

Ernest J. Harkness
Vice President440-280-5382
Fax: 440-280-8029December 8, 2014
L-14-396

10 CFR 55

ATTN: Mr. Raymond K. Walton
U. S. Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
NRC Initial License Examination Submittal

In accordance with NUREG-1021, ES-201, "Initial Operator Licensing Examination Process," enclosed are the proposed examinations, supporting documentation, and reference materials for the NRC initial license examination scheduled to be administered at the Perry Nuclear Power Plant starting February 2, 2014. The examination materials were developed in accordance with the guidelines specified in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1.

NUREG-1021 Forms ES-201-3, ES-301-1, ES-301-2, ES-301-3, ES-301-4, ES-301-5, ES-301-6, ES-401-1, ES-401-3, ES-401-4, ES-401-6, ES-D-1 and ES-D-2 are enclosed with the supporting documentation.

Form ES-301-6 has been completed based on the projected class size and license type at this time. The class size and makeup may change prior to the examination date.

The NRC initial license examination outlines were previously sent to you on October 10, 2014. A complete set of outline forms for both the Reactor Operator (RO) and Senior Reactor Operator (SRO) examinations are included in this submittal.

It is requested that the enclosed examination materials be withheld from public disclosure until after the initial license examinations are completed. None of the materials being sent are considered Safeguards information.

There are no regulatory commitments contained in this letter. If there are questions or if additional information is required, please contact Mr. Raymond Torres at (440) 280-5277.

RECEIVED DEC 10 2014 ~~RECEIVED DEC 01 2014~~ *ekw*

In accordance with 10 CFR 55.40(b)(3) and NUREG-1021, ES-201 part C.1.g, the following signatures are provided:

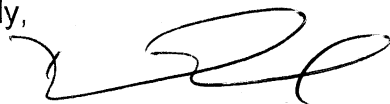


Raymond Torres
Nuclear Qualification Instructor



David W. O'Donnell
Authorized Facility Representative

Sincerely,



DAVID HARKNESS *for*

Ernest J. Harkness

Enclosures:

- A Operator License Examination with Technical References
- B Reference Material to be Provided to Candidates for Written Examination
- C Job Performance Measures Examination
- D Form ES-201-3, Examination Security Agreement
- E Form ES-301-1, Administrative Topics Outline (RO & SRO)
- F Form ES-301-2, Control Room/In-Plant Systems Outline (RO, SRO-I, SRO-U)
- G Form ES-301-3, Operating Test Quality Checklist
- H Form ES-301-4, Simulator Scenario Quality Checklist
- I Form ES-301-5, Transient and Event Checklist
- J Form ES-301-6, Competencies Checklist
- K Form ES-401-1, BWR Examination Outline
- L Form ES-401-3, Generic Knowledge and Abilities Outline-Tier 3
- M Form ES-401-4, Record of Rejected K/As
- N Form ES-401-6, Written Examination Quality Checklist
- O Form ES-D-1, Scenario Outlines
- P Form ES-D-2, Required Operator Actions

cc: NRC Document Control Desk w/o Enclosures
NRC Project Manager w/o Enclosures
NRC Region III Branch Chief w/o Enclosures
NRC Resident Inspector w/o Enclosures

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/2/15 & 2/9/15 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of _____. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	<u>LT TORRES</u>	<u>EXAM TEAM LEAD / EXAM AUTHOR</u>	<u>[Signature]</u>	<u>3/7/14</u>			
2.	<u>Rich Brooks</u>	<u>Fleet Exam Lead</u>	<u>[Signature]</u>	<u>3/25/14</u>			
3.	<u>Tom Gamosik</u>	<u>Fleet Exam Team</u>	<u>[Signature]</u>	<u>3/25/14</u>			
4.	<u>Michael Gagnon</u>	<u>Procedure Writer</u>	<u>[Signature]</u>	<u>5/13/14</u>			
5.	<u>Stephen J. Koster</u>	<u>Technical Reviewer</u>	<u>[Signature]</u>	<u>6/13/14</u>			
6.	<u>Cynthia L. Miklasic</u>	<u>Simulator Software Eng.</u>	<u>[Signature]</u>	<u>6/13/14</u>			
7.	<u>GARY RHODS</u>	<u>Fleet Exam Team</u>	<u>[Signature]</u>	<u>6/24/14</u>			
8.	<u>DALE RICHMOND</u>	<u>Simulator Lead</u>	<u>[Signature]</u>	<u>7/1/14</u>			
9.	<u>David W. O'Donnell</u>	<u>Facility Rev</u>	<u>[Signature]</u>	<u>7/18/14</u>			
10.	<u>Scott L. Davis</u>	<u>Fleet Exam Team</u>	<u>[Signature]</u>	<u>8-4-14</u>			
11.	<u>Michael Doty</u>	<u>Shift Manager / Validation</u>	<u>[Signature]</u>	<u>8/4/14</u>			
12.	<u>ANTHONY WESSON</u>	<u>REACTOR OPERATOR / VALIDATION</u>	<u>[Signature]</u>	<u>8/4/14</u>			
13.	<u>James R. Cross</u>	<u>REACTOR OPERATOR / Validation</u>	<u>[Signature]</u>	<u>8/4/14</u>			
14.	<u>DOUG SHORTER</u>	<u>Shift Manager</u>	<u>[Signature]</u>	<u>8/4/14</u>			
15.	<u>James A. Gerber</u>	<u>Sim Support</u>	<u>[Signature]</u>	<u>8/7/14</u>			

