

Outline Submittal (do not write in this package)

Contains the following:

Outline Submittal Letter

ES-201-2	Examination Outline Quality Checklist
ES-301-1	Administrative Topics Outline (RO)
ES-301-1	Administrative Topics Outline (SRO)
ES-301-2	Control Room and Facility Walk-Through Test Outline (RO/SRO)
ES-301-5	Transient and Event Checklist (Operating Test 1)
ES-301-6	Competencies Checklist (Operating Test 1)
D-1	Dynamic Simulator Scenario Outline for 4 scenarios
ES-401-1	BWR SRO Examination Outline
ES-401-2	BWR RO Examination Outline
Admin	NRC Comments and Resolution on licensee submitted test outline

Commonwealth Edison Company
Dresden Generating Station
6500 North Dresden Road
Morris, IL 60450
Tel 815-942-2920

10 CFR 55.40



October 12, 2000

PSLTR: #00-0143

Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, IL 60532-4351

Dresden Nuclear Power Station Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
Docket Nos. 50-237 and 50-249

Subject: Initial License Examination Integrated Examination Outline

Enclosed is the integrated examination outline which Dresden Nuclear Power Station (DNPS) is submitting for review, comment, and approval for the Initial License Examination scheduled for the week of February 5, 2001, at DNPS.

This submittal includes outlines for the senior reactor operator and reactor operator written examinations, the job performance measure walk-through, the administrative job performance measure walk-through, and the integrated operational scenarios.

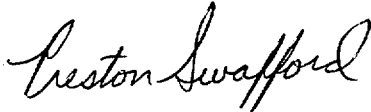
This outline has been developed in accordance with NUREG-1021, "Operator Licensing Examiner Standards," Revision 8, Supplement 1.

In accordance with NUREG 1021, Section ES-201, please ensure that these materials are withheld from public disclosure until after the examinations are complete.

October 12, 2000
U.S. Nuclear Regulatory Commission
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Should you have any questions concerning this letter, please contact Mr. D.F. Ambler, Regulatory Assurance Manager, at (815) 942-2920 extension 3800.

Respectfully,

A handwritten signature in cursive script, reading "Preston Swafford".

Preston Swafford
Site Vice President
Dresden Nuclear Power Station

Enclosures:

ES-201-2	Examination Outline Quality Checklist
ES-201-3	Examination Security Agreements
ES-301-1	Administrative Topics Outline
ES-301-2	Control Room Systems and Facility Walk-Through Test Outline
ES-301-5	Transient and Event Checklist
ES-301-6	Competencies Checklist
ES-401-1	BWR SRO Examination Outline
ES-401-2	BWR RO Examination Outline
ES-D-1	Scenario Outlines

cc: NRC Document Control Desk – w/o enclosures
NRC Senior Resident Inspector - Dresden Nuclear Power Station – w/o enclosures

Facility: Station		Date of Examination: MMM DD, YYYY		
Item	Task Description	Initials		
		a	b*	c
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	QMS	TSP	sm
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all knowledge and ability categories are appropriately sampled.	QMS	TSP	sm
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	QMS	TSP	sm
	d. Assess whether the repetition from previous examination outlines is excessive.	QMS	TSP	sm
2. S I M	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	QMS	TSP	sm
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	QMS	TSP	sm
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	QMS	TSP	sm
3. W / T	a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	QMS	TSP	sm
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301.1, (2) one task is conducted in a low-power or shutdown condition, ✓ (3)* 40% of the tasks require the applicant to implement an alternate path procedure, ✓ (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and ✓ (5) the in-plant walk-through requires the applicant to enter the RCA. ✓	QMS	TSP	* sm
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	QMS	TSP	sm
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	QMS	TSP	sm
	e. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	QMS	TSP	sm
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	QMS	TSP	sm
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	QMS	TSP	sm
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	QMS	TSP	sm
	d. Check for duplication and overlap among exam sections.	QMS	TSP	sm
	e. Check the entire exam for balance of coverage.	QMS	TSP	sm
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	QMS	TSP	sm
Printed Name / Signature		Date		
a. Author	JEFFREY A. SCHMITZ / <i>[Signature]</i>	10/11/00		
b. Facility Reviewer(**)	Terence S. Palenys / <i>[Signature]</i>	10/11/00		
c. Chief Examiner	Deil R. McNeil / <i>[Signature]</i>	10/20/00		
d. NRC Supervisor	David E. Hils / <i>[Signature]</i>	10/20/00		
(*) Not applicable for NRC-developed examinations.				

* There are two JAMs from Group 3.

Facility: Dresden
 Examination Level (circle one) RO SRO

Date of Examination: FEB 05, 2001
 Operating Test Number: 2001 RO

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Use Plant computer to obtain and evaluate parametric information on system or component status.	Perform APRM Gain Verification (KA 2.1.19 Imp 3.0)
	Ability to execute procedure steps.	Calculate Drywell leak rate. (KA 2.1.20 Imp 4.3)
A.2 Equipment Control	Knowledge of tagging and clearance procedures.	Verify a safety tagout. (KA 2.2.13 Imp 3.6)
A.3 Radiation Control	Process for performing a containment purge.	NCAD flow meter correction (KA 2.3.9 Imp 2.5)
A.4 Emergency Plan	Fire in the plant procedures.	Respond to a fire alarm. (KA 2.4.27 Imp 3.0)

Facility: DresdenDate of Examination: FEB 05, 2001Examination Level (circle one): RO / (SRO)Operating Test Number: 2001 SRO

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Recognize indications for system operating parameters which are entry level conditions for technical specifications.	Determine reportability requirements. (KA 2.1.33 Imp 3.4)
	Apply technical specifications for a system.	Review a faulty APRM surveillance. (KA 2.1.12 Imp 4.0)
A.2 Equipment Control	Tagging and clearance procedures.	Initiate a caution card (KA 2.2.13 Imp 3.8)
A.3 Radiation Control	Radiation entry and exposure limits	Question # 1: Exposure limits approval (KA 2.3.4 Imp 3.1)
		Question #2: High Radiation Area entry requirements (KA 2.3.1 Imp 3.0)
A.4 Emergency Plan	Take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator.	Classify a GSEP and determine PARS. (KA 2.4.38 4.0)

