

**EXAMINATION OUTLINE SUBMITTAL AND NRC COMMENTS
FOR THE MONTICELLO INITIAL EXAMINATION - FEBRUARY 2007**

November 1, 2006

L-MT-06-067
10 CFR Part 55.40

Regional Administrator, Region III
US Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351
Attention: Nick Valos

Monticello Nuclear Generating Plant
Docket 50-263
License No. DPR-22

Examination Outlines For the Initial Licensing Examination to Be Conducted the Week of February 12, 2007

Reference 1: NUREG 1021, Operator Licensing Examination Standards for Power Reactors, Revision 9

In accordance with the requirements of 10 CFR 55.40(b) (4), a power reactor facility licensee must receive NRC approval of their proposed written examination and operating tests. Further, 10CFR55.40 (a) requires that examinations meet the requirements of Reference 1. Therefore, enclosed for your review are the proposed examination outlines for the initial license examinations for our operator license applicants.

In accordance with 10CFR 55.49, "Integrity of Examinations and Tests" and Reference 1, Section ES-201, Attachment 1, "Examination Security and Integrity Guidelines," the Nuclear Management Company, LLC requests that the enclosed materials be withheld from public disclosure until after the examinations are complete.

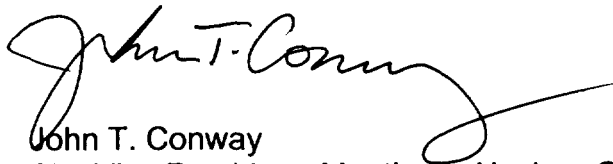
The proposed examination outlines were prepared per the guidelines of Reference 1, sections ES-301 and ES-401. Proposed outlines have been prepared to support development, by the NMC, of examinations for four (4) Reactor Operator (RO) license candidates, one (1) Senior Reactor Operator (SRO) – Upgrade license candidate and four (4) SRO - Instant license candidates.

Enclosed are the following specific items for your review.

Form ES-201-2, Examination Outline Quality Checklist
Form QF-1071-01, NMC Master Security Agreement
Form ES-301-1, Administrative Topics Outline RO

Form ES-301-1, Administrative Topics Outline SRO
Form ES-301-2, Control Room/In-Plant Systems Outline RO
Form ES-301-2, Control Room/In-Plant Systems Outline SRO - I
Form ES-301-2, Control Room/In-Plant Systems Outline SRO - U
Form ES-D-1, Scenario Outline (for scenarios 1, 2, and 3)
Form ES-301-5, Transient and Event Checklist (Crews 1, 2, and 3)
Form ES-401-1, BWR Examination Outline
Form ES-401-3, Generic Knowledge and Abilities Outline (Tier 3)
Form ES-401-4, Record of Rejected K/As Form
MNGP 2007 ILT NRC Written Exam Outline Random and Systematic Process /
Audit Exam Methodology

This letter makes no new commitments and no revisions to existing commitments.



John T. Conway
Site Vice President, Monticello Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosures

cc: Administrator, Region III, USNRC (w/o attachments)
Project Manager, Monticello, USNRC (w/o attachments)
Resident Inspector, Monticello, USNRC (w/o attachments)

Facility:		Date of Examination:		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	✓	AK	NU
	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.	✓	AK	NU
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	✓	AK	NU
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	✓	AK	NU
2. 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.	✓	AK	NU
	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.	✓	AK	NU
	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.	✓	AK	NU
3. 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.	✓	AK	NU
	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	✓	AK	NU
	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.	✓	AK	NU
4. 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.	✓	AK	NU
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	✓	AK	NU
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	✓	AK	NU
	d. Check for duplication and overlap among exam sections.	✓	AK	NU
	e. Check the entire exam for balance of coverage.	✓	AK	NU
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	✓	AK	NU

a. Author	<u>J. Rush</u>	Printed Name/Signature	<u>AK</u>	Date	<u>10/2/06</u>
b. Facility Reviewer (*)	<u>GERALD M. ALLEN</u>				<u>10/15/06</u>
c. NRC Chief Examiner (#)	<u>Nicholas A. Valos</u>				<u>01/19/07</u>
d. NRC Supervisor	<u>ALLEN, PETERSON</u>				

