Facility **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: _____

Competencies	APPLICANTS											
	RO ☑				SRO-I ☑				SRO-U ☑			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnosis Events and Conditions	1,3,4 5,6,7 8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8
Comply With and Use Procedures (1)	1,3,4 5,6,7 8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8
Operate Control Boards (2)	1,3,4 6,7,8 9,10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,4,5 6,7,8					3,6,7 8,9	2,4,6	1,2,5 6,7	5,6,7 8
Communicate and Interact	1,3,4 5,6,7 8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8
Demonstrate Supervisory Ability (3)					1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8	1,2,3 4,5,6 7,8,9 10	1,3,4 5,6,7 8	1,3,4 5,6,7	1,3,4 5,6,7 8
Comply With and Use Tech. Specs. (3)					2,5	1,5	2,4	3,4	2,5	1,5	2,4	3,4

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: **Davis Besse** Date of Examination: **6/3 thru 6/14 2013**

Examination Level **RO** ☒ Operating Test Number _

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations (RO A1.1)	D, R	2.1.43 (4.1) Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc. JPM 58 Calculate SDM with Tave > 500°F
Conduct of Operations (RO A1.2)	N, R	2.1.7 (4.4) Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. JPM New Plot and evaluate 1/M data
Equipment Control (RO A2)	D, R	2.2.12 (3.7) Knowledge of surveillance procedures. JPM 227 Calculate RCS flow with F744 inoperable
Radiation Control (RO A3)	D, S	2.3.5 (2.9) Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. JPM 260 ***Perform radiation element administrative checks for a radioactive liquid release***
Emergency Procedures/Plan		NOT EVALUATED

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: **Davis Besse** Date of Examination: **6/3 thru 6/14 2013**

Examination Level **SRO** ☒ Operating Test Number _____

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations (SRO A1.1)	***N, R***	***2.1.43 (4.3)*** ***Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.*** ***JPM New Shift Manager Review of SDM calculation with Tave > 500 °F***
Conduct of Operations (SRO A1.2)	N, R	2.1.5 (3.9) Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. JPM New Determine Availability For Call-In.
Equipment Control (SRO A2)	N, R	2.2.18 (3.9) Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc. JPM New Shutdown Defense In Depth Assessment
Radiation Control (SRO A3)	N, R	2.3.6 (3.8) Ability to approve release permits. JPM New Perform Administrative Checks For Radioactive Liquid Batch Release
Emergency Procedures/Plan (SRO A4)	D, S	2.4.44 (4.4) Knowledge of emergency plan protective action recommendations. JPM 150 Make Protective Action Recommendations

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: Davis Besse Date of Examination: **6/3 thru 6/14 2013**
Exam Level: RO ☒ SRO(I) ☐ SRO(U) ☐ Operating Test No.: ____

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
S1 Initiate Deboration Using Deborating Demineralizers (JPM New) 004 A4.07 3.9/3.7	N, A, S	1
S2 De-energize SFAS CH 4 RCS Pressure Transmitter (JPM New) 013 K2.01 3.6/3.8	N, S, EN	2
S3 Perform HPI Flow Balance (JPM New) 006 A4.02 4.0/3.8	N, A, S, L, EN	3
S4 Rapid Cooldown of the RCS (JPM New) 041 A3.01 3.2/3.2	N, A, S, L	4S
S5 Shift CTMT Air Cooler From Slow to Fast Speed (JPM 151 022 A4.01 3.6/3.8	D, S, L	5
S6 13.8 KV Bus Transfer to Aux 11 Transformer (JPM New) 062 A4.01 3.3/3.1	N, A, S	6
S7 Bypass SFRCS Logic Channel Trips (JPM 108) 012 A4.03 3.6/3.6	D, S	7
S8 CCW Essential Header Leak Isolation (JPM 125) 008 A2.02 3.2/3.5	D, A, S	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
P1 Actions outside the control room of the primary side reactor operator for a serious control room fire (JPM 003) ***068 AA1.21 3.9/4.1***	***D, E, R***	***8***
P2 Emergency Idle Start EDG 1 (JPM 242) 064 A3.06 3.3/3.4	D, A, E	6
P3 Service Water Primary Header Pressure Control (JPM New) 076 K1.01 3.4/3.3	N	4S

@ All RO and SRO 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: Davis Besse Date of Examination: **6/3 thru 6/14 2013**
Exam Level: RO ☐ SRO(I) ☒ SRO(U) ☐ Operating Test No.: _____

