Final Submittal
(Blue Paper)

CATAWBA DECEMBER 2005 EXAM

05000413/2005301 & 05000414/2005301

DECEMBER 5 - 8, 2005
DECEMBER 14, 2005 (WRITTEN)

FINAL OUTLINES

12/19/05

Simulation Facility: Catawba **Scenario No.: NRC-1** **Op-Test No: 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the applicants' ability to respond to the following malfunctions: A steam dump valve fails open requiring a power reduction to less than 100%. An RN valve fails closed, isolating flow to the KC heat exchanger, requiring a transfer to the other KC train. A loss of main feedwater pump runback fails requiring manual turbine load reduction (rods fail to minimum speed in auto). The pressure master and one spray valve fail requiring manual control by the BOP. 1ETA power is lost, the sequencer stops loading requiring the BOP to manually start required loads. The crew will respond to one dropped control rod. An additional dropped control rod will require a manual reactor trip. This transient results in a steam line break in containment results in a safety injection. Additional failures require the crew to manually start containment spray and other safety injection equipment. The crew must isolate auxiliary feedwater to the faulted steam generator and terminate safety injection.

Initial Conditions: 100% power, BOL, Equilibrium Xe.
NCS Boron Concentration 1374 ppm.

Turnover:

- One week ago Steam Generator 1A developed a 2 GPD tube leak that has remained stable. Secondary chemistry is taking grab samples per their procedures.
- 1EMF-71, S/G A Leakage, is out of service due to a loss of signal problem.
- Charging pump 1A is tagged for motor cooler leak. It has been out of service for 12 hours and is scheduled to be repaired by midnight.
- York County is under a winter storm watch.
- Continue to maintain 100% power.

Event No.	Malf. No./ Position	Event Type*	Event Description
1	RO	C	Steam Dump valve SB-24 fails open requiring a reactor power reduction.
2	BOP	C	Loss of RN flow to 1A KC Heat Exchanger
3	RO SRO (TS)	C	Incomplete runback on a Loss of "B" Main Feedwater pump, Rods move at 8 steps per minute
4	BOP SRO	I	Pressure Master Fails High/ Spray Valve 1NC-29 fails full open in automatic.

Event No.	Malf. No./ Position	Event Type*	Event Description
5	BOP SRO (TS)	C	Loss of Normal Power to 1ETA with partial failure of the blackout sequencer.
6	RO	C	Respond to one dropped control bank "C" rod. Respond to a second dropped rod.
7	ALL	M	Steam Generator 1C Steam line Break Inside Containment <u>Additional Failures:</u> NS pump 1A and 1B fail to auto start. D/G LOCA Sequencer 1A fails to actuate.

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

Simulation Facility: Catawba **Scenario No.: NRC-2** **Op-Test No: 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the applicants' ability to use station procedures to borate and reduce turbine load. Abnormal events include: S/G level program fails high requiring manual control of steam generator level. A failed pressurizer level channel leads to a loss of letdown and a malfunction of automatic makeup which causes a dilution event requiring manual termination. A main turbine loss of lube oil pressure results in a turbine trip first out annunciator. The turbine fails to trip requiring a reactor trip and closure of the main steam isolation valves. Emergency events include: A large break LOCA and failure of the recirculation paths requiring the crew to enter contingency action procedures. During the major event the BOP must take manual actions to establish cold leg injection flow from ND. Actions by the crew establish a flow path from the containment sump to the reactor coolant system.

Initial Conditions: 66% power, MOL, Equilibrium Xe.
NCS Boron Concentration 1162 ppm

Turnover:

- One week ago Steam Generator 1A developed a 2 GPD tube leak that has remained stable. Secondary chemistry is taking grab samples per their procedures.
- 1EMF-71, S/G A Leakage, is out of service due to a loss of signal problem.
- Charging pump 1A is tagged for motor cooler leak. Additional problems with the pump have resulted in a required unit shutdown to Mode 3.
- Initiate a power decrease at 20% per hour per OP/1/A/6100/003 (Controlling Procedure for Unit Operation), Enclosure 4.2 Power Decrease in progress to step 2.13.