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/2/15 & 2/9/15 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

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To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of _____. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Richard J. O'Connor	Shift Manager / NRO Supervisor	<i>[Signature]</i>	8/18/14			
2.	Shaun Kozlowski	Reactor Operator	<i>[Signature]</i>	8-18-14			
3.	Adam Vaughn	SRO / Shift Engineer	<i>[Signature]</i>	8-18-14			
4.	Darin Smith	SRO	<i>[Signature]</i>	8-18-14			
5.	BUD CONNOLLY	COMPUTER ENGINEER	<i>[Signature]</i>	8/21/14			
6.	DAVID WENIGER	SRO	<i>[Signature]</i>	10/13/14			
7.	Ralph Chaulkitt	P.O.	<i>[Signature]</i>	10/13/14			
8.	Michael Brockman	RD	<i>[Signature]</i>	10-13-14			
9.	David Dusing	SRO	<i>[Signature]</i>	10/13/14			
10.							
11.							
12.							
13.							
14.							
15.							

NOTES:

Facility: PerryDate of Examination: Feb 2015Examination Level: ROOperating Test Number: 01

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations OT-3701-ADM_001_RO	R/S, N	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Importance RO 4.4 / SRO 4.7 Determine required actions for placing 1E31-N700A A2-3 in trip
Conduct of Operations OT-3701-ADM_028_RO	R/S, N	2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc. Importance: RO 3.3 / SRO 3.8 Evaluate shift schedule for proficiency watches.
Equipment Control OT-3701-ADM_006_RO	R/S, D	2.2.12 Knowledge of surveillance procedures. Importance: RO 3.7 / SRO 4.1 Perform SVI-R10-T5227
Radiation Control OT-3701-ADM_002_RO	R/S, N	2.3.12 Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. Importance: RO 3.2 / SRO 3.7 Assign NLO to perform valve manipulation.

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: PerryDate of Examination: Feb 2015Examination Level: SROOperating Test Number: 01

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations OT-3701-ADM_028SRO	R/S, N	2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc Importance SRO 3.8 Evaluate schedule to maintain license active.
Conduct of Operations OT-3701-ADM_025SRO	R/S, D	2.1.35 Knowledge of the fuel-handling responsibilities of SROs. Importance: SRO 3.9 Verify proper placement of in-core components during Refuel Ops
Equipment Control OT-3701-ADM_006SRO	R/S, N	2.2.12 Knowledge of surveillance procedures. Importance: SRO 4.1 Perform SVI-R10-T5227
Radiation Control OT-3701-ADM_029SRO	S, N	2.3.6 Ability to approve release permits. Importance: SRO 3.8 Approve Liquid Radwaste Discharge.
Emergency Plan OT-3701-ADM_308SRO	R/S, D	2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. SRO 4.4 Classify event and complete E-plan forms.

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: PerryDate of Examination: Feb. 2015Examination Level: ROOperating Test Number: 01Control 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. OT-3701-B33_502 Raise power with flow	D, S, A	1
b. OT-3701-G33_001 Lower RPV level with blowdown to condenser	N, S, L	2
c. OT-3701-B21_008 Slow close MSIV	D, S	3
d. OT-3701-E12_002 Loss of DHR recovery	M, S, L, E	4
e. OT-3701-B21_507 Perform NS4 Inboard isolation	D, S, A, L, EN	5
f. OT-3701-R10_001 Shift house loads	N, S	6
g. OT-3701-C51_501 Withdraw SRMs	D, A, S, L	7
h. OT-3701-M15_501 Shift AEGT Ventilation trains	N, S, A, EN	9

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

i. OT-3701-R14_501 Energize B ATWS inverter	N, A	6
j. OT-3701-C11_007 EOP-SPI 4.1 field actions	D, R, E	2
k. OT-3701-P54_505 Manually initiate Div 1 DG CO2	N, A, E	8

[@] 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
(EN)gineered safety feature	- / - / ≥ 1(control room system)
(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: PerryDate of Examination: Feb. 2015Examination Level: SRO-IOperating Test Number: 01Control 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. OT-3701-B33_502 Raise power with flow	D, S, A	1
b. OT-3701-G33_001 Lower RPV level with blowdown to condenser	N, S, L	2
c. OT-3701-B21_008 Slow close MSIV	D, S	3
d.		
e. OT-3701-B21_507 Perform NS4 Inboard isolation	D, S, A, L, EN	5
f. OT-3701-R10_001 Shift house loads	N, S	6
g. OT-3701-C51_501 Withdraw SRMs	D, A, S, L	7
h. OT-3701-M15_501 Shift AEGT Ventilation trains	N, S, A, EN	9

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

i. OT-3701-R14_501 Energize B ATWS inverter	N, A	6
j. OT-3701-C11_007 EOP-SPI 4.1 field actions	D, R, E	2
k. OT-3701-P54_505 Manually initiate Div 1 DG CO2	N, A, E	8

[@] 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
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(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: PerryDate of Examination: Feb. 2015Examination Level: SRO-UOperating Test Number: 01Control 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. OT-3701-B33_502 Raise power with flow	D, S, A	1
b.		
c.		
d.		
e.		
f.		
g. OT-3701-C51_501 Withdraw SRMs	D, A, S, L	7
h. OT-3701-M15_501 Shift AEGT Ventilation trains	N, S, A, EN	9