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
S1 Initiate Deboration Using Deborating Demineralizers 004 A4.07 3.9/3.7	(JPM New)	N, A, S	1
S2 De-energize SFAS CH 4 RCS Pressure Transmitter 013 K2.01 3.6/3.8	(JPM New)	N, S, EN	2
S3 Perform HPI Flow Balance 006 A4.02 4.0/3.8	(JPM New)	N, A, S, L, EN	3
S4 Rapid Cooldown of the RCS 041 A3.01 3.2/3.2	(JPM New)	N, A, S, L	4S
S6 13.8 KV Bus Transfer to Aux 11 Transformer 062 A4.01 3.3/3.1	(JPM New)	N, A, S	6
S7 Bypass SFRCS Logic Channel Trips 012 A4.03 3.6/3.6	(JPM 108)	D, S	7
S8 CCW Essential Header Leak Isolation 008 A2.02 3.2/3.5	(JPM 125)	D, A, S	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
P1 Actions outside the control room of the primary side reactor operator for a serious control room fire ***068 AA1.21 3.9/4.1***	***(JPM 003)***	***D, E, R***	***8***
P2 Emergency Idle Start EDG 1 064 A3.06 3.3/3.4	(JPM 242)	D, A, E	6
P3 Service Water Primary Header Pressure Control 076 K1.01 3.4/3.3	(JPM New)	N	4S

@ All RO and SRO 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: Davis Besse Date of Examination: **6/3 thru 6/14 2013**
Exam Level: RO ☐ SRO(I) ☐ SRO(U) ☒ Operating Test No.: _____

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
S3 Perform HPI Flow Balance 006 A4.02 4.0/3.8	(JPM New)	N, A, S, L, EN	3
S4 Rapid Cooldown of the RCS 041 A3.01 3.2/3.2	(JPM New)	N, A, S, L	4S
S7 Bypass SFRCS Logic Channel Trips 012 A4.03 3.6/3.6	(JPM 108)	D, S	7

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

P1 Actions outside the control room of the primary side reactor operator for a serious control room fire ***068 AA1.21 3.9/4.1***	***(JPM 003)***	***D, E, R***	***8***
P2 Emergency Idle Start EDG 1 064 A3.06 3.3/3.4	(JPM 242)	D, A, E	6

@ All RO and SRO 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: **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: _____

1. GENERAL CRITERIA		Initials a	Initials b*	Initials 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).			
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.			
c.	The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).			
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.			
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.			
2. WALK-THROUGH CRITERIA				
a.	Each JPM includes the following, as applicable: • 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 • specific performance criteria that include: - 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			
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.			
3. SIMULATOR CRITERIA				
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.			

	Printed Name / Signature	Date
a. Author	_____	_____
b. Facility Reviewer (*)	_____	_____
c. NRC Chief Examiner (#)	_____	_____
d. NRC Supervisor	_____	_____

NOTE: * The facility signature is not applicable for NRC-developed tests.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

Facility: **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: ____

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.			
2.	The scenarios consist mostly of related events.			
3.	Each event description consists of • 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)			
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.			
5.	The events are valid with regard to physics and thermodynamics.			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
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.			
8.	The simulator modeling is not altered.			
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.			
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.			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
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).			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			

TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)	Actual Attributes						
1. Total malfunctions (5-8)	**6**	**6**	**6**	**5**			
2. Malfunctions after EOP entry (1-2)	**2**	**2**	**1**	**2**			
3. Abnormal events (2-4)	**3**	**3**	**3**	**3**			
4. Major transients (1-2)	**2**	**1**	**1**	**1**			
5. EOPs entered/requiring substantive actions (1-2)	**1**	**1**	**1**	**1**			
6. EOP contingencies requiring substantive actions (0-2)	**1**	**1**	**0**	**1**			
7. Critical tasks (2-3)	**3**	**2**	**3**	**3**			

Facility **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: _____

APPLICANT	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	2 SRO	2 ATC	2 BOP	3 SRO	3 ATC	3 BOP	4 Backup SRO	4 Backup ATC	4 Backup BOP	TOTAL	MINIMUM(*) R	I	U
MASTER	RX	1	1		3	3		4	4		1	1			1	1	0
	NOR	3		3				1		1					1	1	1
	I/C	4,6,7, 10	4,10	6,7	1,2,4 5,7,8	5,7 8	***1***,2,4	2,3,5 7	2,3	2,5,7	2,4,5 7,8	2,4,	5,7,8		4	4	2
	MAJ	8,9	8,9	8,9	6	6	6	6	6	6	6	6	6		2	2	1
	TS	2,5			1,5			2,4			3,4				0	2	2
SROI-1 ☒	RX		1		3									***2***	1	1	0
	NOR									1				***1***	1	1	1
	I/C		4,10		1,2,4 5,7,8					2,5,7				***11***	4	4	2
	MAJ		8,9		6					6				***4***	2	2	1
	TS				1,5									***2***	0	2	2
SROI-2 ☒	RX					3		4						***2***	1	1	0
	NOR			3				1						***2***	1	1	1
	I/C			6,7		5,7 8		2,3,5 7						***9***	4	4	2
	MAJ			8,9		6		6						***4***	2	2	1
	TS							2,4						***2***	0	2	2
SROI-3 ☒	RX	1							4					***2***	1	1	0
	NOR	3												***1***	1	1	1
	I/C	4,6,7, 10					***1***,2,4		2,3					***9***	4	4	2
	MAJ	8,9					6		6					***4***	2	2	1
	TS	2,5												***2***	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 **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: _____

