

Facility: <u>Wolf Creek</u> Date of Examination: <u>05/10/2004</u> Examination Level: RO Operating Test Number: <u>1</u> <u>Revision 03</u>	
Administrative Topic (see Note)	Describe activity to be performed:
Conduct of Operations 2.1.33 RO A1.a	(BANK) Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. Perform Surveillance Test for AFD
Conduct of Operations 2.1.7 RO A1.b	(NEW) Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Given Data, complete a 1/M plot and determine estimated critical rod position (Alternate Success Path)
Equipment Control 2.2.12 RO A2	(NEW) Equipment Control: Knowledge of surveillance procedures. Given Data, Complete the Surveillance Test Data sheet identifying and documenting any out of spec readings.
Radiation Control 2.3.1 RO A3	(MODIFIED BANK) Radiation Control: Knowledge of 10 CFR: 20 and related facility radiation control requirements Given a Clearance Order for venting/draining a contaminated system in the RCA, Determine the RWP, limits and time allowed to complete the job.
Emergency Plan	NA
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.	

Facility: <u>Wolf Creek</u> Date of Examination: <u>5/10/2004</u>	
Examination Level: SRO Operating Test Number: <u>1</u> <u>Revision 03</u>	
Administrative Topic (see Note)	Describe activity to be performed:
Conduct of Operations 2.1.33 SRO A1.a	<p align="center">(Bank)</p> <p>Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.</p> <p>Review Surveillance Test for AFD and based on results determine any required actions. (Alternate Success Path)</p>
Conduct of Operations 2.1.20 SRO A1.b	<p align="center">(NEW)</p> <p>Conduct of Operations: Ability to execute procedure steps.</p> <p>Given initial plant conditions of a SG tube leak, determine from the OFN the required actions.</p>
Equipment Control 2.2.23 SRO A2	<p align="center">(2001 Exam Bank)</p> <p>Equipment Control: Ability to track limiting conditions for operations.</p> <p>Given a sequence of events, Determine the end time of an LCO including any extensions.</p>
Radiation Control 2.3.6 SRO A3	<p align="center">(NEW)</p> <p>Radiation Control: Knowledge of the requirements for reviewing and approving release permits.</p> <p>Given a Release Permit, Review for Technical Accuracy.</p>
Emergency Plan 2.4.41 SRO A4	<p align="center">(Modified Bank)</p> <p>Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications.</p> <p>After observing an event on the simulator, make the E-plan Classification and Protective Action Recommendation.</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.	

Facility: <u>Wolf Creek</u> Date of Examination: <u>5/10/2004</u>		
Exam Level: RO / SRO(I) Operating Test No.: <u>1</u> <u>Revision 03</u>		
Control Room Systems (8 for RO; 7 for SRO(I); 2 or 3 for SROU)		
System / JPM Title	Type Code*	Safety Function
a. (S1) Emergency Borate using EMG FR-S1 (101-S)	DAS	1
b. (S2) Fill an ECCS Accumulator (202-S)	DS	2
c. (S3) Isolate Source of Containment Flooding, EMG FR-Z2 (501-S)	MS	5
d. (S4) Feed S/G's with TDAWP (401-S)	DSL	4
e. (S5) Swap CCW Trains (801-S) (2001 Exam)	DSL	8
f. (S6) Rx Start Up, 10-8 amps to Point of Adding Heat (701-S)	NASL	7
g. (S7) OFN BB-31 S/D LOCA, Isolate RHR Leak (301-S) (RO Only)	NS	3
h. (C1) EMG C-0, "Loss of All AC", Align Alternate Power to Safeguards Bus using the OFN (601-C)	NAC	6
In-Plant Systems (3 for RO; 3 for SRO(I); 3 or 2 for SROU)		
i. (P1) Locally Unisolate BIT (302-P)	MR	3
j. (P2) Align 120 vac Vital Bus to SOLA Xfmr (602-P) (2001 Exam)	DAP	6
k. (P3) EMG C-0, "Loss of All AC", Isolate RCP Seal Leak Off (202-P)	NR	2
* 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, (P)lant		

NOTE: The following are to be run concurrent:

S1/S2

S3/S4

S5/S6

Facility: <u>Wolf Creek</u> Date of Examination: <u>5/10/2004</u>		
Exam Level: SRO(U) Operating Test No.: <u>1</u> Revision <u>03</u>		
Control Room Systems (8 for RO; 7 for SROI; 2 or 3 for SROU)		
System / JPM Title	Type Code*	Safety Function
c. (S3) Isolate Source of Containment Flooding, EMG FR-Z2 (501-S)	MS	5
d. (S4) Feed S/G's with TDAWP (401-S)	DSL	4
f. (S6) Rx Start Up, 10-8 amps to Point of Adding Heat (701-S)	NASL	7
In-Plant Systems (3 for RO; 3 for SROI; 3 or 2 for SROU)		
j. (P2) Align 120 VAC Vital Bus to SOLA Xfmr (602-P) (2001 Exam)	DAP	6
k. (P3) EMG C-0, "Loss of All AC", Isolate RCP Seal Leak Off (202-P)	NR	2
<p>* 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, (P)lant</p>		

NOTE: The following simulator JPMs are to be done concurrent:

S3 and S4

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	K	A	A 2	G *	Total
1. Emergency & Abnormal Plant Evolutions	1	2	5	3				2	3			3	18			4	3	7
	2	1	1	2				1	3			1	9			2	3	5
	Tier Totals	3	6	5				3	6			4	27			6	6	12
2. Plant Systems	1	2	2	4	2	2	2	2	2	4	3	3	28			3	1	4
	2	2	-	1	-	2	1	2	-	-	1	1	10			-	2	2
	Tier Totals	4	2	5	2	4	3	4	2	4	4	4	38			3	3	6
3. Generic Knowledge and Abilities Categories					1	2		3	4		10		1	2	3	4	7	
					2	2		2	4				2	2	2	1		
<p>Note:</p> <ol style="list-style-type: none"> 1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e. the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling. 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. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system or evolution 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 (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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective. 7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the table above; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A". Use duplicate pages for RO and SRO-only exams. 8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3. 9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements. 																		

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Emergency and Abnormal Plant evolutions – Tier 1 Group 1 (RO/SRO)

Form ES-401-2

E/APE #/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	Number	K/A Topics	Imp.	RO #	SRO #
000007 Reactor Trip - Stabilization - Recovery / 1			R				41007 EK301	Knowledge of the reasons for the following as they apply to a reactor trip: Actions contained in EOP for reactor trip	4.0	XXX	
000007 Reactor Trip - Stabilization - Recovery / 1						S	41007 2445	Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6		XXX
000008 Pressurizer Vapor Space Accident / 3	R						42008 AK101	Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves	3.2	XXX	
000009 Small Break LOCA /3					R		41009 EA239	Ability to determine or interpret the following as they apply to a small break LOCA: Adequate core cooling	4.3	XXX	
000009 Small Break LOCA /3					S		41009 EA223	Ability to determine or interpret the following as they apply to a small break LOCA: RCP operating parameters and limits. 10 CFR 43.5	3.3		XXX
000011 Large Break LOCA /3		R					41011 EK202	Knowledge of the interrelations between the and the following Large Break LOCA: Pumps	2.6	XXX	
000015/17 RCP Malfunctions /4		R					42015 AK210	Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: RCP indicators and controls	3.3	XXX	
000022 Loss of Rx Coolant Makeup /2						R	42022 2435	Emergency Procedures / Plan: Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.	2.9	XXX	
000025 Loss of RHR System /4					R		42025 AA204	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Location and isolability of leaks	3.3	XXX	
000026 Loss of Comp. Cooling Water /8					R		42026 AA203	Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition	2.6	XXX	
000027 Pzr Press. Ctrl. Sys. Malf. /3		R					42027 AK203	Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.	2.6	XXX	
000029 ATWS /1						R	41029 222	Equipment Control: Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	XXX	
000029 ATWS /1					S		41029 EA209	Ability to determine or interpret the following as they apply to a ATWS: Occurrence of a main turbine/reactor trip. 10 CFR 43.5	4.4		XXX
000038 SG Tube Rupture/3					S		41038 EA216	Ability to determine or interpret the following as they apply to a SGTR: Actions to be taken if S/G goes solid and water enters steam line. 10 CFR 43.5	4.6		XXX
000040 W/E12 Steam Line Rupture /4											
000054 Loss of Feedwater /4						R	42054 2125	Conduct of Operations: Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	2.8	XXX	