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

i.		
j. OT-3701-C11_007 EOP-SPI 4.1 field actions	D, R, E	2
k. OT-3701-P54_505 Manually initiate Div 1 DG CO2	N, A, E	8

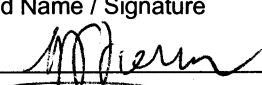



[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* 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
(EN)gineered safety feature	- / - / ≥ 1(control room system)
(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	-----

Justification for revisions to JPM outlines

1. ES-301-2 (RO) – Changed 'g' from "B, A, S, L" to "D, A, S, L" (typo).
2. ES-301-2 (I) – Initially sent wrong form. Resent correct form several days later.
3. ES-301-2 (U) – Initially sent wrong form. Resent correct form several days later.

Facility: **Perry**Date of Examination: **Feb 2015**Operating Test Number: **2015-01**

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).	MT	QD	RW
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	MT	QD	RW
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	MT	QD	RW
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	MT	QD	RW
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	MT	QD	RW
2. Walk-Through Criteria		--	--	--
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> initial conditions initiating cues references and tools, including associated procedures reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee operationally important specific performance criteria that include: <ul style="list-style-type: none"> detailed expected actions with exact criteria and nomenclature system response and other examiner cues statements describing important observations to be made by the applicant criteria for successful completion of the task identification of critical steps and their associated performance standards restrictions on the sequence of steps, if applicable 	MT	QD	RW
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.	MT	QD	RW
3. Simulator Criteria		--	--	--
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.		MT	QD	RW
Printed Name / Signature		Date		
a. Author	Ray Torres 	12/05/14		
b. Facility Reviewer(*)	Dave O'Donnell 	12-5-14		
c. NRC Chief Examiner (#)	RAYMOND KERRY WHEATON 	1/26/2015		
d. NRC Supervisor	Kironori Peters 	1/28/15		
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.				

Facility: **Perry**Date of Exam: **Feb. 2015**Scenario Numbers: **1 / 2 / 3 / 4**Operating Test No.: **2015-01**

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.	<i>mm</i>	<i>QD</i>	RW
2.	The scenarios consist mostly of related events.	<i>mm</i>	<i>QD</i>	RW
3.	Each event description consists of <ul style="list-style-type: none"> the point in the scenario when it is to be initiated the malfunction(s) that are entered to initiate the event the symptoms/cues that will be visible to the crew the expected operator actions (by shift position) the event termination point (if applicable) 	<i>mm</i>	<i>QD</i>	RW
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.	<i>mm</i>	<i>QD</i>	RW
5.	The events are valid with regard to physics and thermodynamics.	<i>mm</i>	<i>QD</i>	RW
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	<i>mm</i>	<i>QD</i>	RW
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.	N/A <i>mm</i>	N/A <i>QD</i>	N/A RW
8.	The simulator modeling is not altered.	<i>mm</i>	<i>QD</i>	RW
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.	<i>mm</i>	<i>QD</i>	RW
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.	All new <i>mm</i>	<i>QD</i>	RW
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	<i>mm</i>	<i>QD</i>	RW
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).	<i>mm</i>	<i>QD</i>	RW
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	<i>mm</i>	<i>QD</i>	RW
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		Actual Attributes		
1.	Total malfunctions (5-8)	5 / 6 / 6 / 6		
2.	Malfunctions after EOP entry (1-2)	2 / 3 / 3 / 1		
3.	Abnormal events (2-4)	4 / 3 / 4 / 6		
4.	Major transients (1-2)	2 / 1 / 2 / 2		
5.	EOPs entered/requiring substantive actions (1-2)	2 / 1 / 1 / 2		
6.	EOP contingencies requiring substantive actions (0-2)	1 / 2 / 1 / 1		
7.	Critical tasks (2-3)	7 / 5 / 3 / 2		

Crew-1

Facility: PERRY		Date of Exam: Feb 2015									Operating Test No.: 2015-01							
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			x							
		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					
															R	I	U	
SRO-I-1 <input checked="" type="checkbox"/>	RX	3						2							2	1	1	0
	NOR	1					1								2	1	1	1
	I/C	3,4,5, 8,9					4,6,7, 8		6,7						11	4	4	2
	MAJ	7,10					6		6,9						5	2	2	1
	TS	2,3													2	0	2	2
SRO-I-2 <input checked="" type="checkbox"/>	RX		3		2										2	1	1	0
	NOR				1					1					2	1	1	1
	I/C		4,8		3,4,5, 6,7,8					3,4,8, 10					12	4	4	2
	MAJ		7,10		6					6,9					5	2	2	1
	TS				3,4										2	0	2	2
SRO-I-3 <input checked="" type="checkbox"/>	Rx					2		2							2	1	1	0
	NOR			1				1							2	1	1	1
	I/C			3,4,5, 9		3,5		3,4,6, 7,8,10							12	4	4	2
	MAJ			7,10		6		6,9							5	2	2	1
	TS							4,5							2	0	2	2
	Rx																	
	NOR																	
	I/C																	
	MAJ																	
	TS																	

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 serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for 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.