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4 Backup						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROU -1 ☒	RX	1						4						2	1	1	0
	NOR	3						1						2	1	1	1
	I/C	4,6,7, 10						2,3,5 7						8	4	4	2
	MAJ	8,9						6						3	2	2	1
	TS	2,5						2,4						4	0	2	2
RO -1 ☒	RX		1											1	1	1	0
	NOR									1				1	1	1	1
	I/C		4,10							2,5,7				5	4	4	2
	MAJ		8,9							6				3	2	2	1
	TS													0	0	2	2
RO -2 ☒	RX								4					1	1	1	0
	NOR			3										1	1	1	1
	I/C			6,7					2,3					4	4	4	2
	MAJ			8,9					6					3	2	2	1
	TS													0	0	2	2
	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														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 **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.: _____

APPLICANT	EVENT TYPE	Scenarios 1 CREW POSITION SRO	ATC	BOP	2 CREW POSITION SRO	ATC	BOP	3 CREW POSITION SRO	ATC	BOP	4 Backup CREW POSITION SRO	ATC	BOP	TOTAL	MINIMUM(*) R	I	U
SROU -2 ☒	RX	1												*1*	1	1	0
	NOR	3												*1*	1	1	1
	I/C	4,6,7, 10												*4*	4	4	2
	MAJ	8,9												*2*	2	2	1
	TS	2,5												*2*	0	2	2
SROU -3 ☒	RX							4						*1*	1	1	0
	NOR							1						*1*	1	1	1
	I/C							2,3,5 7						*4*	4	4	2
	MAJ							6						*1*	2	2	1
	TS							2,4						*2*	0	2	2
RO -3 ☒	RX		1											*1*	1	1	0
	NOR									1				*1*	1	1	1
	I/C		4,10							2,5,7				*5*	4	4	2
	MAJ		8,9							6				*3*	2	2	1
	TS													*0*	0	2	2
RO -4 ☒	RX								4					*1*	1	1	0
	NOR			3										*1*	1	1	1
	I/C			6,7					2,3					*4*	4	4	2
	MAJ			8,9					6					*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: **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Operating Test No.:

Tier / Group	Randomly Selected K/A	Reason for Rejection
		RO OUTLINE
1/1	000011 EA2.12	Question # 3 Davis Besse does not have a system for throttling or stopping reflux boiling spray. Randomly selected 000011 EA2.10 as a replacement.
1/1	000025 AK3.01	Question # 6 Davis Besse does not have an alternate RHR flowpath. Randomly selected 000025 AA1.01 as a replacement.
1/2	000059 AK2.01	Question # 21 Davis Besse does not have any gas monitors on the liquid waste discharge system. Randomly selected 000059 AK2.01 as a replacement.
2/1	025 2.4.4	Question # 40 Davis Besse does not have Ice Condensers. Randomly selected 004 2.4.4 as a replacement.
2/1	025 K1.02	Question # 41 Davis Besse does not have Ice Condensers. Randomly selected 062 K1.02 as a replacement.
2/1	064 K4.08	Question # 50 Davis Besse does not have any design features or interlocks for EDG fuel isolation valves. Randomly selected 064 K4.03 as a replacement.
2/1	073 K5.03	Question # 51 Unable to write a discriminatory question for the process radiation monitoring system that depicts the relationship between radiation intensity and exposure limits. Randomly selected 073 K5.01 as a replacement.
3	2.4.40	Question # 75 Unable to write an RO discriminatory question regarding SRO responsibilities during E-Plan implementation. Randomly selected 2.4.35 as a replacement.
2/2	***034 A3.01***	***Question # 59. Deleted from the exam to achieve balance. There are too many fuel handling questions (5) already being addressed on this exam. Discussed with chief examiner and determined that this K/A should be deleted to obtain a better balance. Randomly selected 041 A2.02 as a replacement.***
		SRO OUTLINE
2/2	027 A2.01	Question # 92 Davis Besse does not have an iodine removal system. Iodine is removed with the passive sodium triphosphate baskets. Randomly selected 015 A2.01 as a replacement.
1/1	057 AA2.16	Question # 77 Unable to write a discriminatory SRO level question for loss of vital AC impact on PZR level. Randomly selected 038 EA2.01 as a replacement.