Facility: DresdenDate of Examination: Feb 05, 2001Exam Level (circle one): RO SRO(I) SRO(U)Operating Test No.: 2001

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Reactor Protection System/ TCV Fast Closure Test/Partial Half Scram (S-0500-08) KA:212000A2.12 (4.0/4.1)	A,S,D	Instrumentation
b. Low Pressure Core Spray System/ Core Spray Pump Operability Test (Degraded Performance) (S-1400-03) KA:209001A4.11 (3.7/3.6)	A,S,D	Reactor Water Inventory Control
c. Isolation (Emergency) Condenser/ Manually Initiate the Isolation Condenser (S-1300-01) KA:207000A4.07 (4.2/4.3)	S,D	Heat Removal From Reactor Core
d. Main and Reheat Steam System/ Isolate One Main Steam Line (S-0250-04) KA:239001A4.01 (4.2/4.0)	S,D,L	Reactor Pressure Control
e. Radiation Monitoring System/ Operate SPING Terminal -Release rate, Stack & SPING smpl flow (S-1700-03) 272000 2.1.20 (4.3/4.2)	S,D	Radioactivity Release
f. Automatic Depressurization System/ Initiate ADS with Failure of One ADS Valve to Open (NEW) 218000 A2.04 (4.1/4.2)	A,S,N	Reactor Pressure Control
g. Reactor Manual Control System/ Timer Malfunction During Rod Exercising (New) 201002A2.01 (2.7/2.8)	A,S,N	Reactivity Control

B.2 Facility Walk-Through

a. Control Rod Drive Hydraulic System/ Vent Scram Air Header to Insert Control Rods KA:295015AA1.01 (3.8/3.9)	D,R	Reactivity Control
b. A.C. Electrical Distribution / Configure Bus 23 for Safe Shutdown from Plant (P-6400-01) KA:295016AA.1.07 (4.2/4.3)	D	Electrical
c. Primary Containment Isolation System / Nuclear Steam Supply Shut-Off / Bypass RWCU Isolations (P-1200-01) KA:204000A3.03 (3.6/3.6)	D	Containment Integrity

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: DresdenDate of Examination: Feb 05, 2001Exam Level (circle one): RO (SRO(I)) (SRO(U))Operating Test No.: 2001

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Reactor Protection System/ TCV Fast Closure Test/Partial Half Scram (S-0500-08) KA:212000A2.12 (4.0/4.1)	A,S,D	Instrumentation (VII)
b. Low Pressure Core Spray System/ Core Spray Pump Operability Test (Degraded Performance) (S-1400-03) KA:209001A4.11 (3.7/3.6)	A,S,D	Reactor Water Inventory Control (II)
c. Isolation (Emergency) Condenser/ Manually Initiate the Isolation Condenser (S-1300-01) KA:207000A4.07 (4.2/4.3)	S,D	Heat Removal From Reactor Core (IV)
d. A.C. Electrical Distribution / Crosstie Bus 24-1 and 34-1 using the crosstie breakers (S6500-02) KA:262001A4.01 (3.4/3.7)	S,D	Electrical (VI)
e. Radiation Monitoring System/ Operate SPING Terminal -Release rate, Stack & SPING smpl flow (S-1700-03) 272000 2.1.20 (4.3/4.2)	S,D	Radioactivity Release (IX)
f. Automatic Depressurization System/ Initiate ADS with Failure of One ADS Valve to Open (NEW) 218000 A2.04 (4.1/4.2)	A,S,N	Reactor Pressure Control (III)
g. Reactor Manual Control System/ Timer Malfunction During Rod Exercising (New) 201002A2.01 (2.7/2.8)	A,S,N	Reactivity Control (I)

B.2 Facility Walk-Through

a. Control Rod Drive Hydraulic System/ Vent Scram Air Header to Insert Control Rods KA:295015AA1.01 (3.8/3.9)	D,R	Reactivity Control (I)
b. A.C. Electrical Distribution / Configure Bus 23 for Safe Shutdown from Plant (P-6400-01) KA:295016AA.1.07 (4.2/4.3)	D	Electrical (VI)
c. Primary Containment Isolation System / Nuclear Steam Supply Shut-Off / Bypass RWCU Isolations (P-1200-01) KA:204000A3.03 (3.6/3.6)	D	Containment Integrity (V)

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

OPERATING TEST NO.: # 1

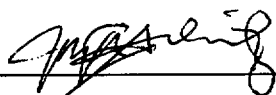
Applicant Type	Evolution Type	Minimum Number	Scenario Number		
			A	B	C
RO	Reactivity	1	2 /	1 /	2 /
	Normal	1	/ 1	/ 2	/ 1
	Instrument / Component	4	3,5 / 4,6	4,6 / 3,5	2,6 / 4,5
	Major	1	7	7	7

As RO	Reactivity	1	2	1	2
	Normal	0	N/A	N/A	N/A
	Instrument / Component	2	3,5	4,6	2,6
	Major	1	7	7	7
SRO-I	Reactivity	0	N/A	N/A	N/A
	Normal	1	1	2	1
	Instrument / Component	2	3,5,4,6	4,6,3,5	2,6,4,5
	Major	1	7	7	7

SRO-U	Reactivity	0	N/A	N/A	N/A
	Normal	1	1	2	1
	Instrument / Component	2	3,5,4,6	4,6,3,5	2,6,4,5
	Major	1	7	7	7

- Instructions:
- (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type. (NSO / Assist NSO)
 - (2) Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (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 requirement.

Author:

 10/11/00

Chief Examiner:

 10/20/00

OPERATING TEST NO.: # 1

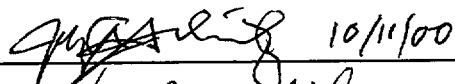
Applicant Type	Evolution Type	Minimum Number	Scenario Number		
			D		
RO	Reactivity	1	2 /		
	Normal	1	/ 1		
	Instrument / Component	4	3,5 / 4,6		
	Major	1	7 / 7		

As RO	Reactivity	1	2		
	Normal	0	N/A	N/A	N/A
	Instrument / Component	2	3,5		
	Major	1	7		
SRO-I	Reactivity	0	N/A	N/A	N/A
	Normal	1	1		
	Instrument / Component	2	3,5,4,6	,	,
	Major	1	7		

SRO-U	Reactivity	0	N/A	N/A	N/A
	Normal	1	1		
	Instrument / Component	2	3,5,4,6	,	,
	Major	1	7		

- Instructions:
- (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type. (NSO / Assist NSO)
 - (2) Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (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 requirement.