Crew-2

Facility: PERRY		Date of Exam: Feb 2015									Operating Test No.: 2015-01						
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			x						
		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		R	I	U
SRO-I-4 <input checked="" type="checkbox"/>	RX	3						2					2	1	1	0	
	NOR	1					1						2	1	1	1	
	I/C	3,4,5, 8,9					4,6,7, 8		6,7				11	4	4	2	
	MAJ	7,10					6		6,9				5	2	2	1	
	TS	2,3											2	0	2	2	
SRO-I-5 <input checked="" type="checkbox"/>	RX		3		2								2	1	1	0	
	NOR				1				1				2	1	1	1	
	I/C		4,8		3,4,5, 6,7,8				3,4,8, 10				12	4	4	2	
	MAJ		7,10		6				6,9				5	2	2	1	
	TS				3,4								2	0	2	2	
SRO-I-6 <input checked="" type="checkbox"/>	Rx				2		2						2	1	1	0	
	NOR			1			1						2	1	1	1	
	I/C			3,4,5, 9		3,5		3,4,6, 7,8,10					12	4	4	2	
	MAJ			7,10		6		6,9					5	2	2	1	
	TS						4,5						2	0	2	2	
	Rx																
	NOR																
	I/C																
	MAJ																
	TS																

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 serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for 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.

Crew-3

Facility: PERRY		Date of Exam: Feb 2015									Operating Test No.: 2015-01						
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			4			x						
		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		R	I	U
SRO-I-7 <input checked="" type="checkbox"/>	RX	3				2		6						3	1	1	0
	NOR	1												1	1	1	1
	I/C	3,4,5, 8,9				3,5		2,4,5, 7,11						12	4	4	2
	MAJ	7,10				6		9,10						5	2	2	1
	TS	2,3						3,8						4	0	2	2
SRO-I-8 <input checked="" type="checkbox"/>	RX		3			2								2	1	1	0
	NOR					1								1	1	1	1
	I/C		4,8			3,4,5, 6,7,8				2,7				10	4	4	2
	MAJ		7,10			6				9,10				5	2	2	1
	TS					3,4								2	0	2	2
RO-1 <input checked="" type="checkbox"/>	Rx							6						1	1	1	0
	NOR			1			1							2	1	1	1
	I/C			3,4,5, 9			4,6,7, 8		4,5, 11					11	4	4	2
	MAJ			7,10			6		9,10					5	2	2	1
	TS													0	0	2	2
	Rx																
	NOR																
	I/C																
	MAJ																
	TS																

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 serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for 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.

Crew-4

Facility: PERRY		Date of Exam: Feb 2015									Operating Test No.: 2015-01							
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			3			4			x							
		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					
															R	I	U	
SRO-I-9 <input checked="" type="checkbox"/>	RX	3				2		6							3	1	1	0
	NOR	1													1	1	1	1
	I/C	3,4,5, 8,9				6,7		2,4,5, 7,11							12	4	4	2
	MAJ	7,10				6,9		9,10							6	2	2	1
	TS	2,3						3,8							4	0	2	2
SRO-I-10 <input checked="" type="checkbox"/>	RX		3		2										2	1	1	0
	NOR				1										1	1	1	1
	I/C		4,8		3,4,6,7 8,10					2,7					10	4	4	2
	MAJ		7,10		6,9					9,10					6	2	2	1
	TS				4,5										2	0	2	2
RO-2 <input checked="" type="checkbox"/>	Rx							6							1	1	1	0
	NOR			1			1								2	1	1	1
	I/C			3,4,5, 9		3,4,8, 10		4,5, 11							11	4	4	2
	MAJ			7,10		6,9		9,10							6	2	2	1
	TS														0	0	2	2
	Rx																	
	NOR																	
	I/C																	
	MAJ																	
	TS																	

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 serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for 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.

Crew-5

Facility: PERRY		Date of Exam: Feb 2015									Operating Test No.: 2015-01						
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 (*)		
		2			3			x			x						
		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		R	I	U
SRO-U-1 <input checked="" type="checkbox"/>	RX	2			2									2	1	1	0
	NOR	1			1									2	1	1	1
	I/C	3,4,5, 6,7,8			3,4,6, 7,8,10									12	4	4	2
	MAJ	6			6,9									3	2	2	1
	TS	3,4			4,5									4	0	2	2
RO-3 <input checked="" type="checkbox"/>	RX					2								1	1	1	0
	NOR			1										1	1	1	1
	I/C			4,6,7, 8		6,7								6	4	4	2
	MAJ			6		6,9								3	2	2	1
	TS													0	0	2	2
RO-4 <input checked="" type="checkbox"/>	Rx		2											1	1	1	0
	NOR						1							1	1	1	1
	I/C		3,5				3,4,8, 10							6	4	4	2
	MAJ		6			6,9								3	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 serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for 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: Perry		Date of Examination: Feb. 2015		Operating Test No.: 2015-01												
Competencies	APPLICANTS															
	SRO-I <input checked="" type="checkbox"/>				ATC <input checked="" type="checkbox"/>				BOP <input checked="" type="checkbox"/>				SRO-U <input checked="" type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnosis Events and Conditions	2,3 4,5 6,8 9	3,4 5,6 7,8	3,4 5,6 7,8 9 10	2,3 4,5 6,7 8,9 10,11	2,3 4,6 8	2,3 5,6 7	2,6 7,8	4,5 6,8 9,10,11	2,3 5,6 7,8 9	4,6 7,8	3,4 5,8 9 10	2,3 5,6 7,9 10	NA	3,4 5,6 7,8	3,4 5,6 7,8 9 10	NA
Comply With and Use Procedures (1)	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8 9,10,11	2,3 4,6 8	2,3 5,6 7	2,4 6,7 8	4,5 6,8 9,10,11	1,2 3,5 6,8 9	1,2 3,4 6,7 8	1,2 3,4 7,8 9 10	1,2 5,6 7,8 9,10,11	NA	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	NA
Operate Control Boards (2)	NA	NA	NA	NA	3,4 6,8	2,3 5,6 7	2,6 7,9	4,5 6,10,11	1,3 5,6 8,9	1,4 5,6 7,8	1,3 4,7 8,9 10	1,2 5,7 9,11	NA	NA	NA	NA
Communicate and Interact	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8 9,10,11	2,3 4,6 8	2,3 5,6 7	1,2 3,4 5,6 7,8 9,10	1,4 5,6 8,9 10,11	1,2 3,4 5,6 7,8 9,10	1,2 3,4 6,7 8	1,2 3,4 5,6 7,8 9,10	1,2 3,5 6,7 8,9 10,11	NA	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	NA
Demonstrate Supervisory Ability (3)	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	1,2 3,4 5,6 7,8 9,10,11	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2 3,4 5,6 7,8	1,2 3,4 5,6 7,8 9,10	NA
Comply With and Use Tech. Specs. (3)	2,3	3,4	4,5	3,8	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,4	4,5	NA