Facility: **Davis Besse** Date of Exam **6/3 thru 6/14 2013** Exam Level: **RO ☒ SRO ☒**

Item Description				Initial a	Initial b*	Initial c#
1.	Questions and answers technically accurate and applicable to facility					
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available					
3.	SRO questions are appropriate per Section D.2.d of ES-401					
4.	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions are repeated from the last two NRC licensing exams, consult the NRR OL program office.)					
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or __ the licensee certifies that there is no duplication; or __ other (explain)					
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: 16/0 (21.3%/0%)	Modified: 0/0 (0%/0%)	New: 59/25 (78.7%/100%)		
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: 32/1 (42.7% / 4%)	C/A: 43/24 (57.3% / 96%)			
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.					
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					
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.					
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with value on cover sheet					

	Printed Name / Signature	Date
a. Author	_____	_____
b. Facility Reviewer (*)	_____	_____
c. NRC Chief Examiner (#)	_____	_____
d. NRC Supervisor	_____	_____

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.

Facility: **Davis-Besse RO** Date of Exam **6/3 thru 6/14 2013**

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	3	2				4	3			3	**18**				**6**
	2	1	2	1				2	2			1	**9**				**4**
	Tier Totals	**4**	**5**	**3**				**6**	**5**			**4**	**27**				**10**
2. Plant Systems	1	3	2	3	3	2	2	3	3	2	2	3	**28**				**5**
	2	1	1	1	1	0	0	2	***2***	***0***	1	1	**10**				**3**
	Tier Totals	**4**	**3**	**4**	**4**	**2**	**2**	**5**	***5***	***2***	**3**	**4**	**38**				**8**
3. Generic Knowledge and Abilities Category					1			2		3		4	**10**	1	2	3	4	**7**
					2			**3**		**2**		**3**						

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/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
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	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Emergency and Abnormal Plant Evolutions - Tier 1/Group 1(RO)	

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	Points
000008 Pressurizer (PZR) Vapor Space Accident ***Question 1***	X						AK1.01 Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves (CFR 41.8 / 41.10 / 45.3)	3.2	1
000009 Small Break LOCA ***Question 2***		X					EK2.03 Knowledge of the interrelations between the small break LOCA and the following: S/Gs (CFR 41.7 / 45.7)	3.0	1
000011 Large Break LOCA ***Question 3***					X		EA2.10 Ability to determine or interpret the following as they apply to a Large Break LOCA: Verification of adequate core cooling (CFR 43.5 / 45.13)	4.5	1
000015/000017 Reactor Coolant Pump (RCP) Malfunctions ***Question 4***						X	2.4.11 Knowledge of abnormal condition procedures. (CFR: 41.10 / 43.5 / 45.13)	4.0	1
000022 Loss of Reactor Coolant Makeup ***Question 5***			X				AK3.02 Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Coolant Makeup: Actions contained in SOPs and EOPs for RCPs, loss of makeup, loss of charging, and abnormal charging (CFR 41.5, 41.10 / 45.6 / 45.13)	3.5	1
000025 Loss of Residual Heat Removal System (RHRS) ***Question 6***				X			AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: RCS/RHRS cooldown rate (CFR 41.7 / 45.5 / 45.6)	3.6	1
000026 Loss of Component Cooling Water (CCW) ***Question 7***				X			AA1. 07 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: Flow rates to the components and systems that are serviced by the CCWS; interactions among the components (CFR 41.7 / 45.5 / 45.6)	2.9	1
000027 Pressurizer Pressure Control System (PZR PCS) Malfunction ***Question 8***		X					AK2.03 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners (CFR 41.7 / 45.7)	2.6	1
000029 Anticipated Transient Without Scram (ATWS) ***Question 9***		X					EK2.06 Knowledge of the interrelations between the and the following an ATWS: Breakers, relays, and disconnects (CFR 41.7 / 45.7)	2.9*	1
000038 Steam Generator Tube Rupture (SGTR) ***Question 10***					X		EA2.12 Ability to determine or interpret the following as they apply to a SGTR: Status of MSIV activating system (CFR 43.5 / 45.13)	3.9*	1
000040 Steam Line Rupture – Excessive Heat Transfer ***Question 11***						X	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)	4.4	1
000054 Loss of Main Feedwater (MFW) ***Question 12***					X		AA2.01 Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): Occurrence of reactor and/or turbine trip (CFR: 43.5 / 45.13)	4.3	1

