

Final Submittal  
(Blue Paper)

**FINAL OUTLINES**

CATAWBA  
2007-301

Facility:		Date of Examination:		
Item	Task Description	Initials		
		a	b*	c#
W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	GD	AM	bd
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	GD	AM	bd
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	GD	AM	bd
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	GD	AM	bd
S I M U L A T O R	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	GD	AM	bd *
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.	GD	AM	*
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	GD	AM	*
W / T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	GD	AM	*
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations	GD	AM	*
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	GD	AM	bd
G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	GD	AM	bd
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	GD	AM	bd
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	GD	AM	bd
	d. Check for duplication and overlap among exam sections.	GD	AM	bd
	e. Check the entire exam for balance of coverage.	GD	AM	bd
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	GD	AM	bd
a. Author	GARY DANIELS / <i>Gary Daniels</i>		Date 12-4-07	
b. Facility Reviewer (*)	GERALD L. McCracken / <i>Gerald L. McCracken</i>		12-5-07	
c. NRC Chief Examiner (#)	Edwin Lee Jr. / <i>Edwin Lee Jr.</i>		12-11-07	
d. NRC Supervisor	MARK A. BATES / <i>Mark A. Bates</i>		12-11-07	

Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

\* APPROVED UNDER A PREVIOUS ES-201-2 (FOR OPERATING TEST GIVEN DURING WEEK OF 12/3/2007)

Facility: <u>Catawba</u> Date of Examination: <u>December 3, 2007</u>		
Examination Level: RO SRO Operating Test Number: <u>NRE</u>		
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	(R-3) R; N	Determine subcooling.
	(S-5) R; N	Review of Surveillance PT and determine TS entry
	(R1-S1) R; N	Shift Manning
Equipment Control	(R-4) R; M	RL Discharge Flow Determination
	(S-3) R; D	Tagging of KF Pump
Radiation Control	(R2-S2) R; M	Determine Radiation Protection
Emergency Plan	(S-4) R; N	Protective Action Recommendation Update Determination
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 ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

Facility: <u>Catawba 2007</u>		Date of Examination: <u>12/3/07</u>
Exam Level: RO		Operating Test No.: <u>NRC</u>
Control Room Systems <sup>®</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. CA/Respond to a Loss of S/G Feedwater	A; D; E; S	4S
b. Establish Blowdown from the ruptured S/G	M; E; S	4P
c. Restoration of Offsite power following loss of grid	A; N; E; S	6
d. NV/Respond to Inadvertent Dilution While Shutdown	A; M; E; L; S	1
e. ECCS/Terminate SI flow	A; D; E; S	3
f. ILE/Restore Normal Letdown	D; E; S	2
g. EMF/Reset Radiation Monitor Trip Setpoints	D; S	7
h. KC/Respond to 1B KC Tank Lo Lo level	N; E; S	8
In-Plant Systems <sup>®</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. EQB/Manually Load Shed ETA	D; E; R	6
j. VX/Place a H2 Analyzer in service per OP	D; E; R	5
k. EP4/Locally isol steam flow from ruptured S/G	D; E	4P
@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: <u>Catawba 2007</u>		Date of Examination: <u>12/3/07</u>
Exam Level: SRO-I		Operating Test No.: <u>NRC</u>
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. CA/Respond to a Loss of S/G Feedwater	A; D; E; S	4S
b. Establish Blowdown from the ruptured S/G	M; E; S	4P
c. Restoration of Offsite power following loss of grid	A; N; E; S	6
d. NV/Respond to Inadvertent Dilution While Shutdown	A; M; E; L; S	1
e. ECCS/Terminate SI flow	A; D; E; S	3
f. ILE/Restore Normal Letdown	D; E; S	2
g.		
h. KC/Respond to 1B KC Tank Lo Lo	N; E; S	8
In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. EQB/Manually Load Shed ETA	D; E; R	6
j. VX/Place a H2 Analyzer in service per OP	D; E; R	5
k. EP4/Locally isol steam flow from ruptured S/G	D; E	4P
@ 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 2007 Date of Examination: 12/3/07  
 Exam Level: SRO-U Operating Test No.: NRC

Control Room Systems<sup>®</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a.		
b.		
c.		
d. NV/Respond to Inadvertent Dilution While Shutdown	A; M; E; L; S	1
e. ECCS/Terminate SI flow	A; D; E; S	3
f. ILE/Restore Normal Letdown	D; E; S	2
g.		
h.		