Author:

 10/11/00

Chief Examiner:

 10/20/00

OPERATING TEST NO.: 1

Competencies	Applicant #1			Applicant #2			Applicant #3		
	RO/SRO-I/SRO-U			RO/SRO-I/SRO-U			RO/SRO-I/SRO-U		
	SCENARIO			SCENARIO			SCENARIO		
	A	B	C	A	B	C	A	B	C
Understand and Interpret Annunciators and Alarms	(4), 5, (6), 7	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8	(4), 5, (6), 7	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8	(4), 5, (6), 7	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8
Diagnose Events and Conditions	3, (4), 5, (6), 7, 8	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8	3, (4), 5, (6), 7, 8	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8	3, (4), 5, (6), 7, 8	(3), 4, (5), 6, 7, 8	3, (4), (5), 6, 7, 8
Understand Plant and System Response	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8
Comply With and Use Procedures (1)	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8
Operate Control Boards (2)	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	N/A	N/A	N/A
Communicate and Interact With the Crew	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8	(1), 2, 3, (4), 5, (6), 7, 8	1, (2), (3), 4, (5), 6, 7, 8	(1), 2, 3, (4), (5), 6, 7, 8
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A	3	3, 4, 6	(1), 2, 3, (4), (5), 6, 7, 8	3	3, 4, 6	(1), 2, 3, (4), (5), 6, 7, 8

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

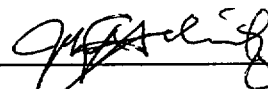
(3) Only applicable to SROs.

Event #s in parenthesis indicate Assist NSO as primary responder.


Instructions:

Circle 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.

Author:

 10/11/00

Chief Examiner:

 10/20/00

OPERATING TEST NO.: # 1

Competencies	Applicant #1			Applicant #2			Applicant #3		
	RO/SRO-I/SRO-U			RO/SRO-I/SRO-U			RO/SRO-I/SRO-U		
	SCENARIO			SCENARIO			SCENARIO		
	D			D			D		
Understand and Interpret Annunciators and Alarms	3, 4, (5), (6), 7, 8			3, 4, (5), (6), 7, 8			3, 4, (5), (6), 7, 8		
Diagnose Events and Conditions	3, 4, (5), (6), 7, 8			3, 4, (5), (6), 7, 8			3, 4, (5), (6), 7, 8		
Understand Plant and System Response	(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8		
Comply With and Use Procedures (1)	(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8		
Operate Control Boards (2)	(1), 2, 3, 4, (5), (6), 7			(1), 2, 3, 4, (5), (6), 7, 8			N/A	N/A	N/A
Communicate and Interact With the Crew	(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8		
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	(1), 2, 3, 4, (5), (6), 7, 8			(1), 2, 3, 4, (5), (6), 7, 8		
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A	4, 5			4, 5		

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Event #s in parenthesis indicate Assist NSO as primary responder.

Instructions:

Circle 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.

Author:

[Signature] 10/11/00

Chief Examiner:

[Signature] 10/20/00

Facility: Dresden

Scenario No: A

Op-Test No: 1

Examiners: _____ Operators: _____

Initial Conditions: IC-75; 55% reactor power; Unit 3 is in Mode 5.

Turnover: The following equipment is out of service: CRD Pump 2A, RFP 2C, APRM Channel 3. Control Rod D09 accumulator is inoperable due to low pressure; actions to recharge the accumulator are in progress.

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	N (AUX)	Stator water cooling pumps are swapped by starting 2B and securing 2A.
2	N/A	R (NSO)	Reactor power is increased from 55% to 65% by withdrawing control rods.
3	RODE07ST	C (NSO)	Control rod E07 becomes stuck during the power increase and the control rod is not moved by increasing drive water pressure.
4	N33	C (AUX)	Instrument air compressor (IAC) 3C trips on overcurrent requiring the manual starting of IAC 2B.
5	RRMASUPF RRMASUPD	I (NSO)	Master recirc flow controller fails and slowly increases both recirculation pump speeds. The excursion is stopped by locking out both recirculation pump scoop tubes.
6	MGMATMG	I (AUX)	Main generator voltage regulator trips to manual and generator voltage is adjusted using manual voltage control.
7	I22 IP1	M (ALL)	Steam leak in the drywell, upstream of flow restrictors, ramps to major size. Reactor auto scrams from high drywell pressure.
8	Override	C (NSO)	Drywell spray valve fails to open on first LPCI loop selected for containment spray.

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

Facility: DresdenScenario No: AOp-Test No: 1Summary:

Following turnover the crew is directed to shutdown Stator Water Cooling Pump 2A for scheduled maintenance. Stator Water Cooling Pump 2B is started and 2B is shutdown. The crew then increases reactor power from 55% to 65%. Just prior to completing rod withdrawal for the power increase, Control Rod E07 becomes stuck. Drive water pressure is increased and further attempts to move the rod are not successful. Instrument Air Compressor (IAC) 3C trips on overcurrent and IAC 2B is manually started to restore instrument air pressure. The master recirculation flow controller fails and slowly raises both recirculation pump speeds until the scoop tubes are manually locked out. Following the power excursion, the main generator voltage regulator trips to manual and the generator output voltage is adjusted by using manual voltage control. A steam leak occurs in the drywell, upstream of the flow restrictors. The reactor automatically scrams on high drywell pressure. The leak increases in size, rapidly increasing drywell pressure. When drywell spray is directed, the inboard drywell spray valve fails to open and the other loop is used to initiate drywell spray. The scenario is terminated when the crew completes an RPV emergency depressurization and drywell pressure is controlled and reduced.