Event No.	Malf. No./ Position	Event Type*	Event Description
1	BOP RO	R N	Boration for power decrease Turbine Load Decrease
2	RO	I	Steam Generator 1C level controller fails high
3	SRO (TS)		Refueling Water Storage Tank Level channel fails low
4	BOP SRO (TS)	I	Pressurizer Level Channel 1 fails low causing loss of letdown. 1NV-2A Fails in Automatic.
5	BOP	C	Automatic makeup from boric acid pumps, diluted makeup to volume control tank.
6	RO	C	Main turbine fails to trip when required

Event No.	Malf. No./ Position	Event Type*	Event Description
7	ALL	M	Large LOCA and Loss of Emergency Coolant Recirculation <u>Additional failures:</u> NV/SI Flow meter failure ND pump 1B fails to start in auto ND pump 1B trips prior to Cold Leg Recirc 1NI-185A Fails to open

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

Facility: Catawba Printed: 11/27/2005

Date Of Exam: 12/13/2005

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	4				3	3			2	18	0	0	0	0	0
	2	1	1	1				2	2			2	9	0	0	0	0	0
	Tier Totals	4	4	5				5	5			4	27	0	0	0	0	0
2. Plant Systems	1	2	2	2	3	2	2	3	3	3	3	3	28	0	0	0	0	0
	2	1	0	2	2	1	1	1	1	0	0	1	10	0	0	0	0	0
	Tier Totals	3	2	4	5	3	3	4	4	3	3	4	38	0	0	0	0	0
3. Generic Knowledge And Abilities Categories		1			2			3			4		10	1	2	3	4	0
		3			3			2			2			0	0	0	0	

Note:

1. Ensure that at least two topics from every 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 the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the 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 K/As 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. Use duplicate pages for RO and SRO-only exams.

9. For Tier 3, select topices 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 10 CFR 55.43.

PWR RO Examination Outline

Printed: 11/27/2005

Facility: Catawba

ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-2**

vol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
011 Pressurizer Level Control								X				A2.12 - Operation of auxiliary spray	3.3	1
034 Fuel Handling Equipment						X						K6.02 - Radiation monitoring systems	2.6	1
035 Steam Generator	X											K1.01 - MFW/AFW systems	4.2	1
055 Condenser Air Removal			X									K3.01 - Main condenser	2.5	1
056 Condensate											X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	1
068 Liquid Radwaste				X								K4.01 - Safety and environmental precautions for handling hot, acidic, and radioactive liquids	3.4	1
071 Waste Gas Disposal					X							K5.04 - Relationship of hydrogen/oxygen concentrations to flammability	2.5	1
072 Area Radiation Monitoring							X					A1.01 - Radiation levels	3.4	1
075 Circulating Water				X								K4.01 - Heat sink	2.5	1
086 Fire Protection			X									K3.01 - Shutdown capability with redundant equipment	2.7	1
K/A Category Totals:	**1**	**0**	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**0**	**1**	**Group Point Total:**		**10**