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

Facility: Monticello Nuclear Generating Plant Date of Examination: 2/12/07
 Exam Level: RO ☒ SRO ☐ Operating Test Number: MNGP-07

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, D	Bulk D/W Temperature Manual Calculation JPM-001 2.4.47 3.4
Conduct of Operations	S, N	Control Room Shift Turnover Checklist JPM-3139-001 2.1.3 3.0
Equipment Control	S, N	Daily Jet Pump Operability Check Test 0133 JPM-0133-001 2.2.12 3.0
Radiation Control	R, M	High Radiation Area Entry JPM-4 AWI-08.04.06-002 2.3.10 2.9
Emergency Plan		
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: Monticello Nuclear Generating Plant Date of Examination: 2/12/07
 Exam Level: RO ☐ SRO ☒ Operating Test Number: MNGP-07

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, D	Bulk DW Temperature Manual Calculation JPM-001 2.4.47 3.7
Conduct of Operations	S, N	Determine Shift Staffing JPM OWI-01.06-003 2.1.4 3.4
Equipment Control	S, N	Review Daily Jet Pump Operability Check Test 0133 2.2.12 3.4
Radiation Control	R, M	High Radiation Area Entry JPM-4 AWI-08.04.06-002 2.3.10 3.3
Emergency Plan	R, D	Protective Action Recommendation JPM-A-2-204-004 2.4.44 4.0
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: Monticello Nuclear Generating Plant

Date of Examination: 2/12/07

Exam Level: RO ☒ SRO-I ☐ SRO-U ☐

Operating Test No.: MNGP-07

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.	JPM-C.4-B.01.03.C-004, PERFORM THE REACTOR SCRAM FUNCTIONAL TEST 0010 / ROD DRIFT / SCRAM 201003.A2.03 3.4/3.7	N, A, S	1
b.	JPM-B.06.05.06-001, REACTOR FEED PUMPS COLD STARTUP 259001.A4.02 3.9/3.7	N, S, L	2
c.	JPM-B.03.03-002, PERFORM SRV OPERABILITY AND POSITION INDICATION CHECK IAW TEST 0112 239002.A4.01 4.4/4.4	D, A, S, L	3
d.	JPM-B.02.03-009, MANUAL INITIATION OF RCIC 217000.A4.04 3.6/3.6	N, A, S	4
e.	JPM-B.04.02-006, DRYWELL TO SUPPRESSION CHAMBER VACUUM BREAKER LEAKAGE OPERATIONAL CHECK 223001.A3.02 3.4/3.4	N, A, S	5
f.	JPM-B.09.08-001, MANUALLY START NO. 11 EDG (CONTROL ROOM ACTIONS) 264000.A4.04 3.7/3.7	P, S	6
g.	JPM-B.05.11-001, PERFORM THE SERVICE WATER EFFLUENT MONITOR FUNCTIONAL TEST 272000.A4.02 3.0/3.0	D, S	7
h.	JPM-B.04.02-002, RESTORE SBTG TO A NORMAL STANDBY LINEUP 261000.A3.01 3.3/3.2	D, S	9

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

i.	JPM-B.08.01.02-05-001, TRANSFER EDG COOLING FROM EDG-ESW TO SERVICE WATER 295018.AA1.01 3.3/3.4	D	8
j.	JPM-B.02.04-03, STARTUP OF AIR DRIVEN COMPRESSORS FOR MAIN AIR SUPPLY TO OUTBOARD MSIVS 239001.K1.12 2.5/2.6	N, R	4
k.	JPM-C.5-3101-002, DEPRESSURIZE THE SCRAM AIR HEADER LOCALLY PER C.5-3101, PART B 295037.EA1.03 4.1/4.1	D, R, E	1

[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Facility: Monticello Nuclear Generating Plant