Facility: Dresden

Scenario No: B

Op-Test No: 1

Examiners: _____ Operators: _____

Initial Conditions: IC-75; 60% reactor power; Unit 3 is in Mode 5.

Turnover: The following equipment is out of service: CRD Pump 2A, RFP 2C, APRM Channel 3. Control Rod D09 accumulator is inoperable due to low pressure; actions to recharge the accumulator are in progress.

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	R (NSO)	Reactor power is reduced from 60% to 50% by inserting control rods.
2	N/A	N (AUX)	A condensate/condensate booster pump is secured for the power reduction.
3	U3PWR237	I (AUX)	The SPING fails due to a malfunction of the 24/48 vdc power supply. Power supply is manually shifted to Unit 3.
4	RODH07AT	I (NSO)	Accumulator trouble alarm due to low pressure on control rod H07. Verify CRD pump flow by inserting control rod.
5	K41 K30	C (AUX)	Bus 29 trips on overcurrent. MCCs 28-7 and 29-7 fail to automatically transfer to Bus 28.
6	RDPPBTRP	C (NSO)	CRD Pump 2B trips on overcurrent. Reactor must be manually scrammed.
7	RDHLDEGA RDHLDEGB RDHLVFPA RDHLVFPB	M (ALL)	Reactor scram fails due to water in scram discharge volume.
8	SCPMPOCA	C (NSO)	SBLC Pump 2A trips on overcurrent just after starting

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

Facility: DresdenScenario No: BOp-Test No: 1Summary:

A unit shutdown is in progress and following turnover the crew reduces reactor power from 60% to 50%. A condensate/condensate booster pump is shutdown at about 450 Mwe during the power reduction. The crew is directed to hold power at 50% and the SPING then fails due to a malfunction in the 24/48 vdc power supply. The 24/48 vdc power for the SPING is then shifted to the Unit 3 supply. An accumulator trouble alarm is received for Control Rod H07 and the accumulator is determined to be inoperable due to low pressure. The crew verifies CRD pump flow by rod insertion since the accumulator for Control Rod D09 is already inoperable. Bus 29 trips on overcurrent and MCCs 28-7 and 29-7 fail to automatically transfer to supply from Bus 28. The MCCs are then manually aligned to Bus 28. CRD Pump 2B trips on overcurrent and with CRD Pump 2A already out of service the crew manually scrams the reactor due to two inoperable accumulators. The reactor scram fails due to a hydraulic lock from water in the scram discharge volume and the crew enters the Failure to Scram EOP. When standby liquid control (SBLC) injection is attempted SBLC Pump 2A trips on overcurrent and alternate boron injection methods are initiated since the other SBLC pump has lost power from Bus 29. The scenario is terminated when the crew achieves control of power and level and a manual scram attempt results in the insertion of all control rods.

Facility: Dresden

Scenario No: C

Op-Test No: 1

Examiners: _____ Operators: _____

Initial Conditions: IC-12; 90% reactor power; Unit 3 is in Mode 5.

Turnover: The following equipment is out of service: CRD Pump 2A, RFP 2C, APRM Channel 3. Control Rod D09 accumulator is inoperable due to low pressure; actions to recharge the accumulator are in progress. Surveillance is in progress for SBT; fan 2/3A is running and ready to be shutdown. The load dispatcher has requested return to rated power.

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	N (AUX)	Shutdown SBT Fan 2/3A and secure system from surveillance.
2	RRMASUPD	R (NSO)	Increase reactor power to rated by increasing recirculation flow.
3	RDFAILM4	I (NSO)	Failure of RPIS inputs from control rod M04.
4	X07	C (AUX)	Reactor Building Exhaust Fan 2A low flow trip.
5	RADRBVBH	I (AUX)	Reactor Building Ventilation Radiation Monitor 2B spurious trip.
6	RLMFBFOF	C (NSO)	FWRV 2B fails open.
7	HP4	M (ALL)	Seismic event occurs followed by FWRV station high vibration. Manual scram of reactor. Unisolable feed line break in drywell following reactor scram.
8	CSPPAFLT CSPPBDEG	C (NSO)	Core Spray Pump 2A overcurrent trip. Core Spray Pump 2B degraded flow.

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

Facility: Dresden

Scenario No: C

Op-Test No: 1

Summary:

Following turnover the crew shutdown a Standby Gas Treatment System (SBGT) fan running for a normal surveillance and secure the system. The crew is then directed to increase reactor power to rated after having been at 90% for a short period. After the return to rated power the RPIS inputs for Control Rod M04 fail and the rod is inserted and electrically disarmed. Reactor Building Exhaust Vent Fan 2A then trips on low flow and the 2B fan is manually started. Following the starting of the fan Reactor Building Ventilation Radiation Monitor 2B spikes upscale, tripping reactor building ventilation and starting SBGT. After determining that the radiation monitor trip was spurious, SBGT is secured and reactor building ventilation is restarted. Then FWRV 2B fails open and the feedwater level control system is manually controlled to restore reactor water level. An earthquake tremor is then experienced. A FWRV station high vibration is received and the reactor is manually scrammed. The reactor feed pumps are then secured and cannot be restarted. An unisolable feed line break occurs in the drywell and increases in severity. The crew performs an RPV emergency depressurization when reactor level cannot be maintained. Core Spray Pump 2A trips on overcurrent when started for low pressure feed, Core Spray Pump 2B is started with degraded flow, and LPCI pumps are then started to provide low pressure flow. The scenario is terminated when the reactor is depressurized and level restored using low pressure ECCS pumps.

Facility: Dresden

Scenario No: D

Op-Test No: 1

Examiners: _____ Operators: _____

Initial Conditions: IC-75; 60% reactor power; Unit 3 is in Mode 5.

Turnover: The following equipment is out of service: CRD Pump 2A, RFP 2C, APRM Channel 3. Control Rod D09 accumulator is inoperable due to low pressure; actions to recharge the accumulator are in progress. MSIV 2a was closed for stroke time adjustment and is ready to be opened. Two reactor feed pumps and three condensate/condensate booster pumps remain running. Running two RBCCW pumps due to high service water temperatures.