PWR RO Examination Outline

Printed: 11/27/2005

Facility: Catawba

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-2**

vol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump	X											K1.01 - RCP lube oil	2.6	1
004 Chemical and Volume Control					X							K5.11 - Thermal stress, brittle fracture, pressurized thermal shock	3.6	1
005 Residual Heat Removal						X						K6.03 - RHR heat exchanger	2.5	1
006 Emergency Core Cooling						X						K6.02 - Core flood tanks (accumulators)	3.4	1
007 Pressurizer Relief/Quench Tank									X			A3.01 - Components which discharge to the PRT	2.7*	1
008 Component Cooling Water											X	2.1.27 - Knowledge of system purpose and or function.	2.8	1
008 Component Cooling Water										X		A4.06 - Remote operation of hand-operated throttle valves to regulate CCW flow rate	2.5*	1
010 Pressurizer Pressure Control								X				A2.01 - Heater failures	3.3	1
012 Reactor Protection			X									K3.02 - T/G	3.2*	1
013 Engineered Safety Features Actuation								X				A2.04 - Loss of instrument bus	3.6	1
022 Containment Cooling							X					A1.04 - Cooling water flow	3.2	1
[illegible]e Condenser											X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
026 Containment Spray									X			A3.01 - Pump starts and correct MOV positioning	4.3	1
039 Main and Reheat Steam					X							K5.08 - Effect of steam removal on reactivity	3.6	1
039 Main and Reheat Steam								X				A2.04 - Malfunctioning steam dump	3.4	1
059 Main Feedwater										X		A4.08 - Feed regulating valve controller	3.0*	1
061 Auxiliary/Emergency Feedwater		X										K2.01 - AFW system MOVs	3.2*	1
062 AC Electrical Distribution							X					A1.01 - Significance of D/G load limits	3.4	1
062 AC Electrical Distribution			X									K3.01 - Major system loads	3.5	1
062 AC Electrical Distribution							X					A1.07 - Inverter outputs	2.4	1
063 DC Electrical Distribution											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
064 Emergency Diesel Generator		X										K2.02 - Fuel oil pumps	2.8*	1
[illegible]ocess Radiation Monitoring	X											K1.01 - Those systems	3.6	1

PWR RO Examination Outline

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ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-2**

.vol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic served by PRMs	Imp.	Points
076 Service Water				X								K4.01 - Conditions initiating automatic closure of closed cooling water auxiliary building header supply and return valves	2.5*	1
076 Service Water				X								K4.02 - Automatic start features associated with SWS pump controls	2.9	1
078 Instrument Air				X								K4.02 - Cross-over to other air systems	3.2	1
078 Instrument Air										X		A4.01 - Pressure gauges	3.1	1
103 Containment									X			A3.01 - Containment isolation	3.9	1
K/A Category Totals:	**2**	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**Group Point Total:**		**28**

PWR RO Examination Outline

Printed: 11/27/2005

Facility: Catawba

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

E # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000001 Continuous Rod Withdrawal / 1				X			AA1.03 - Boric acid pump control switch	3.4	1
000028 Pressurizer Level Malfunction / 2				X			AA1.02 - CVCS	3.4	1
000036 Fuel Handling Accident / 8						X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	1
000037 Steam Generator Tube Leak / 3					X		AA2.05 - Past history of leakage with current problem	2.8	1
000061 ARM System Alarms / 7	X						AK1.01 - Detector limitations	2.5*	1
000069 Loss of CTMT Integrity / 5		X					AK2.03 - Personnel access hatch and emergency access hatch	2.8*	1
000074 Inad. Core Cooling / 4					X		EA2.04 - Relationship between RCS temperature and main steam pressure	3.7	1
000076 High Reactor Coolant Activity / 9						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	3.4	1
W/E07 Inad. Core Cooling / 4			X				EK3.4 - RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated	3.3	1
K/A Category Totals:	**1**	**1**	**1**	**2**	**2**	**2**	**Group Point Total:**		**9**