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Emergency and Abnormal Plant evolutions – Tier 1 Group 1 (RO/SRO)

Form ES-401-2

E/APE #/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	Number	K/A Topics	Imp.	RO #	SRO #
000055 Station Blackout /6											
000056 /Loss of Off Site Power /6	R						42056 AK103	Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Definition of subcooling: use of steam tables to determine it	3.1	XXX	
000056 /Loss of Off Site Power /6						S	42056 2132	Conduct of Operations: Ability to explain and apply all system limits and precautions. 10 CFR 43.2	3.8		XXX
000057 Loss of Vital AC Instrument Bus /6				R			42057 AA102	Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Manual control of PZR level	3.8	XXX	
000057 Loss of Vital AC Instrument Bus /6					S		42057 AA218	Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The indicator, valve, breaker, or damper position which will occur on a loss of power. 10 CFR 43.5	3.1		XXX
000058 Loss of DC Power /6			R				42058 AK301	Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Use of dc control power by D/Gs	3.4	XXX	
000062 Loss of Nuclear Service Water /4			R				42062 AK302	Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS	3.6	XXX	
000065 Loss of Instrument Air /8											
W/E04 LOCA Outside Containment /3				R			45E04 EA12	Ability to operate and / or monitor the following as they apply to the (LOCA Outside Containment): Operating behavior characteristics of the facility.	3.6	XXX	
W/E04 LOCA Outside Containment /3						S	45E04 2410	Emergency Procedures / Plan: Knowledge of annunciator response procedures. 10 CFR 43.5	3.1		XXX
W/E11 Loss of Emergency Coolant Recirc. / 4		R					45E11 EK22	Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) 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.	3.9	XXX	
W/E05 Inadequate Heat Transfer-Loss of Secondary Heat Sink / 4		R					45E05 EK21	Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.7	XXX	
K/A Category Totals RO / SRO	2	5	3	2	3 / 4	3 / 3		Group Point Total		18	7

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Emergency and Abnormal Plant evolutions – Tier 1 Group 2 (RO/SRO)

Form ES-401-2

E/APE #/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	Number	K/A Topics	Imp.	RO#	SRO #
000001 Continuous Rod Withdrawal /1					R		42001 AA203	Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Proper actions to be taken if automatic safety functions have not taken place	4.5	XXX	
000003 Dropped Control Rod /1											
000005 Inoperable/Stuck Control Rod /1											
000024 Emergency Boration /1						R	42024 2422	Emergency Procedures / Plan: Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	3.0	XXX	
000024 Emergency Boration /1					S		42024 AA205	Ability to determine and interpret the following as they apply to the Emergency Boration: Amount of boron to add to achieve required SDM. 10 CFR 43.5	3.9		XXX
000028 /Pzr Level Malfunction /2					S		42028 AA212	Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: Cause for PZR level deviation alarm: controller mal- function or other instrumentation malfunction. 10 CFR 43.5	3.5		XXX
000032 Loss of Source Range NI /7											
000033 Loss of Intermediate Range NI /7											
000036 /Fuel Handling Accident /8				R			42036 AA102	Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: ARM system	3.1	XXX	
000037 SG Tube Leak /3			R				42037 AK303	Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Leak: Comparison of makeup flow and letdown flow for various modes of operation	3.1	XXX	
000051 Loss of Condenser vacuum /4					R		42051 AA202	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	XXX	
000051 Loss of Condenser vacuum /4						S	42051 2132	Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.8		XXX
000059 Accidental Liquid RadWaste Rel. /9											
000060 Accidental Gaseous Radwaste Rel./9	R						42060 AK104	Knowledge of the operational implications of the following concepts as they apply to Accidental Gaseous Radwaste Release: Calculation of offsite doses due to a release from the power plant	2.5	XXX	
000061 ARM System Alarms /7											

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Emergency and Abnormal Plant evolutions – Tier 1 Group 2 (RO/SRO)