Date of Examination: 2/12/07

Exam Level: RO ☐ SRO-I ☒ SRO-U ☐

Operating Test No.: MNGP-07

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. JPM-C.4-B.01.03.C-004, PERFORM THE REACTOR SCRAM FUNCTIONAL TEST 0010 / ROD DRIFT / SCRAM 201003.A2.03 3.4/3.7	N, A, S	1
b. JPM-B.03.03-002, PERFORM SRV OPERABILITY AND POSITION INDICATION CHECK IAW TEST 0112 239002.A4.01 4.4/4.4	D, A, S, L	3
c. JPM-B.02.03-009, MANUAL INITIATION OF RCIC 217000.A4.04 3.6/3.6	N, A, S	4
d. JPM-B.04.02-006, DRYWELL TO SUPPRESSION CHAMBER VACUUM BREAKER LEAKAGE OPERATIONAL CHECK 223001.A3.02 3.4/3.4	N, A, S	5
e. JPM-B.09.08-001, MANUALLY START NO. 11 EDG (CONTROL ROOM ACTIONS) 264000.A4.04 3.7/3.7	P, S	6
f. JPM-B.05.11-001, PERFORM THE SERVICE WATER EFFLUENT MONITOR FUNCTIONAL TEST 272000.A4.02 3.0/3.0	D, S	7
g. JPM-B.04.02-002, RESTORE SBTG TO A NORMAL STANDBY LINEUP 261000.A3.01 3.3/3.2	D, S	9
h.		

In-Plant Systems[@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U)

i. JPM-B.08.01.02-05-001, TRANSFER EDG COOLING FROM EDG-ESW TO SERVICE WATER 295018.AA1.01 3.3/3.4	D	8
j. JPM-B.02.04-03, STARTUP OF AIR DRIVEN COMPRESSORS FOR MAIN AIR SUPPLY TO OUTBOARD MSIVS 239001.K1.12 2.5/2.6	N, R	4
k. JPM-C.5-3101-002, DEPRESSURIZE THE SCRAM AIR HEADER LOCALLY PER C.5-3101, PART B 295037.EA1.03 4.1/4.1	D, R, E	1

[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Facility: Monticello Nuclear Generating Plant

Date of Examination: 2/12/07

Exam Level: RO ☐ SRO-I ☐ SRO-U ☒

Operating Test No.: MNGP-07

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.	JPM-C.4-B.01.03.C-004, PERFORM THE REACTOR SCRAM FUNCTIONAL TEST 0010 / ROD DRIFT / SCRAM 201003.A2.03 3.4/3.7	N, A, S	1
b.	JPM-B.03.03-002, PERFORM SRV OPERABILITY AND POSITION INDICATION CHECK IAW TEST 0112 239002.A4.01 4.4/4.4	D, A, S, L	3
c.	JPM-B.04.02-002, RESTORE SBTG TO A NORMAL STANDBY LINEUP 261000.A3.01 3.3/3.2	D, S	9
d.			
e.			
f.			
g.			
h.			

In-Plant Systems[@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U)

i.	JPM-B.09.08-008, No. 11 EDG OPERATION WITHOUT DIVISION 1 BATTERY 295004.AA1.02 3.8/4.1	D, E	6
j.	JPM-B.02.04-03, STARTUP OF AIR DRIVEN COMPRESSORS FOR MAIN AIR SUPPLY TO OUTBOARD MSIVS 239001.K1.12 2.5/2.6	N, R	4
k.			

[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*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: MNGP Scenario No.: NRC-01 Op-Test No.: MNGP-07

Examiners: _____ Operators: _____

Initial Conditions: 100% reactor power with RCIC inoperable due to planned maintenance on the trip/throttle valve. Test 0008 MAIN STEAM LINE ISOLATION VALVE CLOSURE SCRAM TEST is scheduled to be performed.

Turnover:
Perform Test 0008 MAIN STEAM LINE ISOLATION VALVE CLOSURE SCRAM TEST.