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	N (AUX)	Open MSIV 2A.
2	N/A	R (NSO)	Increase reactor power to 55% by withdrawing control rods.
3	Q01	C (NSO)	RBCCW Pump 2A trip.
4	NIA1FLG NIA1POT	I (NSO)	APRM Channel 1 fails to 125%.
5	HPINIT	I (AUX)	Spurious HPCI initiation.
6	RRMGGAHI	C (NSO)	Recirc MG Set 2A high temperature requiring manual shutdown of Recirculation Pump 2A.
7	RLR F41 FP1	M (ALL)	Wide range level sensing line break in drywell.
8	HPAOPC	C (AUX)	HPCI start failure.

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

Facility: DresdenScenario No: DOp-Test No: 1Summary:

The crew assumes the shift with reactor at about 48% power and the SRO directs the Auxiliary NSO to open MSIV 2A, which was closed for a stroke time adjustment. The NSO, as directed by the SRO, increases reactor power to 60% by control rod withdrawal. Following the power increase, RBCCW Pump 2A trips and the 2B pump is manually started by the Auxiliary NSO. APRM Channel 1 fails upscale and the NSO bypasses the channel. The SRO addresses the Technical Specification requirements for the failed APRM channel. The HPCI system spuriously initiates and the Auxiliary NSO secures the system from the initiation. Recirculation MG Set 2A generator temperature increases and the MG set is secured by the Auxiliary NSO as directed by procedure. A wide range level sensing breaks in the drywell and the reactor automatically scrams on high drywell pressure. Drywell temperature increases and the reactor water level instruments become inoperable due to high drywell temperature. The crew then performs RPV flooding and the scenario is terminated when adequate ECCS low pressure injection is established.

Facility: Dresden

Form ES-401-1

Exam Date: 02/05/2001Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	5				4	4			5	26
	2	3	3	3				2	3			3	17
	Tier Totals	7	7	8				6	7			8	43
2. Plant Systems	1	3	2	2	2	2	2	2	2	2	1	3	23
	2	1	1	1	1	2	1	1	1	1	1	2	13
	3	0	0	0	1	0	1	1	0	0	0	1	4
	Tier Totals	4	3	3	4	4	4	4	3	3	2	6	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					4		4		5		4		17

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

Facility: Dresden

BWR SRO Examination Outline

Printed: 10/11/2011

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295003	Partial or Complete Loss of A.C. Power / 6	X						AK1.06 - Station blackout: Plant-Specific	4.0*	1
295007	High Reactor Pressure / 3						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
295007	High Reactor Pressure / 3				X			AA1.04 - Safety/relief valve operation: Plant-Specific	4.1*	1
295009	Low Reactor Water Level / 2						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
295010	High Drywell Pressure / 5		X					AK2.01 - Suppression pool level	3.3	1
295010	High Drywell Pressure / 5			X				AK3.03 - Radiation level monitoring	3.5	1
295013	High Suppression Pool Temperature / 5						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
295013	High Suppression Pool Temperature / 5			X				AK3.01 - Suppression pool cooling operation	3.8	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.01 - RPS	4.1	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.7	1
295016	Control Room Abandonment / 7				X			AA1.06 - Reactor water level	4.1	1
295017	High Off-Site Release Rate / 9						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
295017	High Off-Site Release Rate / 9	X						AK1.02 - †Protection of the general public	4.3*	1

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8			X				AK3.02 - Interlocks associated with fuel handling equipment	3.8*	1
295023	Refueling Accidents / 8				X			AA1.06 - Neutron monitoring	3.4	1
295024	High Drywell Pressure / 5					X		EA2.01 - Drywell pressure	4.4*	1
295024	High Drywell Pressure / 5					X		EA2.06 - Suppression pool temperature	4.1	1
295025	High Reactor Pressure / 3	X						EK1.06 - Pressure effects on reactor water level	3.6	1
295026	Suppression Pool High Water Temperature / 5			X				EK3.02 - Suppression pool cooling	4.0	1
295030	Low Suppression Pool Water Level / 5						X	2.4.11 - Knowledge of abnormal condition procedures.	3.6	1
295031	Reactor Low Water Level / 2					X		EA2.04 - Adequate core cooling	4.8*	1
295031	Reactor Low Water Level / 2		X					EK2.03 - Low pressure core spray	4.3*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.01 - Reactor pressure effects on reactor power	4.3*	1
295038	High Off-Site Release Rate / 9				X			EA1.06 - Plant ventilation	3.6	1
500000	High Containment Hydrogen Concentration / 5					X		EA2.02 - Oxygen monitoring system availability	3.5	1
500000	High Containment Hydrogen Concentration / 5		X					EK2.08 - Wet Well vent system	3.6	1

K/A Category Totals: 4 4 5 4 4 5

Group Point Total: 26

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295002	Loss of Main Condenser Vacuum / 3			X				AK3.01 - Reactor SCRAM: Plant-Specific	3.8	1
295004	Partial or Complete Loss of D.C. Power / 6				X			AA1.03 - A.C. electrical distribution	3.6	1
295005	Main Turbine Generator Trip / 3		X					AK2.05 - Extraction steam system	2.7	1
295008	High Reactor Water Level / 2	X						AK1.03 - Feed flow/steam flow mismatch	3.2	1
295012	High Drywell Temperature / 5					X		AA2.02 - Drywell pressure	4.1	1
295020	Inadvertent Containment Isolation / 5			X				AK3.08 - Suppression chamber pressure response	3.5	1
295021	Loss of Shutdown Cooling / 4		X					AK2.03 - RHR/shutdown cooling	3.6	1
295021	Loss of Shutdown Cooling / 4			X				AK3.04 - Maximizing reactor water cleanup flow	3.4	1
295022	Loss of CRD Pumps / 1					X		AA2.01 - Accumulator pressure	3.6	1
295022	Loss of CRD Pumps / 1		X					AK2.07 - Reactor pressure (SCRAM assist): Plant-Specific	3.6	1
295028	High Drywell Temperature / 5					X		EA2.03 - Reactor water level	3.9	1
295028	High Drywell Temperature / 5				X			EA1.03 - Drywell cooling system	3.9	1
295033	High Secondary Containment Area Radiation Levels / 9						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.6	1
295034	Secondary Containment Ventilation High Radiation / 9	X						EK1.01 - Personnel protection	4.1	1