In-Plant Systems<sup>®</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

j. VX/Place a H2 Analyzer in service per OP	D; E; R	5
k. EP4/Locally isol steam flow from ruptured S/G	D; E	4P

@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: <u>Catawba 2007</u>		Date of Examination: <u>12/3/07</u>	
Exam Level: RO    SRO-I    SRO-U		Operating Test No.: <u>NRC</u>	
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title	Type Code*	Safety Function	
a. CA/Respond to a Loss of S/G Feedwater (R, I)	A; M; E; S	4S	
b. Establish Blowdown from the ruptured S/G (R, I,)	M; E; S	4P	
c. Restoration of Offsite power following loss of grid (R, I)	A; N; E; S	6	
d. NV/Respond to Inadvertent Dilution W/Shutdown (R, I, U)	A; E; L; M: S	1	
e. ECCS/Terminate SI flow (R, I, U)	A; M; E; S	3	
f. ILE/Restore Normal Letdown (R, I, U)	D; E; S	2	
g. EMF/Reset Radiation Monitor Trip Setpoints (R)	D; S	7	
h. KC/Respond to 1B KC Tank Lo Lo level (R, I)	N; E; S	8	
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i. EQB/Manually Load Shed ETA (R, I)	D; E; R	6	
j. VX/Place a H2 Analyzer in service per OP (R, I, U)	D; E; R	5	
k. EP4/Locally isol steam flow from ruptured S/G (R, I, U)	D; E	4P	
@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: <b>CATAWBA</b>		Date of Examination: <b>2/03/07</b>		Operating Test Number: <b>NRC</b>	
1. General Criteria		Initials			
		a	b*	c#	
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	GD	SM	EL	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	GD	SM	EL	
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	GD	SM	EL	
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	GD	SM	EL	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	GD	SM	EL	
2. Walk-Through Criteria		a	b*	c#	
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>• initial conditions</li> <li>• initiating cues</li> <li>• references and tools, including associated procedures</li> <li>• reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee</li> <li>• operationally important specific performance criteria that include:                         <ul style="list-style-type: none"> <li>– detailed expected actions with exact criteria and nomenclature</li> <li>– system response and other examiner cues</li> <li>– statements describing important observations to be made by the applicant</li> <li>– criteria for successful completion of the task</li> <li>– identification of critical steps and their associated performance standards</li> <li>– restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul>	GD	SM	EL	
b.	Ensure that any changes from the previously approved systems and administrative walk-through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2.	GD	SM	EL	
3. Simulator Criteria		a	b*	c#	
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.		GD	SM	EL	
Printed Name / Signature		Date			
a.	Author <u>GARY DANIELS</u> <i>Gary Daniels</i>	<u>11-20-07</u>			
b.	Facility Reviewer(*) <u>GERALD L. McCracken</u> <i>Gerald L. McCracken</i>	<u>11/20/07</u>			
c.	NRC Chief Examiner (#) <u>Edwin Lee, Jr.</u> <i>Edwin Lee, Jr.</i>	<u>11/27/07</u>			
d.	NRC Supervisor <u>MALCOLM T. WIDAMAN</u> <i>Malcolm T. Widaman</i>	<u>11/27/07</u>			
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.					

