Form 4.1-BWR Boiling-Water Reactor Examination Outline

Facility: Dres	sden Station					K/A (Catalo	g Re	v. 3			Rev.	.3	Dat	e of E	Exam:	04/20	0/2023
	2				F	ro K/	'A Ca	tegor	у Ро	ints				:	SRO	-Only	/ Poii	nts
lier	Group	K1	K2	КЗ	K4	K5	K6	A1	A2	A3	A4	G	Total	A	2	C	3	Total
1	1	4	3	3				4	3			3	20	:	3	4	4	7
Emergency and Abnormal Plant	2	1	1	1		N/A		1	1	N	/A	1	6	2	2		1	3
Evolutions	Tier Totals	5	4	4				5	4			4	26	ę	5		5	10
	1	2	3	3	2	3	2	2	2	2	3	2	26	3	3	:	2	5
2. Plant Systems	2	1	1	1	1	1	2	1	1	1	0	1	11	0	2		1	3
Cyclonic	Tier Totals	3	4	4	3	4	4	3	3	3	3	3	37	ę	5	:	3	8
	СО		E	С	•		RC			E	М	•		со	EC	RC	EM	
3. Generic Knowledge and Abilities Categories	2			2			1				1		6	2	2	1	2	7
	Reactor T	heor	у				The	rmoc	lynar	nics						<u>. </u>		
4. Theory	3							3	3				6					
Notes: CO =Cono EM =Eme	duct of Operatic ergency Procedu	ons; ures/	EC = ′Plar	= Eq າ	luipr	nent	Cor	ntrol	; RC	; = F	Radia	atior	n Cont	rol;				

ES-4.1	-BWR				E	BWR B	Exam	ination Outline (Dresden Station)		
			Em	erger	ncy an	nd Abr	norma	al Plant Evolutions—Tier 1/Group 1 (RO/ <mark>SRO</mark>)		
Item #	E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	Q#
1	(295001) (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION				x			(295001AA1.07) Ability to operate or monitor the following as they apply to (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION / 1 & 4: (CFR: 41.5 / 41.7 / 45.5 to 45.8) Nuclear boiler instrumentation system	3.4	1
2	(295003) (APE 3) PARTIAL OR COMPLETE LOSS OF AC POWER		x					(295003AK2.03) Knowledge of the relationship between the (APE 3) PARTIAL OR COMPLETE LOSS OF AC POWER / 6 and the following systems or components: (CFR: 41.8 / 41.10 / 45.3) AC electrical distribution system	3.9	19
3	(295004) (APE 4) PARTIAL OR COMPLETE LOSS OF DC POWER				х			(295004AA1.04) Ability to operate or monitor the following as they apply to (APE 4) PARTIAL OR COMPLETE LOSS OF DC POWER / 6: (CFR: 41.5 / 41.7 / 45.5 to 45.8) DC electrical loads	3.7	20
4	(295005) (APE 5) MAIN TURBINE GENERATOR TRIP						x	(295005) (APE 5) MAIN TURBINE GENERATOR TRIP / 3 (G2.4.12) EQUIPMENT CONTROL Knowledge of operating crew responsibilities during emergency and abnormal operations (CFR: 41.10 / 45.12)	3.9	75
5	(295006) (APE 6) SCRAM						x	(295006) (APE 6) SCRAM / 1 (G2.1.2) CONDUCT OF OPERATIONS Knowledge of operator responsibilities during any mode of plant operation (CFR: 41.10 / 43.1 / 45.13)	4.1	21
6	(295016) (APE 16) CONTROL ROOM ABANDONMENT		х					(295016AK2.08) Knowledge of the relationship between the (APE 16) CONTROL ROOM ABANDONMENT / 7 and the following systems or components: (CFR: 41.8 / 41.10 / 45.3) Isolation condensers	3.9	2
7	(295018) (APE 18) PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER (CCW)					x		(295018AA2.01) Ability to determine or interpret the following as they apply to (APE 18) PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER (CCW) / 8: (CFR: 41.10 / 43.5 / 45.13) Component temperatures	3.7	38
8	(295019) (APE 19) PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR				х			(295019AA1.02) Ability to operate or monitor the following as they apply to (APE 19) PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR / 8: (CFR: 41.5 / 41.7 / 45.5 to 45.8) System valves	3.2	3
9	(295021) (APE 21) LOSS OF SHUTDOWN COOLING	x						(295021AK1.04) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the (APE 21) LOSS OF SHUTDOWN COOLING / 4: (CFR: 41.5 / 41.7 / 45.7 / 45.8) Natural circulation	3.9	62
10	(295023) (APE 23) REFUELING ACCIDENTS	x						(295023AK1.04) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the (APE 23) REFUELING ACCIDENTS / 8: (CFR: 41.5 / 41.7 / 45.7 / 45.8) Fuel positioning	3.4	5
11	(295024) (EPE 1) HIGH DRYWELL PRESSURE			x				(295024EK3.04) Knowledge of the reasons for the following responses or actions as they apply to (EPE 1) HIGH DRYWELL PRESSURE / 5: (CFR: 41.5 / 41.10 / 45.6 / 45.13) Emergency depressurization	4.2	61
12	(295025) (EPE 2) HIGH REACTOR PRESSURE	x						(295025EK1.07) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the (EPE 2) HIGH REACTOR PRESSURE / 3: (CFR: 41.5 / 41.7 / 45.7 / 45.8) Pressure control strategies	4.2	66
13	(295026) (EPE 3) SUPPRESSION POOL HIGH WATER TEMPERATURE					x		(295026EA2.01) Ability to determine or interpret the following as they apply to (EPE 3) SUPPRESSION POOL HIGH WATER TEMPERATURE / 5: (CFR: 41.10 / 43.5 / 45.13) Suppression pool water temperature	4.1	22