PWR RO Examination Outline

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Facility: Catawba

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000007 Reactor Trip - Stabilization - Recovery / 1						X	2.1.27 - Knowledge of system purpose and or function.	2.8	1
000008 Pressurizer Vapor Space Accident / 3		X					AK2.02 - Sensors and detectors	2.7*	1
000009 Small Break LOCA / 3			X				EK3.15 - Closing of RCP thermal barrier outlet valves	3.2	1
000011 Large Break LOCA / 3	X						EK1.01 - Natural circulation and cooling, including reflux boiling	4.1	1
000015/000017 RCP Malfunctions / 4				X			AA1.20 - RCP bearing temperature indicators	2.7	1
000022 Loss of Rx Coolant Makeup / 2	X						AK1.02 - Relationship of charging flow to pressure differential between charging and RCS	2.7	1
000026 Loss of Component Cooling Water / 8			X				AK3.04 - Effect on the CCW flow header of a loss of CCW	3.5	1
000027 Pressurizer Pressure Control System Malfunction / 3		X					AK2.03 - Controllers and positioners	2.6	1
000038 Steam Gen. Tube Rupture / 3			X				EK3.09 - Criteria for securing/throttling ECCS	4.1	1
54 Loss of Main Feedwater / 4	X						AK1.02 - Effects of feedwater introduction on dry S/G	3.6	1
000055 Station Blackout / 6			X				EK3.01 - Length of time for which battery capacity is designed	2.7	1
000057 Loss of Vital AC Inst. Bus / 6				X			AA1.02 - Manual control of PZR level	3.8	1
000058 Loss of DC Power / 6					X		AA2.02 - 125V dc bus voltage, low/critical low, alarm	3.3*	1
000062 Loss of Nuclear Svc Water / 4						X	2.1.27 - Knowledge of system purpose and or function.	2.8	1
000065 Loss of Instrument Air / 8					X		AA2.07 - Whether backup nitrogen supply is controlling valve position	2.8*	1
W/E04 LOCA Outside Containment / 3		X					EK2.2 - 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	1
W/E11 Loss of Emergency Coolant Recirc. / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.4	1

PWR RO Examination Outline

Facility: Catawba

Printed: 11/27/2005

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

# / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
W/E12 - Steam Line Rupture - Excessive Heat Transfer / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.8	1
K/A Category Totals:	3	3	4	3	3	2	Group Point Total:		18

Facility: Catawba Printed: 11/27/2005

Date Of Exam: 12/13/2005

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	0	0	0				0	0			0	0	0	0	3	3	6
	2	0	0	0				0	0			0	0	0	0	2	2	4
	Tier Totals	0	0	0				0	0			0	0	0	0	5	5	10
2. Plant Systems	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
	Tier Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8
3. Generic Knowledge And Abilities Categories		1			2			3			4		0	1	2	3	4	7
		0			0			0			0			2	2	1	2	

Note:

1. Ensure that at least two topics from every 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).

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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.

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9. For Tier 3, select topices 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 10 CFR 55.43.

PWR SRO Examination Outline

Printed: 11/27/2005

Facility: Catawba

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

# / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000009 Small Break LOCA / 3						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
000022 Loss of Rx Coolant Makeup / 2					X		AA2.04 - How long PZR level can be maintained within limits	3.8	1
000025 Loss of RHR System / 4						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
000056 Loss of Off-site Power / 6					X		AA2.03 - Operational status of safety injection pump	3.9	1
000062 Loss of Nuclear Svc Water / 4						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	4.3	1
K/A Category Totals:	**0**	**0**	**0**	**0**	**3**	**3**	**Group Point Total:**		**6**

PWR SRO Examination Outline

Printed: 11/27/2005

Facility: Catawba

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

# / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000001 Continuous Rod Withdrawal / 1					X		AA2.05 - Uncontrolled rod withdrawal, from available indications	4.6	1
000036 Fuel Handling Accident / 8						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
000060 Accidental Gaseous Radwaste Rel. / 9						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
W/E06 Inad. Core Cooling / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	4.1	1
K/A Category Totals:	**0**	**0**	**0**	**0**	**2**	**2**	**Group Point Total:**		**4**

PWR SRO Examination Outline

Facility: Catawba

Printed: 11/27/2005

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

vol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump								X				A2.05 - Effects of VCT pressure on RCP seal leakoff flows	2.8	1
007 Pressurizer Relief/Quench Tank											X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.3	1
012 Reactor Protection											X	2.1.20 - Ability to execute procedure steps.	4.2	1
026 Containment Spray								X				A2.02 - Failure of automatic recirculation transfer	4.4*	1
064 Emergency Diesel Generator								X				A2.16 - Loss of offsite power during full-load testing of ED/G	3.7	1
K/A Category Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**Group Point Total:**		**5**

