M	Loss of Off-Site Power. Reactor Trip.		
7		C	"B" Train 1E bus lockout.		
8		M	Steam Line Break in "B" SG.		
9		C	MSIV failure. Manual closure required (CT)		
10		C	TDAFW Pump fails to auto start. Manual start required (CT)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Facility:	Wolf Creek	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____
Initial Conditions: _____					
100% power. Maintain current conditions					
"B" MDAFW Pump OOS. Return to service expected in 1 day.					
"A" PORV control circuit failure. "A" PORV Block Valve closed with power removed.					
Turnover:					
Maintain current conditions					
Simulator setup: IC 29, Push CLOSE on BB HIS-8000A (PORV Block Valve), Run Scenario file: 2007NRC02.scn, Place DNO tags on BB HIS-8000A and "B" MDAFP (in PTL)					
Event No.	Malf. No.	Event Type*	Event Description		
1 T=0		I-ATC, SRO TS-SRO	Pressurizer Pressure input to Master Controller fails high		
2 T+15		C-BOP, SRO	Feed Pump Speed Control failure. Manual control required		
3 T+22		I-ALL TS-SRO	First Stage Pressure transmitter failure. (Rods to manual, reset C-7, Steam Dumps to pressure mode)		
4 T+48		C-ATC, SRO TS-SRO	RCS Leak		
5 T+78		I-BOP, SRO	SG Steam Flow transmitter failure		
6 T+87		M	Leak degrades to SBLOCA		
7		C	Reactor Trip breakers fail to open – ATWS		
8		C	Rod Control Failure requires manual rod insertion (CT)		
9		C	"A" SI Pump trips "B" SI Pump fails to auto start. Manual start required (CT)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					