Facility: <u>CANAUBA</u>		Date of Exam: <u>12/3/07</u>		Scenario Numbers: <u>1121314</u>		Operating Test No.: <u>NKC</u>						
QUALITATIVE ATTRIBUTES				Initials								
				a	b*	c#						
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.			90	SM	td						
2.	The scenarios consist mostly of related events.			90	SM	td						
3.	Each event description consists of <ul style="list-style-type: none"> <li>the point in the scenario when it is to be initiated</li> <li>the malfunction(s) that are entered to initiate the event</li> <li>the symptoms/cues that will be visible to the crew</li> <li>the expected operator actions (by shift position)</li> <li>the event termination point (if applicable)</li> </ul>			90	SM	td						
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.			90	SM	td						
5.	The events are valid with regard to physics and thermodynamics.			90	SM	td						
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			90	SM	td						
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.			90	SM	td						
8.	The simulator modeling is not altered.			90	SM	td						
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			90	SM	td						
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.			90	SM	td						
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			90	SM	td						
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			90	SM	td						
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			90	SM	td						
Target Quantitative Attributes (Per Scenario; See Section D.5.d)				Actual Attributes								
1.	Total malfunctions (5-8)			7	1	8	6	17	90	SM	td	
2.	Malfunctions after EOP entry (1-2)			3	1	1	2	1	2	90	SM	td
3.	Abnormal events (2-4)			5	1	5	5	14	90	SM	td	
4.	Major transients (1-2)			1	1	1	1	1	1	90	SM	td
5.	EOPs entered/requiring substantive actions (1-2)			3	1	2	3	1	2	90	SM	td
6.	EOP contingencies requiring substantive actions (0-2)			0	1	1	0	0	0	90	SM	td
7.	Critical tasks (2-3)			5	1	3	4	1	4	90	SM	td

Facility: Catawba Date of Exam: DECEMBER 03,2007 Operating Test No.: 1

A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M  M(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P													
												R	I	U			
R/I	RX		6a			2a			1a								3
	NOR													0	1	1	1
	I/C		2,5			4,7			2a,5			5,6		8	4	4	2
	MAJ		7			8			6			7		4	2	2	1
	TS													0	0	2	2
U/I	RX	6a,6b			2a,2b			1a,1b						6	1	1	0
	NOR	1			1						1			3	1	1	1
	I/C	2,3a, 4a,5			3,4, 5a,7			2a,3, 4a,5			2a,3, 5,6			16	4	4	2
	MAJ	7			8			6			7			4	2	2	1
	TS	3b,4b			5b,6			2b,4b			2b,4			8	0	2	2
R	RX			6b			2b			1b				3	1	1	0
	NOR			1			1					1		3	1	1	1
	I/C			3a,4a			3,5a			3,4a		2a,3		8	4	4	2
	MAJ			7			8			6		7		4	2	2	1
	TS													0	0	2	2

Instructions:

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

Facility: Catawba		Date of Examination: December 3, 2007								Operating Test No.: NRC						
Competencies	APPLICANTS															
	RO				BOP				SRO-U/I				N/A			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	2,5, 6a, 7	2a, 4,7, 8	1a, 2a, 5,6	5,6, 7	3a, 4a, 6b,7	2b, 3, 5a,8	1b, 3, 4a,6	2a, 3,7	2-7	2-8	1-6	2-7				
Comply With and Use Procedures (1)	2,5, 6a, 7	2a, 4,7, 8	1a, 2a, 5,6	5,6, 7	1, 7 3a, 4a, 6b	1,3 2b,, 5a,8	1b, 3, 4a,6	1, 2a,3 ,7	1-7	1-8	1-6	1-7				
Operate Control Boards (2)	2,5, 6a, 7	2a, 4,7, 8	1a, 2a, 5,6	5,6, 7	1,3a ,4a, 6b,7	1,3 2b, 5a,8	1b, 3, 4a,6	1, 2a,3 ,7	N/A	N/A	N/A	N/A				
Communicate and Interact	1-7	1-8	1-6	1-7	1-7	1-8	1-6	1-7	1-7	1-8	1-6	1-7				
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1-7	1-8	1-6	1-7				
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3b, 4b	5b, 6	2b, 4b	2b,4				

Notes:

- (1)Includes Technical Specification compliance for an RO.
- (2)Optional for an SRO-U.
- (3)Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: Catawba <b>FINAL EXAM</b>		Date of Exam: December 3, 2007		Exam Level: RO SRO		
Item Description	Initial					
	a	b*	c#			
1. Questions and answers are technically accurate and applicable to the facility.	cl	SM	tl			
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	cl	SM	tl			
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	cl	SM	tl			
4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).	cl	SM	tl			
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ___ the audit exam was systematically and randomly developed, or ___ the audit exam was completed before the license exam was started, or ___ the examinations were developed independently, or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication, or ___ other (explain)	cl	SM	tl			
6. Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	<b>Bank</b>	<b>Modified</b>	<b>New</b>	cl	SM	tl
	21%/0%	17%/16%	61%/84%			
7. Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	<b>Memory</b>	<b>C/A</b>		cl	SM	tl
	45%/32%	55%/68%				
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	cl	SM	tl			
9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.	cl	SM	tl			
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	cl	SM	tl			
11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.	cl	SM	tl			
		Printed Name / Signature	Date			
a. Author	GACY DANIELS / Gacy Daniels		12/5/07			
b. Facility Reviewer (*)	GERALD L. McCRACKEN / Gerald L. McCracken		12/05/07			
c. NRC Chief Examiner (#)	Edwin Lee Jr. / Edwin Lee Jr.		12/11/2007			
d. NRC Regional Supervisor	MARK A. BATES / Mark A. Bates		12/11/2007			
<p>Note:* The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.</p>						

Facility: CATAWBA		Date of Exam: December 13, 2007		Exam Level: RO SRO	
Item Description	Initials				
	a	b	c		
1. Clean answer sheets copied before grading	10/3 Q	AM-6L			
2. Answer key changes and question deletions justified and documented	10/11/12 Q	AM-1/2 6L			
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	10/5 9/2	AM-6L			
4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail	10/5 9/2	AM-6L			
5. All other failing examinations checked to ensure that grades are justified	10/5 9/2	AM-6L			
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	10/11 9/2	AM-6L			
Printed Name/Signature		Date			
a. Grader	<u>Richard S. Bryan</u> <u>GARY DANIELS / Gary</u>	<u>11/7/08</u> <u>12-13-07</u>			
b. Facility Reviewer(*)	<u>GERALD L. McCracken</u>	<u>12/18/07</u>			
c. NRC Chief Examiner (*)	<u>Edwin Lee, Jr.</u>	<u>1/14/08</u>			
d. NRC Supervisor (*)	<u>MARCO T. WIDMANN</u>	<u>01/14/08</u>			
(*)The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.					