PWR SRO Examination Outline

Printed: 11/27/2005

Facility: Catawba

ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-2**

vol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002 Reactor Coolant											X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.0	1
035 Steam Generator											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
041 Steam Dump/Turbine Bypass Control								X				A2.02 - Steam valve stuck open	3.9	1
K/A Category Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**Group Point Total:**		**3**

Generic Knowledge and Abilities Outline (Tier 3)

PWR RO Examination Outline

Printed: 11/27/2005

Facility: Catawba

Form ES-401-3

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.14	Knowledge of system status criteria which require the notification of plant personnel.	2.5	1
	2.1.21	Ability to obtain and verify controlled procedure copy.	3.1	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
		Category Total:		**3**
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	1
	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.1	1
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	2.8	1
		Category Total:		**3**
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
		Category Total:		**2**
Emergency Procedures/Plan	2.4.27	Knowledge of fire in the plant procedure.	3.0	1
	2.4.39	Knowledge of the RO's responsibilities in emergency plan implementation.	3.3	1
		Category Total:		**2**

Generic Total: **10**

Generic Knowledge and Abilities Outline (Tier 3)

PWR SRO Examination Outline

Printed: 11/27/2005

Facility: Catawba

Form ES-401-3

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits.	2.9	1
		Category Total:		**2**
Equipment Control	2.2.20	Knowledge of the process for managing troubleshooting activities.	3.3	1
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	3.5	1
		Category Total:		**2**
Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
		Category Total:		**1**
Emergency Procedures/Plan	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	4.0	1
	2.4.36	Knowledge of chemistry / health physics tasks during emergency operations.	2.8	1
		Category Total:		**2**

Generic Total: **7**

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO 1/1	038EK3.02 (NRC item 9)	The K/A is concerned with efforts within the S/G tube rupture procedure to prevent the cycling of the S/G PORV. Westinghouse owners group addressed several years ago and stated that there is no priority in ensuruing the PORV remains closed. INPO and the NRC (Bill Orders) were contacted on this subject and their response was that as long as CNS was adhering to the WOG guidelines the NRC would not bring up this issue. The EPE is OK, request a change in the K/A. **7/6/2005 request for change accepted; resampled to EK3.09**
RO 1/2	APE 028 AA1.08 (NRC item 20)	The subject of this AA is related to actions when an instrument channel fails. This will be nearly identical to APE 057 AA1.02. (NRC item 12). Request one of these two be resampled. **7/6/2005 request for change accepted; resampled to AA1.02**
RO 2/1	SYS 026 A3.02 (NRC item 39)	There is no automatic transfer of cooling to the NS heat exchangers. System is OK, request this be resampled. **7/6/2005 request for change accepted; resampled to A3.01**
RO 2/1	Sys 062 A1.01 NRC items 43 and 55)	Repeated again in NRC item 55, request one of these two be replaced. **7/6/2005 request for change accepted; NRC item 55 resampled to 062 A1.07**
RO 2/1	SYS 076 K4.01 (NRC items 47 and 53)	Repeated again in NRC item 53, request one of these two be replaced. **7/6/2005 request for change accepted; NRC item 53 resampled to 076 K4.02**
RO 2/2	SYS 056 G2.1.23 (NRC RO item 65 and SRO 18)	Same as SRO question (NRC SRO item 18). Request one be replaced. **7/6/2005 request for change accepted; see NRC SRO item 18**
RO 2/2	SYS 075 K2.03 (NRC RO item 62)	KA for CNS circulating water system has no ties to essential power. Requested a resampling specific to condenser cooling water related subjects. **8/22/2005 request for change accepted; resampled to K4.01**
RO 2/1	SYS 062 A1/07 (NRC RO item 55)	KA importance less than 2.5. NRC randomly replaced. **New RO question 55 KA: SYS 061 A1.04 IMP: 3.9/3.9** **Sample plan updated on 10/05/2005.**