14	(295028) (EPE 5) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II					x		(295028EA2.02) Ability to determine or interpret the following as they apply to (EPE 5) HIGH DRYWELL TEMPERATURE (MARK I AND MARK II ONLY) / 5: (CFR: 41.10 / 43.5 / 45.13) Reactor pressure	3.6	50
15	(295030) (EPE 7) LOW SUPPRESSION POOL WATER LEVEL			x				(295030EK3.07) Knowledge of the reasons for the following responses or actions as they apply to (EPE 7) LOW SUPPRESSION POOL WATER LEVEL / 5: (CFR: 41.5 / 41.10 / 45.6 / 45.13) NPSH/vortex limits	3.8	51
16	(295031) (EPE 8) REACTOR LOW WATER LEVEL			x				(295031EK3.02) Knowledge of the reasons for the following responses or actions as they apply to (EPE 8) REACTOR LOW WATER LEVEL / 2: (CFR: 41.5 / 41.10 / 45.6 / 45.13) Core submergence	4.7	49
17	(295037) (EPE 14) SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN		x					(295037EK2.02) Knowledge of the relationship between the (EPE 14) SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN / 1 and the following systems or components: (CFR: 41.8 / 41.10 / 45.3) Redundant reactivity control system	4.0	48
18	(295038) (EPE 15) HIGH OFFSITE RADIOACTIVITY RELEASE RATE						x	(295038) (EPE 15) HIGH OFFSITE RADIOACTIVITY RELEASE RATE / 9 (G2.4.6) EMERGENCY PROCEDURES/PLAN Knowledge of emergency and abnormal operating procedures major action categories (CFR: 41.10 / 43.5 / 45.13)	3.7	36
19	(600000) (APE 24) PLANT FIRE ON SITE	x						(600000AK1.02) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the (APE 24) PLANT FIRE ON SITE / 8: (CFR: 41.5 / 41.7 / 45.7 / 45.8) Firefighting methods for each type of fire	3.4	23
20	(700000) (APE 25) GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES				x			(700000AA1.04) Ability to operate or monitor the following as they apply to (APE 25) GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES / 6: (CFR: 41.5 / 41.7 / 45.5 to 45.8) Reactor controls	3.6	56
21	(295001) (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION / 1 & 4					x		(295001AA2.10) Ability to determine or interpret the following as they apply to (APE 1) PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION / 1 & 4: (CFR: 41.10 / 43.5 / 45.13) Recirculation system/RPV differential temperatures	3.7	86
22	(295005) (APE 5) MAIN TURBINE GENERATOR TRIP / 3						x	(295005) (APE 5) MAIN TURBINE GENERATOR TRIP / 3 (G2.1.20) CONDUCT OF OPERATIONS Ability to interpret and execute procedure steps (CFR: 41.10 / 43.5 / 45.12)	4.6	82
23	(295016) (APE 16) CONTROL ROOM ABANDONMENT / 7						x	(295016) (APE 16) CONTROL ROOM ABANDONMENT / 7 (G2.4.5) EMERGENCY PROCEDURES/PLAN Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions (CFR: 41.10 / 43.5 / 45.13)	4.3	96
24	(295021) (APE 21) LOSS OF SHUTDOWN COOLING / 4						x	(295021) (APE 21) LOSS OF SHUTDOWN COOLING / 4 (G2.2.23) EQUIPMENT CONTROL Ability to track technical specification limiting conditions for operation (CFR: 41.10 / 43.2 / 45.13)	4.6	87
25	(295030) (EPE 7) LOW SUPPRESSION POOL WATER LEVEL / 5					x		(295030EA2.01) Ability to determine or interpret the following as they apply to (EPE 7) LOW SUPPRESSION POOL WATER LEVEL / 5: (CFR: 41.10 / 43.5 / 45.13) Suppression pool level	4.1	83
26	(295038) (EPE 15) HIGH OFFSITE RADIOACTIVITY RELEASE RATE / 9						x	(295038) (EPE 15) HIGH OFFSITE RADIOACTIVITY RELEASE RATE / 9 (G2.4.20) EMERGENCY PROCEDURES/PLAN Knowledge of the operational implications of emergency and abnormal operating procedures warnings, cautions, and notes (CFR: 41.10 / 43.5 / 45.13)	4.3	97
27	(600000) (APE 24) PLANT FIRE ON SITE / 8					x		(600000AA2.05) Ability to determine or interpret the following as they apply to (APE 24) PLANT FIRE ON SITE / 8: (CFR: 41.10 / 43.5 / 45.13) Ventilation alignment necessary to secure affected area	3.2	84
ŀ	K/A Category Totals:	4	3	3	4	3/ <mark>3</mark>	3/ 4	Group Point Total:		20/7