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only				
<p>Instructions</p> <p>[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]</p>																	
1.	Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.																
2.	Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).																
3.	Check the appropriate box if a psychometric flaw is identified:																
	<ul style="list-style-type: none"> <li>• The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).</li> <li>• The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).</li> <li>• The answer choices are a collection of unrelated true/false statements.</li> <li>• The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.</li> <li>• One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).</li> </ul>																
4.	Check the appropriate box if a job content error is identified:																
	<ul style="list-style-type: none"> <li>• The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).</li> <li>• The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).</li> <li>• The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).</li> <li>• The question requires reverse logic or application compared to the job requirements.</li> </ul>																
5.	Check questions that are sampled for conformance with the approved K/A and those that are <i>designated SRO-only</i> (K/A and license level mismatches are unacceptable).																
6.	Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?																
7.	At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).																
1	F	2	X				X									E	Distractors B,C & D do not appear to be basis. The way the question is written, I am not sure there is not more that one correct answer. Distractor B could be considered a subset of distractor A. — (11/28/2007) REWROTE QUESTION (OK)
2	F	2	X				X									E	Poor supporting documentation to review the question. Rewrite question to give a set of plant conditions. Is the PORV full open. What channel is selected? Will the selected channel have an effect on what .... --- (11/28/2007) CHANGED WORDING (OK)
3	H	3					X									E	I do not know of any cases where once an isolation occurs, you just reset it without waiting for something to clear or verifying that for something has cleared. Consider adding something to distractors A and C. — (11/28/2007) REVISED DISTRACTORS (OK)
4	H															S	(11/28/2007) REWORDED DISTRACTORS (OK)
5	H	2	X													S/E	This is a memory level question. Look at gramma in the stem. — (11/28/2007) (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only		
6	H	3												S	(11/28/2007) (OK)
7	F	1											X	U	LOD value. This question has nothing to do with emergency communications and techniques. No K/A match. — (11/28/2007) CHANGED WORDING - (K)
8	F	1				X								U	LOD value. Poor distractors. Who would think that YOU control flow in AUTO - Distractors B and C talks about maintaining bearing and oil temperatures – this has nothing to do with the question asked. — (11/28/2007) — REWORDED QUESTION (OK)
9	H	2	X			X								E	Consider rewording the stem to ask the applicant to describe the what affect 1NC-27 would have on the system... Who would expect pressure to increase as a result of the failure – <b>what is normal operating system pressure. Explain why you think distractors C and D are plausible. ---- (11/28/2007) WILL REWORD STEM/DISTRACTORS</b>
10	F?	1				X								U	LOD value. Poor questions. Who would expect reactivity to remain stable when control roads are being inserted? — (11/28/2007) WROTE A NEW QUESTION — (OK)
11	H	2	X			X								U/E	Insufficient information in the stem — reactor power level... The applicant would have to make assumptions. Where is the information you expect us to review to support the answer? From looking at what is provided in the stem, I think that any one would identify a loss of main feed. Why consider distractors A and B. If the reactor is already tripped why would you expect to enter an AP? – (11/28/2007) REVISED STEM AND DISTRACTORS (OK) – (11/29/2007) REVIEWED CHANGES DISCUSSED ON WEDNESDAY (OK)
12	F	2	X			X								E/S	The question is weak. You don't need any of the information in the stem to answer this question. .. It appears that the question could be written as "Which one of the following would result from a rapid depressurization of the S/Gs following a station blackout?..... ". As written I think there could be more than one correct answer. D may be correct. Question should not be written to ask "MOST LIKELY". Improve quality of distractors. — (11/28/2007) NEW QUESTION (OK)
13	H	3												S	(11/28/2007) (OK)
14	F??	2				X								E	This is a memory question. I do not see how distractors A and B are plausible. Your distractor analyses are weak. — (11/28/2007) DECIDED THAT IT IS COMP. — <b>WILL PROVIDE TWO DISTRACTORS (A &amp; B) OR NEW QUESTION</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only		
15	H	2												S	(11/28/2007) (OK)