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	Points
000055 Loss of Offsite and Onsite Power (Station Blackout) ***Question 13***				X			EA1.06 Ability to operate and monitor the following as they apply to a Station Blackout: Restoration of power with one ED/G (CFR 41.7 / 45.5 / 45.6)	4.1	1
000056 Loss of Offsite Power ***Question 14***	X						AK1.01 Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Principle of cooling by natural convection (CFR 41.8 / 41.10 / 45.3)	3.7	1
000062 Loss of Nuclear Service Water ***Question 15***			X				AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers (CFR 41.4, 41.8 / 45.7)	3.2*	1
000077 Generator Voltage and Electric Grid Disturbances ***Question 16***	X						AK1.03 Knowledge of the operational implications of the following concepts as they apply to Generator Voltage and Electric Grid Disturbances: Under-excitation (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8)	3.3	1
BW/E04 Inadequate Heat Transfer - Loss Of Secondary Heat Sink ***Question 17***				X			EA1.1 Ability to operate and / or monitor the following as they apply to the (Inadequate Heat Transfer) Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. (CFR: 41.7 / 45.5 / 45.6)	4.4	1
BW/E10 Post-Trip Stabilization ***Question 18***						X	2.1.19 Ability to use plant computers to evaluate system or component status. (CFR: 41.10 / 45.12)	3.9	1
K/A Category Point Totals:	**3**	**3**	**2**	**4**	**3**	**3**	Group Point Total:		**18**

ES-401	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Emergency and Abnormal Plant Evolutions - Tier 1/Group 2(RO)	

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	Points
000036 Fuel Handling Incidents ***Question 19***	X						AK1.03 Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents : Indications of approaching Criticality (CFR 41.8 / 41.10 / 45.3)	4.0	1
000051 Loss of Condenser Vacuum ***Question 20***						X	2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12)	4.2	1
000059 Accidental Liquid Radwaste Release ***Question 21***		X					AK2.01 Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following: Radioactive-liquid monitors (CFR 41.7 / 45.7)	2.7	1
000060 Accidental Gaseous-Waste Release ***Question 22***					X		AA2.06 Ability to operate and / or monitor the following as they apply to the Accidental Gaseous Radwaste: Valve lineup for release of radioactive gases (CFR 41.7 / 45.5 / 45.6)	3.6*	1
000061 ARM System Alarms ***Question 23***			X				AK3.02 Knowledge of the reasons for the following responses as they apply to the Area Radiation Monitoring (ARM) System Alarms: Guidance contained in alarm response for ARM system (CFR 41.5,41.10 / 45.6 / 45.13)	3.4	1
000069 Loss of Containment Integrity ***Question 24***				X			AA1.03 Ability to operate and / or monitor the following as they apply to the Loss of Containment Integrity: Fluid systems penetrating containment (CFR 41.7 / 45.5 / 45.6)	2.8	1
BW/A01 Plant Runback ***Question 25***					X		AA2.1 Ability to determine and interpret the following as they apply to the (Plant Runback) Facility conditions and selection of appropriate procedures during abnormal and emergency operations. (CFR: 43.5 / 45.13)	3.0	1
BW/A02 Loss of NNI-X ***Question 26***		X					AK2.2 Knowledge of the interrelations between the (Loss of NNI-X) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility. (CFR: 41.7 / 45.7)	3.8	1
BW/E13 EOP Rules ***Question 27***				X			EA1.3 Ability to operate and / or monitor the following as they apply to the (EOP Rules) Desired operating results during abnormal and emergency situations. (CFR: 41.7 / 45.5 / 45.6)	3.4	1
K/A Category Point Totals:	1	2	1	2	2	1	Group Point Total:		9