SRO 2/1	SYS 012 G2.1.14 (NRC item 13)	The pairing of this system and the Generic K/A is extremely limited in scope. There is already a Tier 3 RO exam item for the same G2.1.14. The subject is OK, request a resample. **7/6/2005 request for change accepted; resampled to G2.1.20**
SRO 2/1	SYS 064 A2.21 (NRC item 15)	The K/A is discussing a subject unfamiliar to the D/G equipment at Catawba. The system is OK, request a resampling. **7/6/2005 request for change accepted; resampled to A2.16**
SRO 2/2	SYS 056 G2.1.23 (NRC SRO item 18 and RO 65)	Same as RO 65. Request one of these two be replaced. **7/6/2005 request for change accepted; resampled to** **068 G2.1.23**
SRO 1/1	APE 056 AA2.45 (NRC item 95)	AA2.45 as it is written cannot be used to develop an SRO level question. Request a resampling. **11/21/2005 request for change accepted; resampled to AA2.03**
SRO 2/2	SYS 068 G2.1.23 (NRC item 99)	SYS 068 using G2.1.23 could not be used to develop an SRO level question. Request and resampling. **11/21/2005 request for change accepted; resampled to** **002 G2.1.23**

Facility: CATAWBA
Exam Level: RO SRO-I SRO-U

Date of Examination: 12/05/2005
Operating Test No.: 1

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

System / JPM Title	Type Code*	Safety Function
a. Place ND Train B in RHR Mode During Loss of ND K/A: APE025 AA1.01 (3.6/3.7)	D,E,L,S	4 (PRI)
b. Align ND to Aux Containment Spray (ESF) K/A: E014 EA1.1 (3.7/3.7)	E,N,S	5
c. Respond to Process Radiation Monitoring Alarms K/A: GENERIC 2.4.10 (3.0/3.1)	A,N,S	7
d. Place Excess Letdown in Service K/A: APE002 AK3.03 (3.1/3.3)	D,S	2
e. Evacuate the Control Room per AP/17 Case II K/A: APE068 AA1.23 (4.3/4.4)	A,E,N,S	8
f. Manually Makeup to the VCT K/A: SYS004 A4.12 (3.8/3.3)	D,S	1
g. Identify and Isolate a Ruptured S/G K/A: EPE038 EA1.32 (4.6/4.7)	A,E,N,S	3
h. Restore 1ETA and Shutdown the D/G from the Control Room K/A: APE056 AA1.04 (3.2/3.1)	D,S	6
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Auxiliary Building Actions for Loss of Control Room K/A: APE068 AK3.18 (4.2/4.5)	A,E,N,R	8
j. Restore Power to 2EDD K/A: APE058 AA1.03 (3.1/3.3)	A,E,M	6
k. Locally Break Vacuum During a Loss of Feedwater K/A: APE054 AK3.04 (4.4/4.4)	N,E	4 (SEC)

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: CATAWBA
Exam Level: RO (SRO-I) SRO-U

Date of Examination: 12/05/2005
Operating Test No.: 1

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

System / JPM Title	Type Code*	Safety Function
a. Place ND Train B in RHR Mode During Loss of ND K/A: APE025 AA1.01 (3.6/3.7)	D,E,L,S	4 (PRI)
b. Align ND to Aux Containment Spray (ESF) K/A: E014 EA1.1 (3.7/3.7)	E,N,S	5
c. Respond to Process Radiation Monitoring Alarms K/A: GENERIC 2.4.10 (3.0/3.1)	A,N,S	7
d. Place Excess Letdown in Service K/A: APE002 AK3.03 (3.1/3.3)	D,S	2
e. Evacuate the Control Room per AP/17 Case II K/A: APE068 AA1.23 (4.3/4.4)	A,E,N,S	8
f. Manually Makeup to the VCT K/A: SYS004 A4.12 (3.8/3.3)	D,S	1
g. Identify and Isolate a Ruptured S/G K/A: EPE038 EA1.32 (4.6/4.7)	A,E,N,S	3