16	F	2	X			X								E	What step in the procedure are you referring too? At step 2 actions are taken to identify and isolate the break. — (11/28/2007) (OK)
17	F?	2	1			X								E	The stem ask two things. What is the position of CFPT recirc valves following a reactor trip? What actions must be taken to manually control the valves? The distractors appear to answer three questions. <b>(11/29/2007) REVISE STEM</b>
18														S	(11/29/2007) (OK)
19														S	(11/29/2007) (OK)
20	H	2	X			X								E	The stem as - What actions is required to ensure the boration is accomplished. We tell them boration has been established at 40 gpm. Are you asking about adequate boration? Why do you consider distractor D plausible. — (11/28/2007) REWORDED DISTRACTORS (OK)
21	F		X									X		U	Please explain how this matches the K/A . The question appears to be asking - which one of the following describe the effect of decreasing voltage on N-31. As written does the questions address improper HV setting? — (11/28/2007) NEW QUESTION (OK)
22	H	2	X			X								E/S	Extra ? mark in the stem. I do not understand your analysis for distractor D. Are DAC limits identified? How would increasing DAC affect overall radiation? Anything that affect amount of radiation received contributes to overall ALARA. — (11/29/2007) REWROTE QUESTION (OK)
23	H	2												S	(11/29/2007) (OK)
24	F	2	X			X								E/S	Disconnect between stem and distractor C. It does not describe what is required. — (11/29/2007) CHANGED DISTRACTOR C (OK)
25	H	3												S	(11/29/2007) — REWORDED STEM (OK)
26	F	2	X			X								E?/S	I do not think all of the information provided in the stem is needed. It looks like the question is only asking ... What is the bases for not dumping steam, when in ....., if the affected SG NR level is greater than 93 percent..... Distractor A could be correct — (11/29/2007) (11/29/2007) REVISED STEM AND DISTRACTOR (OK)
27	F											X		U	K/A does not match. — (11/29/2007) WROTE NEW QUESTION (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	# units	Backward	Q=K/A	SRO Only		
28	H													S	(11/29/2007) (OK)
29	29												X	X	K/A does not match — (11/29/2007) REWROTE QUESTION (OK)
30														S	(11/29/2007) (OK)
31														S	(11/29/2007) (OK)
32														S	Questions stem could be worded better. — (11/29/2007) REWROTE STEM ; REVISED DISTRACTORS (OK)
33													X	U	K/A does not match — (11/29/2007) REPLACED QUESTION
34													X		K/A does not match — (11/29/2007) REPLACED QUESTION (OK)
35														U/E	As question is written it does not address K/A. Consider asking... Based on.... Distractor C is not plausible.....(11/29/2007) REWROTE QUESTION (OK)
36					X									U/E	Are there any auto start associated with these pumps. I do not see how distractors A and C are plausible. — (11/29/2007) WROTE NEW QUESTION (OK)
37														S	(11/29/2007) (OK)
38													?		Rewrite question to have question match K/A more accurately. — (11/29/2007) REWROTE QUESTION (OK)
39														S	(11/29/2007) <b>SIM TO SRO QUESTION – WILL MODIFY QUESTION</b>
40														S?	Is the TS statement needed. Consider adding containment pressure channel 3 failed high..... (11/29/2007) REVISED QUESTION (OK)
41														S	(11/29/2007) (OK)
42														S	(11/29/2007) (OK)
43					X									E	Distractor A could be correct. — (11/29/2007) <b>NEED TO WORK ON THIS QUESTION — LOOK AT DISTRACTORS</b>
44														S	(11/29/2007) (OK)
45														E	B is not plausible. Dis not plausible. (11/29/2007) (OK)
46														S	(11/29/2007) (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only			
47													X		U/E	Is a transformer considered a major load. — (11/29/2007) (MODIFIED) (OK)
48															S	(11/29/2007) (OK)
49													X		U	K/A does not match — (11/29/2007) REPLACED K/A (OK)
50															S	(11/29/2007) (OK)
51															S	(11/29/2007) (OK)
52															S	(11/29/2007) (OK)
53						X									E/S	Are there any valves in the system that would close on signals from either unit. Consider adding Phase A. (11/29/2007) — MODIFIED STEM (OK)
54													X?			Good question. However, please explain why you think it matches the K/A. (11/29/2007) — (OK)
55	F	3													S	(11/29/2007) (OK)
56	F	2													S	(11/29/2007) (OK)
57	F	2													S	(11/29/2007) MODIFIED DISTRACTORS (OK)
58	H														?	Is this an SRO question? — (11/29/2007) —REVISED QUESTION (OK)
59															S	(11/29/2007) (OK)
60	F	2													S	(11/29/2007) (OK)
61	F														S	(11/29/2007) (OK)
62		2	X													Stem is poorly written. — (11/29/2007) REVISED STEM (OK)
63															S	(11/29/2007) (OK)
64															S	Is this a area rad monitor or a process rad monitor? --- (11/29/2007) ALLOWED THIS QUESTION BECAUSE THEY DID NOT HAVE AN AREA RAD MONITOR. (OK)
65															S	(11/29/2007) (OK)
66															S	(11/29/2007) (OK)
67															U	Three correct answer <b>(11/29/2007) WILL PROVIDE NEW QUESTION</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
68	F													S	(11/29/2007) (OK)