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	Points
003 Reactor Coolant Pump System (RCPS) ***Question 28***									X			A3.02 Ability to monitor automatic operation of the RCPS, including: Motor current (CFR: 41.7 / 45.5)	2.6	1
003 Reactor Coolant Pump System (RCPS) ***Question 29***			X									K3.01 Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: RCS (CFR: 41.7 / 45.6)	3.7	1
004 Chemical and Volume Control System ***Question 30***				X								K4.14 Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: Control interlocks on letdown system (letdown tank bypass valve) (CFR: 41.7)	2.8*	1
005 Residual Heat Removal System (RHRS) ***Question 31***						X						K6.03 Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger (CFR: 41.7 / 45.7)	2.5	1
006 Emergency Core Cooling System (ECCS) ***Question 32***						X						K6.02 Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Core flood tanks (accumulators) (CFR: 41.7 / 45.7)	3.4	1
007 Pressurizer Relief Tank/Quench Tank System (PRTS) ***Question 33***			X									K3.01 Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment (CFR: 41.7 / 45.6)	3.3	1
008 Component Cooling Water System (CCWS) ***Question 34***								X				A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCW pump (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.3	1
010 Pressurizer Pressure Control System (PZR PCS) ***Question 35***											X	2.2.39 Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)	3.9	1
010 Pressurizer Pressure Control System (PZR PCS) ***Question 36***				X								K4.02 Knowledge of PZR PCS design feature(s) and/or interlock(s) which provide for the following: Prevention of uncovering PZR heaters (CFR: 41.7)	3.0	1
012 Reactor Protection System (RPS) ***Question 37***								X				A2.07 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of dc control power (CFR: 41.5 / 43.5 / 45.3 / 45.5)	3.2*	1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Points
013 Engineered Safety Features Actuation System (ESFAS) ***Question 38***	X											K1.07 Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: AFW System (CFR: 41.2 to 41.9 / 45.7 to 45.8)	4.1	1
022 Containment Cooling System (CCS) ***Question 39***							X					A1.04 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including: Cooling water flow (CFR: 41.5 / 45.5)	3.2	1
004 Chemical and Volume Control System ***Question 40***											X	2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. (CFR: 41.10 / 43.2 / 45.6)	4.5	1
062 AC Electrical Distribution System ***Question 41***	X											K1.02 Knowledge of the physical connections and/or cause/effect relationships between the ac distribution system and the following systems: ED/G (CFR: 41.2 to 41.9)	4.1	1
026 Containment Spray System (CSS) ***Question 42***		X										K2.02 Knowledge of bus power supplies to the following: MOVs (CFR: 41.7)	2.7*	1
039 Main and Reheat Steam System (MRSS) ***Question 43***					X							K5.08 Knowledge of the operational implications of the following concepts as the apply to the MRSS: Effect of steam removal on reactivity (CFR: 441.5 / 45.7)	3.6	1
059 Main Feedwater (MFW) System ***Question 44***							X					A1.07 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Feed Pump speed, including normal control speed for ICS (CFR: 41.5 / 45.5)	2.5*	1
059 Main Feedwater (MFW) System ***Question 45***										X		A4.01 Ability to manually operate and monitor in the control room: MFW turbine trip indication (CFR: 41.7 / 45.5 to 45.8)	3.1*	1
061 Auxiliary / Emergency Feedwater (AFW) System ***Question 46***								X				A2.06 Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Back leakage of MFW (CFR: 41.5 / 43.5 / 45.3 / 45.13)	2.7	1
062 AC Electrical Distribution System ***Question 47***									X			A3.04 Ability to monitor automatic operation of the ac distribution system, including: Operation of inverter (e.g., precharging synchronizing light, static transfer) (CFR: 41.7 / 45.5)	2.7	1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Points
063 DC Electrical Distribution System ***Question 48***							X					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: Battery capacity as it is affected by discharge rate (CFR: 41.5 / 45.5)	2.5	1
063 DC Electrical Distribution System ***Question 49***										X		A4.02 Ability to manually operate and/or monitor in the control room: Battery voltage indicator (CFR: 41.7 / 45.5 to 45.8)	2.8*	1
064 Emergency Diesel Generator (ED/G) System ***Question 50***				X								K4.03 Knowledge of ED/G system design feature(s) and/or interlock(s) which provide for the following: Governor valve operation (CFR: 41.7)	2.5	1
073 Process Radiation Monitoring (PRM) System ***Question 51***					X							K5.01 Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Radiation theory, including sources, types, units, and effects (CFR: 41.5 / 45.7)	2.5	1
076 Service Water System (SWS) ***Question 52***		X										K2.04 Knowledge of bus power supplies to the following: Reactor building closed cooling water (CFR: 41.7)	2.5*	1
078 Instrument Air System (IAS) ***Question 53***	X											K1.05 Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: MSIV air (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.4*	1
103 Containment System ***Question 54***											X	2.1.28 Knowledge of the purpose and function of major system components and controls. (CFR: 41.7)	4.1	1
103 Containment System ***Question 55***			X									K3.02 Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under normal operations (CFR: 41.7 / 45.6)	3.8	1
K/A Category Point Totals:	**3**	**2**	**3**	**3**	**2**	**2**	**3**	**3**	**2**	**2**	**3**	Group Point Total:		**28**

ES-401	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Plant Systems - Tier 2/Group 2(RO)	