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Instructions:

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

Facility: Perry		Date of Exam: Feb. 2015																
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1	3	4	3	N/A			3	3	N/A			4	20	4	3	7	
	2	2	1	1				1	1				1	7	2	1	3	
	Tier Totals	5	5	4				4	4				5	27	6	4	10	
2. Plant Systems	1	2	1	2	2	1	3	4	3	3	2	3	26	3	2	5		
	2	1	1	1	1	1	2	1	1	1	1	1	12	1	2	3		
	Tier Totals	3	2	3	3	2	5	5	4	4	3	4	38	4	4	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		3		2		2			2	2	1	2	

Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).

2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.

3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding 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; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.

9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 RO						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	2.4.11 Knowledge of abnormal condition procedures.	4.0	1
295003 Partial or Complete Loss of AC / 6	X						AK1.06 Knowledge of the operational implications of the following concepts as they apply to Partial Or Complete Loss Of A.C. Power: Station blackout: Plant-Specific	3.8	1
295004 Partial or Total Loss of DC Pwr / 6		X					AK2.01 Knowledge of the interrelations between Partial Or Complete Loss Of D.C. Power and the following: Battery charger	3.1	1
295005 Main Turbine Generator Trip / 3			X				AK3.03 Knowledge of the reasons for the following responses as they apply to Main Turbine Generator Trip: Feedwater temperature decrease	2.8	1
295006 SCRAM / 1				X			AA1.04 Ability to operate and/or monitor the following as they apply to Scram: Recirculation system	3.1	1
295016 Control Room Abandonment / 7					X		AA2.06 Ability to determine and/or interpret the following as they apply to Control Room Abandonment: 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 material.	4.2	1
295019 Partial or Total Loss of Inst. Air / 8		X					AK2.19 Knowledge of the interrelations between Partial Or Complete Loss Of Instrument Air and the following: RHR/LPCI: Plant-Specific	2.7	1
295021 Loss of Shutdown Cooling / 4			X				AK3.02 Knowledge of the reasons for the following responses as they apply to Loss Of Shutdown Cooling: Feeding and bleeding reactor vessel	3.3	1
295023 Refueling Acc / 8				X			AA1.08 Ability to operate and/or monitor the following as they apply to Refueling Accidents: †Containment building ventilation: Mark-III	3.3	1
295024 High Drywell Pressure / 5					X		EA2.07 Ability to determine and/or interpret the following as they apply to High Drywell Pressure: Containment radiation levels: Mark-III	3.4	1
295025 High Reactor Pressure / 3						X	2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	1
295026 Suppression Pool High Water Temp. / 5	X						EK1.02 Knowledge of the operational implications of the following concepts as they apply to Suppression Pool High Water Temperature: Steam condensation	3.5	1
295027 High Containment Temperature / 5		X					EK2.04 Knowledge of the interrelations between High Containment Temperature (Mark III Containment Only) and the following: SPDS/ERIS/CRIDS/GDS	2.6	1
295028 High Drywell Temperature / 5						X	2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1	1
295030 Low Suppression Pool Wtr Lvl / 5	X						EK1.03 Knowledge of the operational implications of the following concepts as they apply to Low Suppression Pool Water Level: Heat capacity	3.8	1
295031 Reactor Low Water Level / 2		X					EK2.14 Knowledge of the interrelations between Reactor Low Water Level and the following: Emergency generators	3.9	1
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1									