69						X								E/S	Missing words in distractors A,B & C (11/29/2007) REWORDED DISTRACTORS (OK)
70	H													S	(11/29/2007) – REWORDED DISTRACTORS (OK)
71														S	(11/29/2007) (OK)
72						X								E/S	B & C are not plausible <b>(11/29/2007) (OK) WILL REWRITE QUESTION</b>
73														E/S	A & C are not plausible — (11/29/2007) (OK)..
74						X								E/S	B & D are not plausible (11/29/2007) REWORDED QUESTION (OK)
75														S	(11/29/2007) (11/29/2007) (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only			
<p>Instructions</p> <p>[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]</p> <p>1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.</p> <p>2. Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).</p> <p>3. Check the appropriate box if a psychometric flaw is identified:</p> <ul style="list-style-type: none"> <li>• The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).</li> <li>• The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).</li> <li>• The answer choices are a collection of unrelated true/false statements.</li> <li>• The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.</li> <li>• One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).</li> </ul> <p>4. Check the appropriate box if a job content error is identified:</p> <ul style="list-style-type: none"> <li>• The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).</li> <li>• The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).</li> <li>• The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).</li> <li>• The question requires reverse logic or application compared to the job requirements.</li> </ul> <p>5. Check questions that are <u>sampled</u> for conformance with the approved K/A and those that are <i>designated SRO-only</i> (K/A and license level mismatches are unacceptable).</p> <p>6. Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?</p> <p>7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).</p>																
1	F	1	X			X								X	U	Question not comprehension. Poorly written - LOD. Stem lacks sufficient information. The applicant is required to make too many assumptions. There are possibly three correct answers depending on what assumptions are made (A, B, & C). K/A is for APE the questions references EP. This is a Unit 2 question, however, no Unit 2 reference provided. Lesson plan not provided. Not an SRO level question. WILL LOOK AT REWRITING QUESTION — (11/28/2007) PROVIDED NEW QUESTION (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
277	F	1	X		X	X								X	U	Question not comprehension. This is a system question and not SRO only. I think the question can be answered without the first part of the stem. If VI is loss which one of the following describes a system effect and what should/could be done to resolve the issue?. Leaning towards T/F. Please define Auxiliary Shutdown Panel. Is it different from the Remote Shutdown Panel. It is my understanding that these panels are typically used when the control room is evacuated or loss of control occurs. I do not see the correlation between loss of VI and the need to go to the ASP. If this is true distractors B & D become implausible. Please explain why you consider the loss of S/G PORVs plausible. WILL REVISE B & D DISTRACTORS — (11/28/2007) SELECTED NEW K/A AND NEW QUESTION (OK)
378	H	2	X			X									U/E	This question appear to ask for the best answer. The stem lacks information. The initial conditions say that RTP is 100%. Based on the changes in plant parameters that were noticed by the operator, I would think that a change would be noted in RTP as well. Depending on the scenario, would it not be possible for S/G level to be controlled at program level for a short period of time. Based on the information provided, there could be more than one correct answer? REWORK THE DISTRACTORS — (11/28/2007) CHANGED DISTRACTORS (OK)
479	H	2													S	OK! Could be done in an admin JPM. REVISED QUESTION - (OK)
580	F	1													U	You only need to know what the VI pressure for tripping the reactor is 55 PSIG and decreasing to answer the question. Is this not something we expect the RO would be required to know? MADE CHANGES TO QUESTION — (OK)
681	F/H	1													U/E	Direct look up. No system knowledge is needed to answer this question. Based on the distractors, the applicant only need FWST level and containment pressure information in the stem. Once he/she identifies that only one NS pump is required 3 distractors are eliminated. WILL ADD INFORMATION IN STEM AND MODIFY DISTRACTORS (WILL REMOVE ONE COLUMN) — (11/28/2007) MADE CHANGES (OK)
782	H	1	X			X								X	U/E	Question appears to be an Admin JPM. LOD. Stem is poorly written. Both C and D are correct. Once and evaluation is performed and approval is granted by the VP, that says that the work can be done. What make this an SRO only question? WILL SELECT ANOTHER K/A AND QUESTION — (11/28/2007) WROTE A NEW QUESTION (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia #/ units	Back- ward	Q= K/A	SRO Only				