Form ES-401-2

E/APE #/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	Number	K/A Topics	Imp.	RO #	SRO #
000067 Plant Fire on Site /8					R		42067 AA213	Ability to determine and interpret the following as they apply to the Plant Fire on Site: Need for emergency plant shutdown	3.3	XXX	
000068 Control Room Evac. /8											
000069 W/E14 Loss of CTMT Integrity /5											
000074 W/E06&E07Inadequate Core Cooling /4											
000076 High Reactor Coolant Activity /9			R				42076 AK305	Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity: Corrective actions as a result of high fission-product radioactivity level in the RCS	2.9	XXX	
000076 High Reactor Coolant Activity /9						S	42076 249	Emergency Procedures / Plan: Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies. 10 CFR 43.5	3.9		XXX
W/EO1 & E02 Rediagnosis & SI Termination / 3			R				45E02 EK22	Knowledge of the interrelations between the (SI Termination) 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.	3.5	XXX	
W/E13 Steam Generator Over-pressure / 4											
W/E15 Containment Flooding / 5						S	45W/E15 234	Radiation Control: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. 10 CFR 43.4	3.1		XXX
W/E16 High Containment Radiation / 9											
K/A Category Totals RO / SRO	1	1	2	1	3 / 2	1 / 3		Group Point Total		9	5

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Plant Systems – Tier 2 Group 1 (RO/SRO)

Form ES-401-2

System #/Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Number	K/A Topics	Imp.	RO#	SRO#
003 Reactor Coolant Pump							R					34003 A101	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: RCP vibration	2.9	XXX	
003 Reactor Coolant Pump								S				34003 A203	Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems associated with RCP motors, including faulty motors and current, and winding and bearing temperature problems. 10 CFR 43.5	3.1		XXX
004 Chemical and Volume Control											R	31004 2128	Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	3.2	XXX	
004 Chemical and Volume Control								S				32004 A209	Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High primary and/or secondary activity. 10 CFR 43.5	3.9		XXX
005 Residual Heat Removal			R									34005 K306	Knowledge of the effect that a loss or malfunction of the RHRS will have on the following: CSS	3.1	XXX	
006 Emergency Core Cooling		R										33006 K201	Knowledge of bus power supplies to the following: ECCS pumps	3.6	XXX	
006 Emergency Core Cooling										R		33006 A402	Ability to manually operate and/or monitor in the control room: Valves	4.0	XXX	
007 Pressurizer Relief/Quench Tank								R				35007 A203	Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Overpressurization of the PZR	3.6	XXX	
008 Component Cooling Water									R			38008 A303	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	XXX	

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Plant Systems – Tier 2 Group 1 (RO/SRO)

Form ES-401-2

System #/Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Number	K/A Topics	Imp.	RO#	SRO#
010 Pressurizer Pressure Control			R									33010 K303	Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: ESFAS	4.0	XXX	
012 Reactor Protection					R							37012 K501	Knowledge of the operational implications of the following concepts as they apply to the RPS: DNB	3.3	XXX	
012 Reactor Protection						R						37012 K601	Knowledge of the effect of a loss or malfunction of the following will have on the RPS: Bistables and bistable test equipment	2.8	XXX	
013 ESFAS				R								32013 K406	Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following: Recirculation actuation system reset	4.0	XXX	
013 ESFAS								S				32013 A206	Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent ESFAS Actuation.	4.5		XXX
022 Containment Cooling									R			35022 A301	Ability to monitor automatic operation of the CCS, including: Initiation of safeguards mode of operation	4.1	XXX	
022 Containment Cooling										R		35022 A401	Ability to manually operate and/or monitor in the control room: CCS fans	3.6	XXX	
026 Containment Spray								R				35026 A203	Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of ESF	4.1	XXX	
039 Main and Reheat Steam											R	34039 217	Conduct of Operations: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	XXX	
056 Condensate	R											34056 K103	Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: MFW.	2.6	XXX	
059 Main Feedwater							R					34059 A107	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Feed Pump speed. (ICS is N/A for Wolf Creek.)	2.5	XXX	
059 Main Feedwater									R			34059 A306	Ability to monitor automatic operation of the MFW, including: Feedwater isolation	3.2	XXX	

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Plant Systems – Tier 2 Group 1 (RO/SRO)