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 RO							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	#	
295038 High Off-site Release Rate / 9			X				EK3.02 Knowledge of the reasons for the following responses as they apply to High Off-Site Release Rate: System isolations	3.9	1	
600000 Plant Fire On Site / 8				X			AA1.05 Ability to operate and / or monitor the following as they apply to Plant Fire On Site: Plant and control room ventilation systems	3.0	1	
700000 Generator Voltage and Electric Grid Disturbances / 6					X		AA2.01 Ability to determine and/or interpret the following as they apply to Generator Voltage And Electric Grid Disturbances: Operating point on the generator capability curve	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 2 RO							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						AK1.03 Knowledge of the operational implications of the following concepts as they apply to Loss Of Main Condenser Vacuum: Loss of heat sink	3.6	1	
295007 High Reactor Pressure / 3										
295008 High Reactor Water Level / 2		X					AK2.08 Knowledge of the interrelations between High Reactor Water Level and the following: Main turbine: Plant-Specific	3.4	1	
295009 Low Reactor Water Level / 2										
295010 High Drywell Pressure / 5										
295011 High Containment Temp / 5			X				AK3.01 Knowledge of the reasons for the following responses as they apply to High Containment Temperature (Mark III Containment Only): Increased containment cooling	3.6	1	
295012 High Drywell Temperature / 5										
295013 High Suppression Pool Temp. / 5										
295014 Inadvertent Reactivity Addition / 1										
295015 Incomplete SCRAM / 1				X			AA1.07 Ability to operate and/or monitor the following as they apply to Incomplete Scram: Neutron monitoring system	3.6	1	
295017 High Off-site Release Rate / 9					X		AA2.04 Ability to determine and/or interpret the following as they apply to High Off-Site Release Rate: †Source of off-site release	3.6	1	
295020 Inadvertent Cont. Isolation / 5 & 7										
295022 Loss of CRD Pumps / 1						X	2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.0	1	
295029 High Suppression Pool Wtr Lvl / 5										
295032 High Secondary Containment Area Temperature / 5										
295033 High Secondary Containment Area Radiation Levels / 9										
295034 Secondary Containment Ventilation High Radiation / 9	X						EK1.02 Knowledge of the operational implications of the following concepts as they apply to Secondary Containment Ventilation High Radiation: †Radiation releases	4.1	1	
295035 Secondary Containment High Differential Pressure / 5							Not Applicable to Perry			
295036 Secondary Containment High Sump/Area Water Level / 5										
500000 High CTMT Hydrogen Conc. / 5										
K/A Category Point Totals:	2	1	1	1	1	1	Group Point Total:		7	

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 RO											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					A1.05 Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: Injection Mode (Plant Specific) controls including: Suppression pool level	3.8	1
205000 Shutdown Cooling								X				A2.06 Ability to (a) predict the impacts of the following on the Shutdown Cooling System (RHR Shutdown Cooling Mode); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: SDC/RHR pump trips K5.02 Knowledge of the operational implications of the following concepts as they apply to Shutdown Cooling System (RHR Shutdown Cooling Mode): Valve operation	3.4 2.8	2
206000 HPCI												Not Applicable to Perry		
207000 Isolation (Emergency) Condenser												Not Applicable to Perry		
209001 LPCS							X					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the Low Pressure Core Spray System controls including: Core spray flow K6.05 Knowledge of the effect that a loss or malfunction of the following will have on the Low Pressure Core Spray System: ECCS room cooler(s)	3.4 2.8	2
209002 HPCS								X				A2.10 Ability to (a) predict the impacts of the following on the High Pressure Core Spray System (HPCS); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve openings; BWR-5,6	2.7	1
211000 SLC									X			A3.07 Ability to monitor automatic operations of the Standby Liquid Control System including: Lights and alarms: Plant-Specific	3.7	1
212000 RPS										X		A4.09 Ability to manually operate and/or monitor in the control room: Scram instrument volume level	3.9	1
215003 IRM											X	2.2.39 Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	1
215004 Source Range Monitor	X											K1.03 Knowledge of the physical connections and/or cause-effect relationships between Source Range Monitor (Srm) System and the following: Rod control and information system: Plant-Specific	3.0	1
215005 APRM / LPRM / OPRM		X										K2.02 Knowledge of electrical power supplies to the following: APRM channels	2.6	1
217000 RCIC			X									K3.01 Knowledge of the effect that a loss or malfunction of the Reactor Core Isolation Cooling System (RCIC) will have on following: Reactor water level A1.01 Ability to predict and/or monitor changes in parameters associated with operating the Reactor Core Isolation Cooling System (RCIC) controls including: RCIC flow	3.7 3.7	2

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 RO												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	#	
218000 ADS				X								K4.01 Knowledge of Automatic Depressurization System design feature(s) and/or interlocks which provide for the following: Prevent inadvertent initiation of ADS logic	3.7	1	
223002 PCIS/Nuclear Steam Supply Shutoff						X						K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off: Nuclear boiler instrumentation	3.3	1	
239002 SRVs							X					A1.06 Ability to predict and/or monitor changes in parameters associated with operating the Relief/Safety Valves controls including: Reactor power	3.7	1	
259002 Reactor Water Level Control								X				A2.03 Ability to (a) predict the impacts of the following on the Reactor Water Level Control System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of reactor water level input A3.05 Ability to monitor automatic operations of the Reactor Water Level Control System including: Changes in reactor power	3.6 3.4	2	
261000 SGTS									X			A3.03 Ability to monitor automatic operations of the Standby Gas Treatment System including: Valve operation	3.0	1	
262001 AC Electrical Distribution										X		A4.02 Ability to manually operate and/or monitor in the control room: Synchroscope, including understanding of running and incoming voltages 2.4.9 Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	3.4 3.8	2	
262002 UPS (AC/DC)											X	2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.5	1	
263000 DC Electrical Distribution	X											K1.02 Knowledge of the physical connections and/or cause- effect relationships between D.C. Electrical Distribution and the following: Battery charger and battery	3.2	1	
264000 EDGs			X									K3.02 Knowledge of the effect that a loss or malfunction of the Emergency Generators (Diesel/Jet) will have on following: A.C. electrical distribution	3.9	1	
300000 Instrument Air				X								K4.02 Knowledge of Instrument Air System design feature(s) and or interlocks which provide for the following: Cross-over to other air systems	3.0	1	
400000 Component Cooling Water						X						K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: Valves	2.7	1	
K/A Category Point Totals:	2	1	2	2	1	3	4	3	3	2	3	Group Point Total:		26	