Facility: Dresden

BWR SRO Examination Outline

Printed: 10/11/2011

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295036	Secondary Containment High Sump/Area Water Level / 5						X	2.4.11 - Knowledge of abnormal condition procedures.	3.6	1
600000	Plant Fire On Site / 8						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
600000	Plant Fire On Site / 8	X						AK1.01 - Fire Classifications by type	2.8	1

K/A Category Totals: 3 3 3 2 3 3

Group Point Total: 17

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
202002	Recirculation Flow Control System / 1			X									K3.01 - Core flow	3.5	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2				X								K4.07 - Emergency generator load sequencing	3.9	1
206000	High Pressure Coolant Injection System / 2			X									K3.01 - Reactor water level control: BWR-2, 3, 4	4.0	1
207000	Isolation (Emergency) Condenser / 4		X										K2.02 - Initiation logic: BWR-2, 3	3.7	1
207000	Isolation (Emergency) Condenser / 4				X								K4.08 - Protection against incomplete steam condensation (condensate outlet valve does not fully open): BWR-2,3,(P-Spec)	3.6	1
209001	Low Pressure Core Spray System / 2	X											K1.03 - Keep fill system	3.0	1
209001	Low Pressure Core Spray System / 2											X	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
211000	Standby Liquid Control System / 1							X					A1.02 - Explosive valve indication	3.9	1
216000	Nuclear Boiler Instrumentation / 7						X						K6.03 - Temperature compensation: Plant-Specific	2.8	1
218000	Automatic Depressurization System / 3	X											K1.05 - Remote shutdown system: Plant-Specific	3.9	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
218000	Automatic Depressurization System / 3										X		A4.08 - Suppression pool level	3.8	1
223001	Primary Containment System and Auxiliaries / 5											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
223001	Primary Containment System and Auxiliaries / 5							X					A1.05 - Hydrogen concentration	3.3	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5											X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5								X				A2.08 - †Surveillance testing	3.1	1
226001	RHR/LPCI: Containment Spray System Mode / 5		X										K2.02 - Pumps	2.9*	1
226001	RHR/LPCI: Containment Spray System Mode / 5					X							K5.06 - Vacuum breaker operation	2.8	1
239002	Relief/Safety Valves / 3						X						K6.03 - A.C. power: Plant-Specific	2.9*	1
241000	Reactor/Turbine Pressure Regulating System / 3					X							K5.03 - Reactor power vs. reactor pressure	3.6	1
259002	Reactor Water Level Control System / 2								X				A2.06 - Loss of controller signal output	3.4	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
261000	Standby Gas Treatment System / 9									X			A3.02 - Fan start	3.1	1
264000	Emergency Generators (Diesel/Jet) / 6	X											K1.05 - Emergency generator fuel oil supply system	3.3	1
264000	Emergency Generators (Diesel/Jet) / 6									X			A3.03 - Indicating lights, meters, and recorders	3.4	1

K/A Category Totals: 3 2 2 2 2 2 2 2 2 2 1 3

Group Point Total: 23

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1			X									K3.03 - Control rod drive mechanisms	3.2	1
201001	Control Rod Drive Hydraulic System / 1					X							K5.02 - Flow indication	2.6	1
202001	Recirculation System / 1		X										K2.01 - Recirculation pumps: Plant-Specific	3.2	1
204000	Reactor Water Cleanup System / 2								X				A2.08 - RWCU pump seal failure	3.1	1
214000	Rod Position Information System / 7						X						K6.02 - Position indication probe	2.7	1
215002	Rod Block Monitor System / 7	X											K1.06 - Control rod selection: BWR-3, 4, 5	3.1	1
215002	Rod Block Monitor System / 7					X							K5.01 - Trip reference selection: Plant-Specific	2.8	1
215003	Intermediate Range Monitor (IRM) System / 7											X	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
215003	Intermediate Range Monitor (IRM) System / 7				X								K4.05 - Changing detector position	3.0	1
234000	Fuel Handling Equipment / 8										X		A4.01 - †Neutron monitoring system	3.9	1
245000	Main Turbine Generator and Auxiliary Systems / 4									X			A3.05 - Control valve operation	3.1	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
262002	Uninterruptable Power Supply (A.C./D.C.) / 6							X					A1.02 - Motor generator outputs	2.9	1
263000	D.C. Electrical Distribution / 6											X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1

K/A Category Totals: 1 1 1 1 2 1 1 1 1 1 2

Group Point Total: 13

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1							X					A1.03 - CRD drive water flow	2.9	1
256000	Reactor Condensate System / 2						X						K6.01 - Plant air systems	2.8	1
288000	Plant Ventilation Systems / 9											X	2.1.12 - Ability to apply technical specifications for a system.	4.0	1
288000	Plant Ventilation Systems / 9				X								K4.03 - Automatic starting and stopping of fans	2.9	1

K/A Category Totals: 0 0 0 1 0 1 1 0 0 0 1

Group Point Total: 4

BWR SRO Examination Outline

Form ES-401-5

Facility: Dresden

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.12	Ability to apply technical specifications for a system.	4.0	1
	2.1.14	Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	4.0	1
Category Total:				4
Equipment Control	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
	2.2.14	Knowledge of the process for making configuration changes.	3.0	1
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	3.8	1
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	3.5	1
Category Total:				4
Radiation Control	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.	3.1	1
	2.3.9	Knowledge of the process for performing a containment purge.	3.4	1
	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
Category Total:				5

BWR SRO Examination Outline

Form ES-401-5

Facility: Dresden

Generic Category	KA	KA Topic	Imp.	Points
Emergency Plan	2.4.32	Knowledge of operator response to loss of all annunciators.	3.5	1
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
	2.4.50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
	2.4.13	Knowledge of crew roles and responsibilities during EOP flowchart use.	3.9	1