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Points
002 Reactor Coolant System (RCS) ***Question 56***	X											K1.03 Knowledge of the physical connections and/or cause-effect relationships between the RCS and the following systems: Borated water storage tank (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.8	1
014 Rod Position Indication System ***Question 57***				X								K4.03 Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: Rod bottom lights (CFR: 41.5 / 45.7)	3.2	1
015 Nuclear Instrumentation System ***Question 58***										X		A4.01 Ability to manually operate and/or monitor in the control room: Selection of controlling NIS channel (CFR: 41.7 / 45.5 to 45.8)	3.6*	1
041 Steam Dump System (SDS) and Turbine Bypass Control ***Question 59***								X				***A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the SDS; and (b) based on those predictions or mitigate the consequences of those malfunctions or operations: Steam valve stuck open*** ***(CFR: 41.5 / 43.5 / 45.3 / 45.13)***	***3.6***	1
055 Condenser Air Removal System ***Question 60***			X									K3.01 Knowledge of the effect that a loss or malfunction of the CARS will have on the following: Main condenser (CFR: 41.7 / 45.6)	2.5	1
068 Liquid Radwaste System ***Question 61***								X				A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Lack of tank recirculation prior to release (CFR: 41.5 / 43.5 / 45.3 / 45.13)	2.7*	1
072 Area Radiation Monitoring System ***Question 62***							X					A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ARM system controls including: Radiation levels (CFR: 41.5 / 45.5)	3.4	1
075 Circulating Water System ***Question 63***		X										K2.03 Knowledge of bus power supplies to the following: Emergency/essential SWS pumps (CFR: 41.7)	2.6*	1
079 Station Air System ***Question 64***											X	2.4.2 Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. (CFR: 41.7 / 45.7 / 45.8)	4.5	1
086 Fire Protection System (FPS) ***Question 65***							X					K6.04 Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the : Fire, smoke, and heat detectors (CFR: 41.7 / 45.7)	2.6	1
K/A Category Point Totals:	**1**	**1**	**1**	**1**	**0**	**0**	**2**	***2***	***0***	**1**	**1**	Group Point Total:		**10**

ES 401	Generic Knowledge and Abilities Outline (Tier 3)	Form ES-401-3

Facility: **Davis-Besse RO** Date of Exam **6/3 thru 6/14 2013**

Category	K/A#	Topic	RO		SRO Only	
			IR	Points	IR	Points
1. Conduct of Operations	2.1.40	Knowledge of refueling administrative requirements. (CFR: 41.10 / 43.5 / 45.13) ***Question 66***	2.8	1		
	2.1.45	Ability to identify and interpret diverse indications to validate the response of another indication. (CFR: 41.7 / 43.5 / 45.4) ***Question 67***	4.3	1		
			Subtotal	**2**		
2. Equipment Control	2.2.36	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. (CFR: 41.10 / 43.2 / 45.13) ***Question 68***	3.1	1		
	2.2.7	Knowledge of the process for conducting special or infrequent tests. (CFR: 41.10 / 43.3 / 45.13) ***Question 69***	2.9	1		
	2.2.35	Ability to determine Technical Specification Mode of Operation. (CFR: 41.7 / 41.10 / 43.2 / 45.13) ***Question 70***	3.6	1		
			Subtotal	**3**		
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10) ***Question 71***	3.2	1		
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.11 / 41.12 / 43.4 / 45.9) ***Question 72***	2.9	1		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 43.4 / 45.9 / 45.10) ***Question 73***	3.4			
			Subtotal	**2**		
4. Emergency Procedures/ Plan	2.4.31	Knowledge of annunciator alarms, indications, or response procedures. (CFR: 41.10 / 45.3) ***Question 74***	4.2	1		
	2.4.35	Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13) ***Question 75***	3.8	1		
			Subtotal	**3**		
			Tier 3 Point Total	**10**		

Facility: **Davis-Besse SRO** Date of Exam **6/3 thru 6/14 2013**

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												**18**	3	3	**6**
	2												**9**	2	2	**4**
	Tier Totals												**27**	**5**	**5**	**10**
2. Plant Systems	1												**28**	3	2	**5**
	2												**10**	0 / 2	1	**3**
	Tier Totals												**38**	**5**	**3**	**8**
3. Generic Knowledge and Abilities Category		1			2			3			4		**10**	1 / **1**	2 / **2**	3 / **2**	4 / **2**	**7**

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/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
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	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Emergency and Abnormal Plant Evolutions - Tier 1/Group 1(SRO)	