Event No.	Malf. No.	Event Type*	Event Description
1	MS06A	N (BOP) (SRO)	Perform Test 0008 MAIN STEAM LINE ISOLATION VALVE CLOSURE SCRAM TEST. The 'A' Outboard MSIV will fail to close when required by test resulting in an ITS LCO.
2	CH07B	I (RO)	CRD Flow Control Valve Fails Closed. The STBY FCV will be placed in service when High CRD Temperature annunciator alarms.
3	AP07	C (BOP) (SRO)	Inadvertent ADS timer actuation. ADS taken to inhibit. ITS LCO
4	TU03G TU03H	R (RO)	Main Turbine Vibrations, lower reactor power to lower / stabilize vibrations.
5	SW01A	C (BOP)	RBCCW system degradation. RBCCW Pump Trip. Standby pump fails to auto start.
6	FW20A	C (RO)	Loss of Air to 'A' Feed Reg. Valve. FRV Lockup and recovery.
7	RR01A	M (ALL) M (ALL) M (ALL) C (BOP)	Recirc line break inside primary containment. Scram. Unable to spray D/W. EOP 1100 entry (RPV Control). EOP 1200 entry (Primary Containment Control). EOP 2002 entry (Blowdown) Failure of 1 ADS SRV to open

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

Facility: MNGP Scenario No.: NRC-02 Op-Test No.: MNGP-07

Examiners: _____ Operators: _____

Initial Conditions: 89% reactor power. Test OSP-TRB-0570, EXERCISE MAIN TURBINE BYPASS VALVES, is scheduled to be completed.

Turnover:

Complete Test OSP-TRB-0570, EXERCISE MAIN TURBINE BYPASS VALVES and return to 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	TC06B	N (BOP) (SRO)	Complete Test OSP-TRB-0570, EXERCISE MAIN TURBINE BYPASS VALVES The #2 Turbine Bypass Valve will not open as required by the test resulting in an ITS LCO.
2	CH08A	C (RO)	11 CRD Pump trip. Start 12 CRD pump.
3	TC05A	I (BOP)	EPR Oscillations and placing the MPR in control.
4	RR02C PP06	I (RO) (SRO)	RPV press inst fails upscale, half scram fails to be initiated. ITS LCO.
5	RR07 RR08	R (RO) C (BOP) (SRO)	12 Recirc pump motor bearing temp and vibrations high and subsequent shutdown of pump. ITS LCO.
6	PP05A PP05C CH16	M (ALL)	Group 1 isolation, ATWS EOP-2007 (Failure to Scram) entry. All rods inserted, EOP-1100 (RPV Control) entry and RPV parameter recovery
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: MNGP Scenario No.: NRC-03 Op-Test No.: MNGP-07

Examiners: _____ Operators: _____

Initial Conditions: Reactor power is ~95% with APRM 2 inoperable.

Turnover:

Withdraw control rod 26-27 to position 08 and then perform Test 0255-03-IA-1-1, CORE SPRAY LOOP A QUARTERLY PUMP AND VALVE TESTS.

Event No.	Malf. No.	Event Type*	Event Description
1	CH02	C (RO)	Withdraw control rod with raised drive pressure.
2	N/A	N (BOP)	Perform Test 0255-03-IA-1-1, CORE SPRAY LOOP A QUARTERLY PUMP AND VALVE TESTS.
3	SL02A	(SRO)	SBLC Squib Valve Loss of Continuity ITS LCO
4	NI13D	I (RO)	APRM 4 Fails Upscale. Bypass APRM and reset half scram.
5	FW15B	C (BOP) R (RO)	12 RFP bearing high temperature, shutdown 12 RFP. Lower reactor power to support removal of 12 RFP.
6	HP01	I (BOP) (SRO)	HPCI inadvertent initiation and shutdown. HPCI will be inoperable. ITS LCO.
7	RU07	M (ALL)	RWCU Leak, un-isolable, EOP-1300 Entry, Scram Blowdown, EOP 2002 Entry.