Category Total: 4

Generic Total: 17

- ① Randomly selected three 'BOTH' KAs from Generic (2.1.11, 2.3.9, 2.4.49)
- ② Will write separate questions for RO + SRO exams to comply with NUREG-1021 Rev 8 Supplement requirement.
- ③ Three KAs selected identified as Not applicable to Dresden
295005AK2.09, 295002AK3.05, 295016AA1.02
- ④ Replacement KAs RANDOMLY SELECTED FROM REMAINING KAs WITHIN THE SAME SYSTEM AND KA statement section.
295005AK2.05, 295002AK3.01, 295016AA1.06

2/2/01/00

Facility: Dresden

Form ES-401-2

Exam Date: 02/05/2001Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	5	3				1	1			1	13
	2	5	3	4				5	1			1	19
	3	0	1	2				1	0			0	4
	Totals Tier	7	9	9				7	2			2	36
2. Plant Systems	1	3	2	3	3	2	3	3	2	3	2	2	28
	2	1	2	2	2	2	2	2	2	2	2	0	19
	3	0	0	0	1	0	1	1	0	0	1	0	4
	Tier Totals	4	4	5	6	4	6	6	4	5	5	2	51
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					3		3		3		4		13

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

BWR RO L mination Outline

Printed: 10/11/12

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295005	Main Turbine Generator Trip / 3		X					AK2.05 - Extraction steam system	2.6	1
295007	High Reactor Pressure / 3				X			AA1.04 - Safety/relief valve operation: Plant-Specific	3.9	1
295009	Low Reactor Water Level / 2						X	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	4.3	1
295010	High Drywell Pressure / 5		X					AK2.01 - Suppression pool level	3.2	1
295010	High Drywell Pressure / 5			X				AK3.03 - Radiation level monitoring	3.2	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.01 - RPS	3.9	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.01 - Reactor SCRAM	4.1*	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.4	1
295024	High Drywell Pressure / 5					X		EA2.06 - Suppression pool temperature	4.1	1
295025	High Reactor Pressure / 3	X						EK1.06 - Pressure effects on reactor water level	3.5	1
295031	Reactor Low Water Level / 2		X					EK2.03 - Low pressure core spray	4.2	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.01 - Reactor pressure effects on reactor power	4.1*	1
500000	High Containment Hydrogen Concentration / 5		X					EK2.08 - Wet Well vent system	3.2	1

K/A Category Totals: 2 5 3 1 1 1

Group Point Total: 13

Facility: Dresden

BWR RO L mination Outline

Printed: 10/11/2011

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295002	Loss of Main Condenser Vacuum / 3			X				AK3.01 - Reactor SCRAM: Plant-Specific	3.7	1
295003	Partial or Complete Loss of A.C. Power / 6	X						AK1.06 - Station blackout: Plant-Specific	3.8	1
295004	Partial or Complete Loss of D.C. Power / 6				X			AA1.03 - A.C. electrical distribution	3.4	1
295008	High Reactor Water Level / 2	X						AK1.03 - Feed flow/steam flow mismatch	3.2	1
295008	High Reactor Water Level / 2				X			AA1.09 - Ability to drain: Plant-Specific	3.3	1
295013	High Suppression Pool Temperature / 5			X				AK3.01 - Suppression pool cooling operation	3.6	1
295016	Control Room Abandonment / 7				X			AA1.06 - Reactor water level	4.0	1
295017	High Off-Site Release Rate / 9	X						AK1.02 - †Protection of the general public	3.8*	1
295017	High Off-Site Release Rate / 9		X					AK2.05 - Stack-gas monitoring system: Plant-Specific	3.4	1
295020	Inadvertent Containment Isolation / 5			X				AK3.08 - Suppression chamber pressure response	3.3	1
295020	Inadvertent Containment Isolation / 5					X		AA2.03 - Reactor power	3.7	1
295022	Loss of CRD Pumps / 1		X					AK2.07 - Reactor pressure (SCRAM assist): Plant-Specific	3.4	1
295026	Suppression Pool High Water Temperature / 5			X				EK3.02 - Suppression pool cooling	3.9	1
295028	High Drywell Temperature / 5				X			EA1.03 - Drywell cooling system	3.9	1

BWR RO Lamination Outline

Printed: 10/11/2011

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295030	Low Suppression Pool Water Level / 5						X	2.4.11 - Knowledge of abnormal condition procedures.	3.4	1
295034	Secondary Containment Ventilation High Radiation / 9	X						EK1.01 - Personnel protection	3.8	1
295038	High Off-Site Release Rate / 9				X			EA1.06 - Plant ventilation	3.5	1
295038	High Off-Site Release Rate / 9		X					EK2.01 - Radwaste	3.1	1
600000	Plant Fire On Site / 8	X						AK1.01 - Fire Classifications by type	2.5	1

K/A Category Totals: 5 3 4 5 1 1

Group Point Total: 19

Facility: Dresden

BWR RO Lamination Outline

Printed: 10/11/2011

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295021	Loss of Shutdown Cooling / 4		X					AK2.03 - RHR/shutdown cooling	3.6	1
295021	Loss of Shutdown Cooling / 4			X				AK3.04 - Maximizing reactor water cleanup flow	3.3	1
295023	Refueling Accidents / 8			X				AK3.02 - Interlocks associated with fuel handling equipment	3.4	1
295023	Refueling Accidents / 8				X			AA1.06 - Neutron monitoring	3.3	1