Form ES-401-2

System #/Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Number	K/A Topics	Imp.	RO#	SRO#
061 Auxiliary Feedwater					R							34061 K501	Knowledge of the operational implications of the following concepts as they apply to the AFW: Relationship between AFW flow and RCS heat transfer	3.6	XXX	
062 AC Electrical Distribution			R									36062 K301	Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following: Major system loads	3.5	XXX	
063 DC Electrical Distribution				R								36063 K402	Knowledge of DC electrical system design feature(s) and/or interlock(s) which provide for the following: Breaker interlocks, permissives, bypasses and cross-ties.	2.9	XXX	
064 Emergency Diesel Generator	R											36064 K105	Knowledge of the physical connections and/or cause-effect relationships between the ED/G system and the following systems: Starting air system	3.4	XXX	
064 Emergency Diesel Generator						R						36064 K608	Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks	3.2	XXX	
073 Process Radiation Monitoring											R	37073 239	Radiation Control: Knowledge of the process for performing a containment purge.	2.5	XXX	
073 Process Radiation Monitoring											S	37073 236	Radiation Control: Knowledge of the requirements for reviewing and approving release permits. 10 CFR 43.4	3.1		XXX
076 Service Water		R										34076 K201	Knowledge of bus power supplies to the following: Service Water	2.7	XXX	
076 Service Water			R									34076 K301	Knowledge of the effect that a loss or malfunction of the SWS will have on the following: Closed cooling water	3.4	XXX	
078 Instrument Air										R		38078 A401	Ability to manually operate and/or monitor in the control room: Pressure gauges	3.1	XXX	
103 Containment									R			35103 A301	Ability to monitor automatic operation of the containment system, including: Containment isolation	3.9	XXX	
K/A Category Point totals RO / SRO	2	2	4	2	2	2	2	2	4	3	3 / 1		Group Point Total		28	4

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Plant Systems – Tier 2 Group 2 (RO/SRO)

Form ES-401-2

System #/Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Number	K/A Topics	Imp.	RO#	SRO#
001 Control Rod Drive							R					31001 A104	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CRDS controls including: PZR level and pressures	3.7	XXX	
002 Reactor Coolant							R					32002 A104	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCS controls including: Subcooling Margin	3.9	XXX	
011 Pressurizer Level Control			R									32011 K301	Knowledge of the effect that a loss or malfunction of the PZR LCS will have on the following: CVCS	3.2	XXX	
014 Rod Position Indication										R		31014 A402	Ability to manually operate and/or monitor in the control room: Control rod mode-select switch	3.4	XXX	
015 Nuclear Instrumentation																
016 Non-Nuclear Instrumentation																
017 In-Core Temperature Monitor																
027 Containment Iodine Removal																
028 H2 Recombiner and Purge Control					R							35028 K502	Knowledge of the operational implications of the following concepts as they apply to the HRPS: Flammable hydrogen concentration	3.4	XXX	
028 H2 Recombiner and Purge Control											S	35028 239	Radiation Control: Knowledge of the process for performing a containment purge. 10 CFR 43.4	3.5		XXX
029 Containment Purge											R	35029 2132	Conduct of Operations: Ability to explain and apply all system limits and precautions.	3.4	XXX	
033 Spent Fuel Pool Cooling																
034 Fuel Handling Equipment																
035 Steam Generator						R						34035 K602	Knowledge of the effect of a loss or malfunction on the following will have on the S/GS: Secondary PORV	3.1	XXX	
041 Steam Dump/Turbine Bypass Control					R							34041 K505	Knowledge of the operational implications of the following concepts as the apply to the SDS: Basis for RCS design pressure limits	2.6	XXX	
045 Main Turbine Generator																
055 Condenser Air Removal											S	34055 2225	Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	2.5		XXX
068 Liquid Radwaste	R											39068 K107	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	XXX	
071 Waste Gas Disposal																

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Plant Systems – Tier 2 Group 2 (RO/SRO)

Form ES-401-2

System #/Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Number	K/A Topics	Imp.	RO#	SRO#
072 Area Radiation Monitoring																
075 Circulating Water	R											38075 K102	Knowledge of the physical connections and/or cause-effect relationships between the circulating water system and the following systems: Liquid radwaste discharge	2.9	XXX	
079 Station Air																
086 Fire Protection																
K/A Category Point totals RO / SRO	2	-	1	-	2	1	2	-	-	1	1 / 2		Group Point Total		10	2

WCNOC NRC License Examination
May 7, 2004 PWR Examination outline
Generic Knowledge and Abilities Outline (Tier 3)