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

i. Auxiliary Building Actions for Loss of Control Room K/A: APE068 AK3.18 (4.2/4.5)	A,E,N,R	8
j. Restore Power to 2EDD K/A: APE058 AA1.03 (3.1/3.3)	A,E,M	6
k. Locally Break Vacuum During a Loss of Feedwater K/A: APE054 AK3.04 (4.4/4.4)	N,E	4 (SEC)

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: CATAWBA
Exam Level: RO SRO-I (SRO-U)

Date of Examination: 12/05/2005
Operating Test No.: 1

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

System / JPM Title	Type Code*	Safety Function
a. Place ND Train B in RHR Mode During Loss of ND K/A: APE025 AA1.01 (3.6/3.7)	D,E,L,S	4 (PRI)
b. Align ND to Aux Containment Spray **(ESF)** K/A: E014 EA1.1 (3.7/3.7)	E,N,S	5
c. Respond to Process Radiation Monitoring Alarms K/A: GENERIC 2.4.10 (3.0/3.1)	A,N,S	7

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

i. Auxiliary Building Actions for Loss of Control Room K/A: APE068 AK3.18 (4.2/4.5)	A,E,N,R	8
j. Restore Power to 2EDD K/A: APE058 AA1.03 (3.1/3.3)	A,E,M	6

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Catawba
Examination Level: RO SRO

Date of Examination: December 5, 2005
Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	Title: Determine allowable work hours and required rest hours. Description: Determine the allowable hours an operator can work and the amount of hours rest required based on those limits per the Nuclear Site Directive. K/A: 2.1.1 (3.7/3.8)
Conduct of Operations	M,R	Title: Determine the amount of boric acid required to get Control Bank D above the Rod insertion limits Description: Applicant must calculate the required amount of boric acid to increase control rods to above the insertion limit. K/A: 2.1.25 (2.8/3.1)
Radiation Control	N,R	Title: Determine radiation protection requirements for an activity Description: The RO must calculate his exposure and allowable stay time based on the governing radiation work permit and room survey map during a pump venting procedure. K/A: 2.3.10 (2.9/3.3)
Emergency Plan	N,S	Title: Perform the emergency plan requirements for a hazmat event. Description: The RO receives an emergency phone call into the control room and uses the station emergency plan procedures to activate a hazmat team response to assist in containing a fuel oil spill. K/A: 2.4.43 (2.8/3.5)

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

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Catawba | Date of Examination: December 5, 2005

Examination Level: RO (SRO) | Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	Title: Determine minimum staffing requirements, if overtime limits have been exceeded, and required actions per Tech Spec 5.2.2 and NSD-200 Description: Determine minimum staffing requirements, what actions need to be taken to meet those requirements, and complete administrative form related to exceeding overtime limits. K/A: 2.1.1 (3.7/3.8)
Conduct of Operations	M,R	Title: Determine the amount of boric acid required to get Control Bank D above the Rod insertion limits Description: Applicant must calculate the required amount of boric acid to increase control rods to above the insertion limit. K/A: 2.1.25 (2.8/3.1)
Equipment Control	N,R	Title: Evaluate an emergent issue equipment failure Description: Determine Tech Spec entry requirements and post maintenance test requirements following D/G maintenance. K/A: 2.2.17 (2.3/3.5)
Radiation Control	N,R	Title: Determine radiation protection requirements for an activity Description: The SRO must calculate his exposure and allowable stay time based on the governing radiation work permit and room survey map during a pump venting procedure. K/A: 2.3.10 (2.9/3.3)
Emergency Plan	N,R	Title: Perform an event classification and complete the transmittal form. Description: The SRO must evaluate an accident description and determine the classification level then complete the emergency notification form for transmittal to the states and counties. K/A: 2.4.41 (2.3/4.1)

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

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)