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

Facility: MNGP				Date of Exam: 02/12/2007														
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A 2	G *	Total		
1. Emergency & Abnormal Plant Evolutions	1	3	4	3	N/A			3	3	N/A		4	20	4	3	7		
	2	1	1	1				2	1			1	7	2	1	3		
	Tier Totals	4	5	4				5	4			5	27	6	4	10		
2. Plant Systems	1	2	1	2	3	2	2	2	3	4	3	2	26	3	2	5		
	2	1	1	2	1	1	1	1	1	1	1	1	12	2	1	3		
	Tier Totals	3	2	4	4	3	3	3	4	5	4	3	38	5	3	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		2		2		3			1	2	2	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).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding 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 (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. Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO) SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						x	2.4.48 Ability to interpret control room indications to verify the status and operation of system/and understand how operator actions and directives affect plant and system conditions.	3.5	1
295003 Partial or Complete Loss of AC / 6	x						AK1.06 Station Blackout	3.8	1
295004 Partial or Total Loss of DC Pwr / 6		x					AK2.03 DC Bus Loads	3.3	1
295005 Main Turbine Generator Trip / 3			x				AK3.01 Reactor Scram	3.8	1
295006 SCRAM / 1				x			AA1.05 Neutron Monitoring System	4.2	1
295016 Control Room Abandonment / 7					x		AA2.06 Cooldown Rate	3.3	1
295018 Partial or Total Loss of CCW / 8						x	2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference materials.	3.4	1
295019 Partial or Total Loss of Inst. Air / 8		x					AK2.09 Containment	3.3	1
295021 Loss of Shutdown Cooling / 4		x					AK2.07 Reactor Recirculation	3.1	1
295023 Refueling Acc / 8			x				AK3.01 Refueling Floor Evacuation	3.6	1
295024 High Drywell Pressure / 5				x			EA1.07 PCIS / NSSSS	3.8	1
295025 High Reactor Pressure / 3					x		EA2.03 Suppression Pool Temperature	3.9	1
295026 Suppression Pool High Water Temp. / 5						x	2.1.11 Knowledge of less than 1 hour tech spec action statements for systems	3.0	1
295027 High Containment Temperature / 5							N/A MNGP	N/A	N/A
295028 High Drywell Temperature / 5	x						EK1.02 Equipment environmental qualification	2.9	1
295030 Low Suppression Pool Wtr Lvl / 5		x					EK2.08 SRV discharge submergents	3.5	1
295031 Reactor Low Water Level / 2			x				EK3.02 Reactor Scram	4.4	1
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	x			x			EK1.07 Shutdown margin EA1.03 ARI / RPT / ATWS	3.4 4.1	2
295038 High Off-site Release Rate / 9					x		EA2.03 Radiation levels	3.5	1
600000 Plant Fire On Site / 8						x	2.4.46 Ability to verify that the alarms are consistent with the plant conditions	3.5	1
K/A Category Totals:	3	4	3	3	3	4	Group Point Total:		20

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO <u>SRO</u>)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4										
295003 Partial or Complete Loss of AC / 6					x		AA2.02 Reactor power / pressure / and level	4.3	1	
295004 Partial or Total Loss of DC Pwr / 6										
295005 Main Turbine Generator Trip / 3										
295006 SCRAM / 1										
295016 Control Room Abandonment / 7						x	2.4.23 Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.8	1	
295018 Partial or Total Loss of CCW / 8										
295019 Partial or Total Loss of Inst. Air / 8						x	2.2.13 Knowledge of tagging and clearance procedures	3.8	1	
295021 Loss of Shutdown Cooling / 4										
295023 Refueling Acc / 8						x	AA2.05 Entry conditions of emergency plan	4.6	1	
295024 High Drywell Pressure / 5										
295025 High Reactor Pressure / 3					x		EA2.01 Reactor pressure	4.2	1	
295026 Suppression Pool High Water Temp. / 5					x		EA2.02 Suppression pool level	3.9	1	
295027 High Containment Temperature / 5							N/A MNGP	N/A	N/A	
295028 High Drywell Temperature / 5						x	2.1.19 Ability to use plant computer to obtain and evaluate parametric information on system or component status	3.0	1	
295030 Low Suppression Pool Wtr Lvl / 5										
295031 Reactor Low Water Level / 2										
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1										
295038 High Off-site Release Rate / 9										
600000 Plant Fire On Site / 8										
K/A Category Totals:	0	0	0	0	4	3	Group Point Total:		7	