Form ES-401-3

Category	K/A #	Topic	RO		SRO-Only	
			Imp.	#	Imp.	#
1. Conduct of Operations	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	3.0	XXX		
	2.1.12	Ability to apply technical specifications for a system. 10 CFR 43.5			4.0	XXX
	2.1.14	Knowledge of system status criteria which require the notification of plant personnel. 10 CFR 43.5			3.3	XXX
	2.1.20	Ability to execute procedure steps.	4.3	XXX		
	Subtotal			2		2
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity	3.7	XXX		
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations. 10 CFR 43.5			3.6	XXX
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits	2.5	XXX		
	2.2.33	Knowledge of control rod programming. 10 CFR 43.6			2.9	XXX
	Subtotal			2		2
3. Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements. 10 CFR 43.4			3.0	XXX
	2.3.2	Knowledge of facility ALARA program.	2.5	XXX		
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release. 10 CFR 43.4			3.2	XXX
	2.3.11	Ability to control radiation releases.	2.7	XXX		
	Subtotal			2		2
4. Emergency Procedures / Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	2.9	XXX		
	2.4.6	Knowledge of symptom based EOP mitigation strategies.	3.1	XXX		
	2.4.9	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	XXX		
	2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies. 10 CFR 43.5			3.6	XXX
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.8	XXX		
	Subtotal			4		1
Tier 3 Point Total				10		7

Facility: Wolf Creek Scenario No.: One (NEW) Op-Test No.: One Revision 03

Examiners: _____ Operators: _____

Initial Conditions: 100% Power, MOL
"A" MDAFWP is OOS for bearing replacement.
"S" Safety Injection Pump is OOS for Oil Change
Severe Thunderstorm Watch for Coffey County.

Turnover: Maintain current plant conditions.

Event No.	Malf. No.	Event Type*	Event Description
1 T+1	mMSS 13	I (BOP)	Steam Header Pressure Channel fails low. (Affects both MFP's)
2 T+11	mPRS 03A	C (RO)	Pzr Spray Valve fails full open in Automatic.
3 T+18	mEPS 06B	C (ALL)	Vital 4160volt NB02 bus lockout
4 T+38	N/A	N (BOP) R (RO)	Tech Spec Required Shutdown due to loss of two AFW pumps.
5 T+48	mFWM 20	M (ALL)	Main Feed Line break in Turbine Building
6 T+54	mAfw 02B	C (BOP)	TDAFW pump fails. Entry to FR-H1.
7 T+60	IOR P0105 5B	C (RO)	"A" CCP fails to Auto Start on Safety Injection.

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

Facility: Wolf Creek Scenario No.: 2 (MODIFIED) Op-Test No.: One Revision 03

Examiners: _____ Operators: _____

Initial Conditions: 100% Power, MOL
NCP is OOS for bearing replacement.

Turnover: Maintain current plant conditions.

Event No.	Malf. No.	Event Type*	Event Description
1 T+1	mPRS 01C	I (RO)	PZR Pressure Channel Fails High
2 T+17	mMSS 07C	C (BOP)	"C" S/G ARV fails open in auto, manual available.
3 T+26	mFWM 03B	C (BOP)	"B" S/G MFRV fails closed in auto, manual available.
4 T+34	mNIS 03C	I (RO)	Nuclear Instrumentation Channel NI-43 fails high.
5 T+45	mRCS 06A	M (ALL)	SSE/OBE escalates to Loss of Offsite Power, LBLOCA.
6 T+49	mDGS 02A/B	C (RO)	Both EDG's fail to Auto Start.
7 T+70	rBN881 2A	C (RO)	"A" Train RWST suction to RHR fails to align during EMG ES-12, Transfer to Cold Leg Recirc

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

Facility: Wolf Creek Scenario No.: 3 B/U (NEW) Op-Test No.: One Revision 03

Examiners: _____ Operators: _____

Initial Conditions: 30% increasing power, Ready to Enter Gen 00-004

Turnover: Prepare to continue power increase to 100%

Event No.	Malf. No.	Event Type*	Event Description
1 T+1	mFWM 02C4	I (BOP)	"C" S/G Controlling Level Channel fails high.
2 T+11	mCVC 13C	C (RO)	Normal Charging Pump Trips
3 T+19	mCVC 06A	C (ALL)	Excessive Seal Leak Off "A" RCP.
4 T+45	mRCS 02A	M (ALL)	S/G Tube Rupture develops on "A" S/G requiring Rx Trip/Sl.
5 T+48	p19019 B & p19028 B	C (RO)	Both ESW pumps fail to auto start on Safety Injection.

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