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 2 RO										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												Not Applicable to Perry		
201003 Control Rod and Drive Mechanism						X						K6.02 Knowledge of the effect that a loss or malfunction of the following will have on the Control Rod And Drive Mechanism: Reactor pressure	3.0	1
201004 RSCS												Not Applicable to Perry		
201005 RCIS							X					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the Rod Control And Information System (RCIS) controls including: First stage shell pressure/turbine load: BWR-6	3.2	1
201006 RWM												Not Applicable to Perry		
202001 Recirculation								X				A2.02 Ability to (a) predict the impacts of the following on the Recirculation System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation system leak	3.7	1
202002 Recirculation Flow Control									X			A3.01 Ability to monitor automatic operations of the Recirculation Flow Control System including: Flow control valve operation: BWR-5,6	3.6	1
204000 RWCU														
214000 RPIS												Not Applicable to Perry		
215001 Traversing In-core Probe														
215002 RBM												Not Applicable to Perry		
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode										X		A4.02 Ability to manually operate and/or monitor in the control room: Valve lineup	3.7	1
223001 Primary CTMT and Aux.											X	2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	1
226001 RHR/LPCI: CTMT Spray Mode	X											K1.11 Knowledge of the physical connections and/or cause-effect relationships between RHR/LPCI: Containment Spray System Mode and the following: Component cooling water systems	2.8	1
230000 RHR/LPCI: Torus/Pool Spray Mode												Not Applicable to Perry		
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
239003 MSIV Leakage Control												Not Applicable to Perry		

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 2 RO											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	#
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate		X										K2.01 Knowledge of electrical power supplies to the following: System pumps	2.7	1
259001 Reactor Feedwater			X									K3.06 Knowledge of the effect that a loss or malfunction of the Reactor Feedwater System will have on following: Core inlet subcooling	3.1	1
268000 Radwaste														
271000 Offgas				X								K4.04 Knowledge of Offgas System design feature(s) and/or interlocks which provide for the following: The prevention of hydrogen explosions and/or fires	3.3	1
272000 Radiation Monitoring														
286000 Fire Protection					X							K5.02 Knowledge of the operational implications of the following concepts as they apply to Fire Protection System: Effect of Halon on fires: Plant-Specific	2.6	1
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals						X						K6.15 Knowledge of effect that a loss of malfunction of the following will have on the Reactor Vessel Internals: ADS	3.1	1
K/A Category Point Totals:	1	1	1	1	1	2	1	1	1	1	1	Group Point Total:		12

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 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										
295003 Partial or Complete Loss of AC / 6										
295004 Partial or Total Loss of DC Pwr / 6						X	2.4.31 Knowledge of annunciator alarms, indications, or response procedures.	4.1	1	
295005 Main Turbine Generator Trip / 3										
295006 SCRAM / 1										
295016 Control Room Abandonment / 7										
295018 Partial or Total Loss of CCW / 8										
295019 Partial or Total Loss of Inst. Air / 8										
295021 Loss of Shutdown Cooling / 4					X		AA2.02 Ability to determine and/or interpret the following as they apply to Loss Of Shutdown Cooling: RHR/shutdown cooling system flow	3.4	1	
295023 Refueling Acc / 8										
295024 High Drywell Pressure / 5										
295025 High Reactor Pressure / 3					X		EA202 Ability to determine and/or interpret the following as they apply to High Reactor Pressure: Reactor power	4.2	1	
295026 Suppression Pool High Water Temp. / 5										
295027 High Containment Temperature / 5						X	2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	1	
295028 High Drywell Temperature / 5										
295030 Low Suppression Pool Wtr Lvl / 5					X		EA2.02 Ability to determine and/or interpret the following as they apply to Low Suppression Pool Water Level: Suppression pool temperature	3.9	1	
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						X	2.1.32 Ability to explain and apply system limits and precautions.	4.0	1	
600000 Plant Fire On Site / 8					X		AA2.15 Requirements for establishing a fire watch	3.5	1	
700000 Generator Voltage and Electric Grid Disturbances / 6										
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 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	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	1	
295007 High Reactor Pressure / 3										
295008 High Reactor Water Level / 2										
295009 Low Reactor Water Level / 2					X		AA2.01 Ability to determine and/or interpret the following as they apply to Low Reactor Water Level: Reactor water level.	4.2	1	
295010 High Drywell Pressure / 5					X		AA2.02 Ability to determine and/or interpret the following as they apply to High Drywell Pressure: Drywell pressure.	3.8	1	
295011 High Containment Temp / 5										
295012 High Drywell Temperature / 5										
295013 High Suppression Pool Temp. / 5										
295014 Inadvertent Reactivity Addition / 1										
295015 Incomplete SCRAM / 1										
295017 High Off-site Release Rate / 9										
295020 Inadvertent Cont. Isolation / 5 & 7										
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										
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:	0	0	0	0	2	1	Group Point Total:		3	