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	
295002 Loss of Main Condenser Vac / 3				x			AA1.03 RPS	3.4	1	
295007 High Reactor Pressure / 3										
295008 High Reactor Water Level / 2					x		AA2.03 RWCU blowdown flow	2.9	1	
295009 Low Reactor Water Level / 2										
295010 High Drywell Pressure / 5										
295011 High Containment Temp / 5							N/A MNGP	N/A	N/A	
295012 High Drywell Temperature / 5						x	2.4.8 Knowledge of how the event based emergency / abnormal operating procedures are used in conjunction with the symptom based EOPs	3.0	1	
295013 High Suppression Pool Temp. / 5										
295014 Inadvertent Reactivity Addition / 1	x						AK1.05 Fuel thermal limits	3.7	1	
295015 Incomplete SCRAM / 1		x					AK2.08 Neutron monitoring system	3.6	1	
295017 High Off-site Release Rate / 9										
295020 Inadvertent Cont. Isolation / 5 & 7			x				AK3.05 Reactor water level response	3.8	1	
295022 Loss of CRD Pumps / 1										
295029 High Suppression Pool Wtr Lvl / 5										
295032 High Secondary Containment Area Temperature / 5										
295033 High Secondary Containment Area Radiation Levels / 9				x			EA1.04 SBTG / FRVS	4.2	1	
295034 Secondary Containment Ventilation High Radiation / 9										
295035 Secondary Containment High Differential Pressure / 5										
295036 Secondary Containment High Sump/Area Water Level / 5										
500000 High CTMT Hydrogen Conc. / 5										
K/A Category Point Totals:	1	1	1	2	1	1	Group Point Total:		7	

ES-401

BWR Examination Outline
Plant Systems - Tier 2/Group 1 (RO) SRO)

Form ES-401-1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode		x										K2.02 Valves	2.5	1
205000 Shutdown Cooling			x									K3.02 Reactor water level	3.2	1
206000 HPCI				x								K4.19 Auto xfer of HPCI pump suction	3.7	1
207000 Isolation (Emergency) Condenser												N/A MNGP	N/A	N/A
209001 LPCS					x							K5.01 Indications of pump cavitation	2.6	1
209002 HPCS												N/A MNGP	N/A	N/A
211000 SLC				x		x						K6.03 A C power	3.2	2
212000 RPS					x		x					K4.07 RWCU isolation	3.8	
												A1.09 Individual relay status	2.7	2
												K5.02 Specific logic arrangements	3.3	
215003 IRM								x				A2.04 Up scale or down scale trips	3.7	1
215004 Source Range Monitor									x			A3.03 RPS status	3.6	1
215005 APRM / LPRM								x		x		A4.03 APRM back panel switches, meters and indicating lights	3.2	2
												A2.07 Recirc flow channels flow mismatch	3.2	
217000 RCIC											x	2.1.24 Ability to obtain and interpret station electrical and mechanical drawings	2.8	1
218000 ADS	x											K1.02 Low pressure core spray	4.0	1
223002 PCIS/Nuclear Steam Supply Shutoff	x											K1.11 Containment atmosphere sampling	2.9	1
239002 SRVs			x									K3.03 Ability to rapidly depressurize the reactor	4.3	1
259002 Reactor Water Level Control				x								K4.10 Three element control	3.4	1
261000 SGTS							x			x		A4.07 System flow	3.1	2
												A1.07 SBT train temperature	2.8	
262001 AC Electrical Distribution						x						K6.01 D.C. power	3.1	1
262002 UPS (AC/DC)									x			A2.01 Under voltage	2.6	1
263000 DC Electrical Distribution								x	x			A2.01 Grounds	2.8	2
												A3.01 Meters, dials, recorders, alarms, and indicating lights	3.2	
264000 EDGs									x			A3.04 Operation of the governor control system on frequency and voltage control	3.1	1
300000 Instrument Air										x		A4.01 Pressure gauges	2.6	1
400000 Component Cooling Water											x	2.1.28 Knowledge of the purpose and function of major system components and controls	3.2	1
K/A Category Point Totals:	2	1	2	3	2	2	2	3	4	3	2	Group Point Total		26