K/A Category Totals: 0 1 2 1 0 0

Group Point Total: 4

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1			X									K3.03 - Control rod drive mechanisms	3.1	1
201001	Control Rod Drive Hydraulic System / 1					X							K5.02 - Flow indication	2.6	1
202002	Recirculation Flow Control System / 1			X									K3.01 - Core flow	3.5	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2				X								K4.07 - Emergency generator load sequencing	3.7	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2											X	2.2.12 - Knowledge of surveillance procedures.	3.0	1
206000	High Pressure Coolant Injection System / 2			X									K3.01 - Reactor water level control: BWR-2, 3, 4	4.0	1
206000	High Pressure Coolant Injection System / 2		X										K2.03 - Initiation logic: BWR-2, 3, 4	2.8*	1
207000	Isolation (Emergency) Condenser / 4		X										K2.02 - Initiation logic: BWR-2, 3	3.5	1
207000	Isolation (Emergency) Condenser / 4				X								K4.08 - Protection against incomplete steam condensation (condensate outlet valve does not fully open): BWR-2,3,(P-Spec)	3.4	1
209001	Low Pressure Core Spray System / 2	X											K1.03 - Keep fill system	2.9	1
209001	Low Pressure Core Spray System / 2											X	2.1.10 - Knowledge of conditions and limitations in the facility license.	2.7	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
211000	Standby Liquid Control System / 1							X					A1.02 - Explosive valve indication	3.8	1
215003	Intermediate Range Monitor (IRM) System / 7				X								K4.05 - Changing detector position	2.9	1
215004	Source Range Monitor (SRM) System / 7						X						K6.05 - Trip units	2.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7										X		A4.04 - LPRM back panel switches, meters and indicating lights	3.2	1
216000	Nuclear Boiler Instrumentation / 7						X						K6.03 - Temperature compensation: Plant-Specific	2.8	1
218000	Automatic Depressurization System / 3	X											K1.05 - Remote shutdown system: Plant-Specific	3.9	1
218000	Automatic Depressurization System / 3										X		A4.08 - Suppression pool level	3.7	1
223001	Primary Containment System and Auxiliaries / 5							X					A1.05 - Hydrogen concentration	3.1	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5								X				A2.08 - †Surveillance testing	2.7	1
239002	Relief/Safety Valves / 3						X						K6.03 - A.C. power: Plant-Specific	2.7*	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
241000	Reactor/Turbine Pressure Regulating System / 3					X							K5.03 - Reactor power vs. reactor pressure	3.5	1
241000	Reactor/Turbine Pressure Regulating System / 3							X					A1.24 - Main turbine eccentricity	2.6	1
259002	Reactor Water Level Control System / 2								X				A2.06 - Loss of controller signal output	3.3	1
259002	Reactor Water Level Control System / 2									X			A3.01 - Runout flow control: Plant-Specific	3.0*	1
261000	Standby Gas Treatment System / 9									X			A3.02 - Fan start	3.2	1
264000	Emergency Generators (Diesel/Jet) / 6	X											K1.05 - Emergency generator fuel oil supply system	3.2	1
264000	Emergency Generators (Diesel/Jet) / 6									X			A3.03 - Indicating lights, meters, and recorders	3.4	1

K/A Category Totals: 3 2 3 3 2 3 3 2 3 2 2

Group Point Total: 28

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1							X					A1.03 - CRD drive water flow	2.9	1
202001	Recirculation System / 1		X										K2.01 - Recirculation pumps: Plant-Specific	3.2*	1
204000	Reactor Water Cleanup System / 2								X				A2.08 - RWCU pump seal failure	2.9	1
214000	Rod Position Information System / 7						X						K6.02 - Position indication probe	2.7	1
215002	Rod Block Monitor System / 7	X											K1.06 - Control rod selection: BWR-3, 4, 5	3.0	1
215002	Rod Block Monitor System / 7					X							K5.01 - Trip reference selection: Plant-Specific	2.6	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5								X				A2.12 - Valve logic failure: Plant-Specific	3.0	1
226001	RHR/LPCI: Containment Spray System Mode / 5		X										K2.02 - Pumps	2.9*	1
226001	RHR/LPCI: Containment Spray System Mode / 5					X							K5.06 - Vacuum breaker operation	2.6	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5									X			A3.01 - Valve operation	3.4	1
245000	Main Turbine Generator and Auxiliary Systems / 4									X			A3.05 - Control valve operation	3.0	1
245000	Main Turbine Generator and Auxiliary Systems / 4				X								K4.10 - Extraction steam	2.6	1

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
256000	Reactor Condensate System / 2						X						K6.01 - Plant air systems	2.8	1
256000	Reactor Condensate System / 2			X									K3.02 - CRD hydraulics system	3.2	1
262002	Uninterruptable Power Supply (A.C./D.C.) / 6							X					A1.02 - Motor generator outputs	2.5	1
263000	D.C. Electrical Distribution / 6			X									K3.02 - Components using D.C. control power (i.e. breakers)	3.5	1
290001	Secondary Containment / 5				X								K4.03 - Fluid leakage collection	2.8	1
290001	Secondary Containment / 5										X		A4.09 - System status lights and alarms: Plant-Specific	3.2	1
290003	Control Room HVAC / 9										X		A4.04 - Environmental conditions	2.8	1

K/A Category Totals: 1 2 2 2 2 2 2 2 2 2 2 0

Group Point Total: 19

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215001	Traversing In-Core Probe / 7						X						K6.04 - Primary containment isolation system: Mark-I&II(Not-BWR1)	3.1	1
215001	Traversing In-Core Probe / 7							X					A1.06 - Radiation alarms: (Not-BWR1)	2.9	1
234000	Fuel Handling Equipment / 8										X		A4.01 - †Neutron monitoring system	3.7	1
288000	Plant Ventilation Systems / 9				X								K4.03 - Automatic starting and stopping of fans	2.8	1

K/A Category Totals: 0 0 0 1 0 1 1 0 0 1 0

Group Point Total: 4

BWR RO Examination Outline

Form ES-401-5

Facility: Dresden

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.0	1
	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.8	1
Category Total:				3
Equipment Control	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	2.6	1
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	1
	2.2.33	Knowledge of control rod programming.	2.5	1
Category Total:				3
Radiation Control	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	2.6	1
	2.3.2	Knowledge of facility ALARA program.	2.5	1
Category Total:				3
Emergency Plan	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
	2.4.50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
	2.4.13	Knowledge of crew roles and responsibilities during EOP flowchart use.	3.3	1
	2.4.9	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	1
Category Total:				4
Generic Total:				13

① See comments on SRO outline - 10/11/00

NRC Comments and Resolution (Outline Submittal)

1. The licensee submitted an outline form (ES-301-2) that contained two JPMs from the same safety group in the control room JPMs. It is not a requirement to have all seven JPMs from different safety groups (examination standards state they "should" be from seven different groups). The facility was asked to provide a different JPM for one of the two JPMs in the same group.

The station responded with a satisfactory replacement JPM from a different safety group.