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 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														
205000 Shutdown Cooling														
206000 HPCI												Not Applicable to Perry		
207000 Isolation (Emergency) Condenser												Not Applicable to Perry		
215005 OPRM														
209001 LPCS														
209002 HPCS														
211000 SLC								X				A2.05 Ability to (a) predict the impacts of the following on the Standby Liquid Control System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of SBLC tank heaters	3.4	1
212000 RPS														
215003 IRM														
215004 Source Range Monitor														
215005 APRM / LPRM														
217000 RCIC											X	2.4.6 Knowledge of EOP mitigation strategies	4.7	1
218000 ADS														
223002 PCIS/Nuclear Steam Supply Shutoff								X				A2.08 Ability to (a) predict the impacts of the following on the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: †Surveillance testing	3.1	1
239002 SRVs														
259002 Reactor Water Level Control														
261000 SGTS														
262001 AC Electrical Distribution								X				A2.02 Ability to (a) predict the impacts of the following on the A.C. Electrical Distribution; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident	3.9	1
262002 UPS (AC/DC)											X	2.2.37 Ability to determine operability and/or availability of safety related equipment.	4.6	1
263000 DC Electrical Distribution														
264000 EDGs														
300000 Instrument Air														

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 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	#
400000 Component Cooling Water														
K/A Category Point Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 2 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												Not Applicable to Perry		
201003 Control Rod and Drive Mechanism														
201004 RSCS												Not Applicable to Perry		
201005 RCIS														
201006 RWM												Not Applicable to Perry		
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS												Not Applicable to Perry		
215001 Traversing In-core Probe														
215002 RBM												Not Applicable to Perry		
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode											X	2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	4.1	1
223001 Primary CTMT and Aux.											X	2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	1
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode												Not Applicable to Perry		
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
239003 MSIV Leakage Control												Not Applicable to Perry		
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.								X				A2.02 Ability to (a) predict the impacts of the following on the Main Turbine Generator And Auxiliary Systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of lube oil	3.5	1

ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 2 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	#
256000 Reactor Condensate														
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas														
272000 Radiation Monitoring														
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	1	0	0	2	Group Point Total:		3

Facility: Perry			Date of Exam: February 2013			
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. 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		
	2.1.13	Knowledge of facility requirements for controlling vital/controlled access.	2.5	1		
	2.1.30	Ability to locate and operate components, including local controls.	4.4	1		
	2.1.36	Knowledge of procedures and limitations involved in core alterations.			4.1	1
	2.1.41	Knowledge of the refueling process.			3.7	1
	Subtotal			3		2
2. Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.7	1		
	2.2.38	Knowledge of conditions and limitations in the facility license.	3.6	1		
	2.2.43	Knowledge of the process used to track inoperable alarms.	3.0	1		
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	1
	2.2.25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.			4.2	1
	Subtotal			3		2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	1		
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	1		
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.7	1
	Subtotal			2		1
4. Emergency Procedures / Plan	2.4.27	Knowledge of "fire in the plant" procedures.	3.4	1		
	2.4.39	Knowledge of RO responsibilities in emergency plan implementation.	3.9	1		
	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information).			4.1	1
	2.4.40	Knowledge of SRO responsibilities in emergency plan implementation.			4.5	1
	Subtotal			2		2
Tier 3 Point Total				10		7

[illegible]

Facility: Perry		Date of Exam: February 2015		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>	
Item Description	Initial				
	a	b*	c#		
1. Questions and answers are technically accurate and applicable to the facility.	<i>mm</i>	<i>OO</i>	RKW		
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	<i>mm</i>	<i>OO</i>	RKW		
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	<i>mm</i>	<i>OO</i>	RKW		
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).			RKW		
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input checked="" type="checkbox"/> the audit exam was systematically and randomly developed; or <input checked="" type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)	<i>mm</i>	<i>OO</i>	RKW		
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.	Bank	Modified	New		
	54.7% / 36.0%	14.7% / 4.0%	30.7% / 60.0%		
	<i>mm</i>	<i>OO</i>	RKW		
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.	Memory	C/A			
	42.7% / 28.0%	57.3% / 72.0%			
	<i>mm</i>	<i>OO</i>	RKW		
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	<i>mm</i>	<i>OO</i>	RKW		
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.	<i>mm</i>	<i>OO</i>	RKW		
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	<i>mm</i>	<i>OO</i>	RKW		
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.	<i>mm</i>	<i>OO</i>	RKW		
<p>Printed Name / Signature</p> <p>a. Author <u>Ray Torres</u> <i>Ray Torres</i> <u>12/5/14</u></p> <p>b. Facility Reviewer (*) <u>Dave O'Donnell</u> <i>Dave O'Donnell</i> <u>12-5-14</u></p> <p>c. NRC Chief Examiner (#) <u>RAYMOND KENTLY WALTON</u> <i>Raymond Kently Walton</i> <u>1/2/15</u></p> <p>d. NRC Regional Supervisor <u>Theron Keiser</u> <i>Theron Keiser</i> <u>1/28/15</u></p>					
<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>					