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO/SRO)										Form ES-401-1		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic														
201002 RMCS			x									K3.01 Ability to move control rods	3.4	1
201003 Control Rod and Drive Mechanism				x								K4.05 Rod position indication	3.2	1
201004 RSCS												N/A MNGP		
201005 RCIS												N/A MNGP		
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control					x							K5.02 Feedback signals	2.6	1
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe							x					K6.04 APRM reference channel	2.8	1
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.								x				A1.02 Containment/drywell temperature	3.4	1
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup												A2.02 Loss of refueling platform air system	3.1	1
234000 Fuel Handling Equipment									x					
239001 Main and Reheat Steam														
239003 MSIV Leakage Control												N/A MNGP		
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.									x			A3.01 Turbine trip	3.6	1
256000 Reactor Condensate										x		A4.03 Hotwell level controls	3.2	1
259001 Reactor Feedwater											x	2.2.2 Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels	4.0	1
268000 Radwaste														
271000 Offgas														
272000 Radiation Monitoring	x											K1.09 Primary containment isolation system	3.6	1
286000 Fire Protection		x										K2.02 Pumps	2.9	1
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC				x								K3.04 Control room pressure	2.8	1
290002 Reactor Vessel Internals														
K/A Category Point Totals:	1	1	2	1	1	1	1	1	1	1	1	Group Point Total		12

ES-401

BWR Examination Outline
Plant Systems - Tier 2/Group 2 (RO **SRO**)

Form ES-401-1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic								x				A2.09 Loss of applicable plant air systems	3.1	1
201002 RMCS														
201003 Control Rod and Drive Mechanism														
201004 RSCS												N/A MNGP		
201005 RCIS												N/A MNGP		
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe								x				A2.08 Failure to retract to shield	2.9	1
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
239003 MSIV Leakage Control												N/A MNGP		
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate														
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas														
272000 Radiation Monitoring											x	2.2.11 Knowledge of the process for controlling temporary changes	3.4	1
286000 Fire Protection														
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals														
K/A Category Point Totals:	0	0	0	0	0	0	0	2	0	0	1	Group Point Total		3

Facility: MNGP		Date of Exam: 02/12/2007				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.20	Ability to execute procedure steps	4.3	1		
	2.1.32	Ability to explain and apply system limits and precautions	3.4	1		
	2.1.25	Ability to obtain and interpret station reference materials such as graphs / monographs / and tables which contain performance data	2.8	1		
	2.1.4	Knowledge of shift staffing requirements			3.4	1
		Subtotal		3		1
2. Equipment Control	2.2.27	Knowledge of the refueling process	2.6	1		
	2.2.22	Knowledge of limiting conditions for operations and safety limits	3.4	1		
	2.2.25	Knowledge of bases in tech specs for limiting conditions for operations and safety limits			3.7	1
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status			3.8	1
		Subtotal		2		2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized	2.5	1		
	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements	2.6	1		
	2.3.11	Ability to control radiation releases			3.2	1
	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements			3.0	1
		Subtotal		2		2
4. Emergency Procedures / Plan	2.4.2	Knowledge of system setpoints / interlocks and automatic actions associated with EOP entry conditions	3.9	1		
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications	3.8	1		
	2.4.16	Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0	1		
	2.4.14	Knowledge of general guidelines for EOP flowchart use			3.9	1
	2.4.44	Knowledge of emergency plan protective action recommendations			4.0	1
		Subtotal		3		2
Tier 3 Point Total				10		7

Facility: MNGP

Date of Exam: 2/12/07

Operating Test No:
MNGP-07

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 (*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
RO <input checked="" type="checkbox"/> 1	RX		4											1	1	1	0
SRO-I <input type="checkbox"/>	NOR						1							1	1	1	1
SRO-U <input type="checkbox"/>	I/C		2/6				3/5							4	4	4	2
	MAJ		7				6							2	2	2	1
	TS													0	0	2	2
RO <input checked="" type="checkbox"/> 2	RX					5								1	1	1	0
SRO-I <input type="checkbox"/>	NOR			1										1	1	1	1
SRO-U <input type="checkbox"/>	I/C			3,5,7		2/4								5	4	4	2
	MAJ			7		6								2	2	2	1
	TS													0	0	2	2
RO <input type="checkbox"/>	RX	4				5								2	1	1	0
SRO-I <input type="checkbox"/>	NOR	1				1								2	1	1	1
SRO-U <input type="checkbox"/>	I/C	2,3,5				2,3,4								9	4	4	2
SRO-U <input checked="" type="checkbox"/>	MAJ	7				6								2	2	2	1
	TS	1/3				1,4,5								5	0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