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	Points
000056 Loss of Offsite Power ***Question 76***						X	2.1.20 Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)	4.6	1
000038 Steam Generator Tube Rupture (SGTR) ***Question 77***					X		EA2.01 Ability to determine and interpret the following as they apply to SGTR: When to isolate one or more S/Gs (CFR: 43.5 / 45.13)	4.7	1
000058 Loss of DC Power ***Question 78***					X		AA2.03 Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost; impact on ability to operate and monitor plant systems (CFR: 43.5 / 45.13)	3.9	1
000065 Loss of Instrument Air ***Question 79***						X	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. (CFR: 41.10 / 43.5 / 45.13)	4.2	1
BW/E10 Post-Trip Stabilization ***Question 80***					X		EA2.1 Ability to determine and interpret the following as they apply to the (Post-Trip Stabilization) Facility conditions and selection of appropriate procedures during abnormal and emergency operations. (CFR: 43.5, 45.13)	4.0	1
BW/E05 Steam Line Rupture - Excessive Heat Transfer ***Question 81***						X	2.4.20 Knowledge of the operational implications of EOP warnings, cautions, and notes. (CFR: 41.10 / 43.5 / 45.13)	4.3	1
K/A Category Point Totals:	**0**	**0**	**0**	**0**	**3**	**3**	Group Point Total:		**6**

ES-401	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Emergency and Abnormal Plant Evolutions - Tier 1/Group 2(SRO)	

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	Points
000001 Continuous Rod Withdrawal ***Question 82***					X		AA2.03 Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal : Proper actions to be taken if automatic safety functions have not taken place (CFR: 43.5 / 45.13)	4.8	1
000024 Emergency Boration ***Question 83***						X	2.2.42 Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)	4.6	1
000033 Loss of Intermediate Range Nuclear Instrumentation ***Question 84***					X		AA2.03 Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Indication of blown fuse (CFR: 43.5 / 45.13)	3.1	1
BW/A06 Shutdown Outside Control Room ***Question 85***						X	2.1.32 Ability to explain and apply system limits and precautions. (CFR: 41.10 / 43.2 / 45.12)	4.0	1
K/A Category Point Totals:	**0**	**0**	**0**	**0**	**2**	**2**	Group Point Total:		**4**

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Points
006 Emergency Core Cooling System (ECCS) ***Question 86***								X				A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: System leakage (CFR: 41.5 / 45.5)	3.7	1
013 Engineered Safety Features Actuation System (ESFAS) ***Question 87***											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. (CFR: 41.7 / 43.5 / 45.12)	4.6	1
026 Containment Spray System (CSS) ***Question 88***								X				A2.07 Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of containment spray pump suction when in recirculation mode, possibly caused by clogged sump screen, pump inlet high temperature exceeded cavitation, voiding), or sump level below cutoff (interlock) limit (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.9	1
039 Main and Reheat Steam System (MRSS) ***Question 89***								X				A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Increasing steam demand, its relationship to increases in reactor power (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.6	1
061 Auxiliary/Emergency Feedwater (AFW) System ***Question 90***											X	2.4.6 Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)	4.7	1
K/A Category Point Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	Group Point Total:		**5**

ES-401	PWR Examination Outline	Form ES-401-2
Davis-Besse 6/2013	Plant Systems - Tier 2/Group 2(SRO)	

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	Points
011 Pressurizer Level Control System (PZR LCS) ***Question 91***								X				A2.07 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Isolation of letdown (CFR: 41.5 / 43.5 / 45.3 / 45.13)	3.3	1
015 Nuclear Instrumentation System ***Question 92***								X				A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Power supply loss or erratic operation (CFR: 41.5 / 43.5 / 45.3 / 45.5)	3.9	1
033 Spent Fuel Pool Cooling System (SFPCS) ***Question 93***											X	2.1.20 Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)	4.6	1
K/A Category Point Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	Group Point Total:		**3**

ES 401	Generic Knowledge and Abilities Outline (Tier 3)	Form ES-401-3

Facility: **Davis-Besse SRO** Date of Exam **6/3 thru 6/14 2013**

Category	K/A#	Topic	RO		SRO Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.42	Knowledge of new and spent fuel movement procedures. (CFR: 41.10 / 43.7 / 45.13) ***Question 94***			3.4	1
					Subtotal	**1**
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. (CFR: 41.5 / 41.10 / 43.5 / 43.6 / 45.1) ***Question 95***			4.4	1
	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.(CFR: 41.10 / 43.5 / 45.13) ***Question 96***			3.9	1
					Subtotal	**2**
3. Radiation Control	2.3.6	Ability to approve release permits. (CFR: 41.13 / 43.4 / 45.10) ***Question 97***			3.8	1
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.12 / 43.4 / 45.9) ***Question 98***			3.1	1
					Subtotal	**2**
4. Emergency Procedures/ Plan	2.4.27	Knowledge of "fire in the plant" procedures. (CFR: 41.10 / 43.5 / 45.13) ***Question 99***			3.9	1
	2.4.44	Knowledge of emergency plan protective action recommendations. (CFR: 41.10 / 41.12 / 43.5 / 45.11) ***Question 100***			4.4	1
					Subtotal	**2**
					Tier 3 Point Total	**7**