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
8 83	F?	1											X	U	Memory question. Action take to evaluate control room of all non-essential personnel and ..... is an immediate action once the alarm is received. Please provide list of conditions that would require evacuation of the control room. REWROTE QUESTION (OK)	
9 84	H				X	X								U	This appears to be a system question combined with???? T/F based on knowing separation requirements. Distractors A & B are not plausible. Why would anyone expect A & B train of a component to be fed/receive its signal from the same transmitter or source? Distractor C is not plausible. Why is there a need to refer to loss of letdown base on the information given in the stem. (WILL LOOK AT REWRITING THE DISTRACTORS) — (11/28/2007) SELECTED A NEW K/A PROVIDED A NEW QUESTION (OK)	
10 85	F	1/2				X								X	U	This is not an SRO only question. I think that in most cases the cooldown rate is established at 100 degrees per hour. RO s and SROs are required tp know this. I think the all operators would know that one would want to establish a cooldown rate as close to 100 degrees as possible. Is 70 not close to 100. What is max rate? Could one not say that max rate is not 99 or 100? LOD -- MADE CHANGES TO STEM AND DISTRACTORS (OK) (11/28/2007) (OK)
11 86	H	3													S	OK (WILL CHANGE DISTRACTORS AND REVISED STEM) (11/28/2007) (OK)
12 87	H	3													S	OK (K/A DOES NOT MATCH — WILL CHANGE QUESTION) (11/28/2007) (OK)
13 88	F?	1											X	X	U	Very LOD. This is a general knowledge question. applicable to any system (not necessarily associated with RPS. Every licensed operator know that the SRO/CRS must stay in a position of oversight. I know of no situation where the SRO would be required to step down and start operating controls. How can this be an SRO only question? (WILL REWRITE QUESTION). — (11/28/2007) CHANGED QUESTION (OK)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
1489	H	2		X		X							X	U	Anytime reactor power is greater than 100% I think the RO and the SRO know that you take actions to reduce power to 100% and below. I think that you may be able to argue that this questions has two acceptable answers. After closing the SM Byp, how long would it take for power to return to below to below 100%? When the RO notices that a component is out of position, is he/she going to take action to put it in the correct position? (REWROTE QUESTION – OK) (11/28/2007) MADE A CHANGE TO THE STEM (OK)
1590	F?		X			X								E	Consider rewriting the question to ask the applicant to Identify which condition would require an entry into an EP, the EP that would be entered and the classification that should be made. (REWROTE QUESTION) – OK (11/28/2007) (OK)
1691			X			X								E	Reword stem. Poorly written. Give a set of plant conditions. State what is lost. I do not think there is a need to say that the power supply to associated AC Panel .... Identify the power supply that is lost. Distractors need to be rewritten. REWRITE QUESTION – DISTRACTORS WILL IDENTIFY PROCEDURES AND WHAT ACTIONS SHOULD BE TAKEN TO MITIGATE PROBLEM – (11/28/2007) REWROTE QUESTION – (OK).
1792			X		X	X								E	As written this is a True/False question. Rewrite stem and distractors. I do not see where impact is described or predicted WILL REWRITE QUESTION - QUESTION WILL BE BASED ON ONLY PHASE A OR B. (11/28/2007) – REWROTE QUESTION (OK)
1893	F	1	X			X								E/S	Question is weak. WILL LOOK AT BASES AND CONSIDER ADDING NON -RO ITEM – CONSIDER REWRITING QUESTION --(11/28/2007) – (11/28/2007) REWROTE QUESTION (OK)
1994	C	1												U	Memory question. Per plant procedures, which procedure may be deviated form and what is required to deviate from the identified procedure? WILL REWRITE QUESTION – (11/28/2007) REWROTE QUESTION (OK) LICENSEE WANTS TO LOOK AT AGAIN **– (11/29/2007) WROTE A NEW QUESTION (OK)
2095													X	U/E	Please explain why this should be considered an SRO only question as written. Maybe the question can be rewritten to include a set of conditions – have the applicant identify the problem and what actions should be taken..... WILL WORK ON. – (11/28/2007) REWROTE QUESTION (OK)