- 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.
- 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.
- 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: MNGP		Date of Exam: 2/12/07		Operating Test No: MNGP-07													
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(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
RO <input checked="" type="checkbox"/> 3	RX							5						1	1	1	0
SRO-I <input type="checkbox"/>	NOR			1			1							2	1	1	1
SRO-U <input type="checkbox"/>	I/C			3,5,7			3/5			1/4				7	4	4	2
	MAJ			7			6			7				3	2	2	1
	TS													0	0	2	2
RO <input type="checkbox"/>	RX	4				5		5						3	1	1	0
SRO-I <input checked="" type="checkbox"/> 1	NOR	1						2						2	1	1	1
SRO-U <input type="checkbox"/>	I/C	2,3,5,7				2/4		1,4,5,6						11	4	4	2
	MAJ	7				6		7						3	2	2	1
	TS	1/3						3/6						4	0	2	2
RO <input type="checkbox"/>	RX		4			5								2	1	1	0
SRO-I <input checked="" type="checkbox"/> 2	NOR					1				2				2	1	1	1
SRO-U <input type="checkbox"/>	I/C		2/6			3,5,4				5/6				8	4	4	2
	MAJ		7			6				7				3	2	2	1
	TS					1,4,5								3	0	2	2
RO <input type="checkbox"/>	RX													1	1	1	0
SRO-I <input type="checkbox"/>	NOR													1	1	1	1
SRO-U <input type="checkbox"/>	I/C													4	4	4	2
	MAJ													2	2	2	1
	TS													0	2	2	2

Instructions:

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Facility: MNGP

Date of Exam: 2/12/07

Operating Test No:
MNGP-07

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 (*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
RO <input checked="" type="checkbox"/> 4	RX							5					1	1	1	0	
SRO-I <input type="checkbox"/>	NOR			1			1						2	1	1	1	
SRO-U <input type="checkbox"/>	I/C			3,5,7			3/5			1/4			7	4	4	2	
	MAJ			7			6			7			3	2	2	1	
	TS												0	0	2	2	
RO <input type="checkbox"/>	RX	4				5		5					3	1	1	0	
SRO-I <input type="checkbox"/>	NOR	1						2					2	1	1	1	
SRO-U <input checked="" type="checkbox"/> 3	I/C	2,3,5,7				2/4		1,4,5,7					11	4	4	2	
	MAJ	7				6		7					3	2	2	1	
	TS	1/3						3/6					4	0	2	2	
RO <input type="checkbox"/>	RX		4			5							2	1	1	0	
SRO-I <input type="checkbox"/>	NOR					1				2			2	1	1	1	
SRO-U <input checked="" type="checkbox"/> 4	I/C		2/6			2,3,4,5				5/6			8	4	4	2	
	MAJ		7			6				7			3	2	2	1	
	TS					1,4,5							3	0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
SRO-U <input type="checkbox"/>	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	

Instructions:

- 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.
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MONTICELLO 2007 INITIAL LICENSE EXAM OPERATING OUTLINE COMMENTS

#	Source	Comment	Resolution
1.	Admin JPM-001	There is no K/A listed associated with Section 2.1 of the K/A catalog. Admin JPMs associated with Conduct of Operations are required to have a K/A from Section 2.1 of the K/A catalog. <u>NOTE:</u> This comment applies to both the RO and SRO outlines.	Comment incorporated. The K/A for the JPM was changed to 2.1.25.
2.	Control Room JPM-B.04.02-002	The Importance Ratings for the RO/SRO should be listed as 3.2/3.3 instead of 3.3/3.2. <u>NOTE:</u> This comment applies to the RO, SRO-I, and SRO-U outlines.	Comment incorporated.