ES-4.1	I-BWR				E	BWR B	Exami	ination Outline (Dresden Station)		
			Em	erger	ncy ar	nd Abr	norma	al Plant Evolutions—Tier 1/Group 2 (RO/ <mark>SRO</mark>)		
Item #	E/APE # / Name / Safety Function	K1	K2	К3	A1	A2	G	K/A Topic(s)	IR	Q#
28	(295009) (APE 9) LOW REACTOR WATER LEVEL / 2					х		(295009AA2.01) Ability to determine or interpret the following as they apply to (APE 9) LOW REACTOR WATER LEVEL / 2: (CFR: 41.10 / 43.5 / 45.13) Reactor water level	4.1	39
29	(295010) (APE 10) HIGH DRYWELL PRESSURE / 5			x				(295010AK3.04) Knowledge of the reasons for the following responses or actions as they apply to (APE 10) HIGH DRYWELL PRESSURE / 5: (CFR: 41.5 / 41.10 / 45.6 / 45.13) Leak investigation	3.6	45
30	(295012) (APE 12) HIGH DRYWELL TEMPERATURE / 5	x						(295012AK1.01) Knowledge of the operational implications and/or cause and effect relationships of the following concepts as they apply to the (APE 12) HIGH DRYWELL TEMPERATURE / 5: (CFR: 41.5 / 41.7 / 45.7 / 45.8) Drywell pressure	4.0	6
31	(295013) (APE 13) HIGH SUPPRESSION POOL TEMPERATURE. / 5				x			(295013AA1.02) Ability to operate or monitor the following as they apply to (APE 13) HIGH SUPPRESSION POOL TEMPERATURE. / 5: (CFR: 41.5 / 41.7 / 45.5 to 45.8) Systems that add heat to the suppression pool	4.1	7
32	(295032) (EPE 9) HIGH SECONDARY CONTAINMENT AREA TEMPERATURE / 5		x					(295032EK2.01) Knowledge of the relationship between the (EPE 9) HIGH SECONDARY CONTAINMENT AREA TEMPERATURE / 5 and the following systems or components: (CFR: 41.8 / 41.10 / 45.3) Area/room coolers	3.5	24
33	(295036) (EPE 13) SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL / 5						x	(295036) (EPE 13) SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL / 5 (G2.4.22) EMERGENCY PROCEDURES/PLAN Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations (CFR: 41.7 / 41.10 / 43.5 / 45.12)	3.6	25
34	(295017) (APE 17) ABNORMAL OFFSITE RELEASE RATE / 9					x		(295017AA2.02) Ability to determine or interpret the following as they apply to (APE 17) ABNORMAL OFFSITE RELEASE RATE / 9: (CFR: 41.10 / 43.5 / 45.13) Total number of curies released or release rate/duration	3.3	100
35	(295033) (EPE 10) HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS / 9					x		(295033EA2.04) Ability to determine or interpret the following as they apply to (EPE 10) HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS / 9: (CFR: 41.10 / 43.5 / 45.13) Emergency plan	4.3	95
36	(295034) (EPE 11) SECONDARY CONTAINMENT VENTILATION HIGH RADIATION / 9						x	(295034) (EPE 11) SECONDARY CONTAINMENT VENTILATION HIGH RADIATION / 9 (G2.1.1) CONDUCT OF OPERATIONS Knowledge of conduct of operations requirements (CFR: 41.10 / 43.1 / 45.13)	4.2	85
k	K/A Category Totals:	1	1	1	1	1/ <mark>2</mark>	1/ 1	Group Point Total:		6/ <mark>3</mark>
r										

ES-4.1	-BWR				E	BWR E	Exami	inatior	n Outl	ine (D	resde	n Sta	tion)		
			Em	erger	ncy ar	nd Abr	norma	al Plar	it Evo	lution	s—Tie	er 2/G	Group 1 (RO/ <mark>SRO</mark>)		
Item #	System / Name	К1	K2	К3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Q#
37	(203000) (SF2, SF4 RHR/LPCI) RHR/LPCI: INJECTION MODE		x										(203000K2.03) (SF2, SF4 RHR/LPCI) RHR/LPCI: INJECTION MODE Knowledge of electrical power supplies to the following: (CFR: 41.7) Initiation logic	3.7	8
38	(205000) (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE)					x							(205000K5.02) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): (CFR: 41.5 / 45.3) Valve operation	3.5	9
39	(205000) (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE)					x							(205000K5.04) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the (SF4 SCS) SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): (CFR: 41.5 / 45.3) System venting	2.9	44
40	(206000) (SF2, SF4 HPCI) HIGH PRESSURE COOLANT INJECTION SYSTEM											x	(206000) (SF2, SF4 HPCI) HIGH PRESSURE COOLANT INJECTION SYSTEM (G2.4.19) EMERGENCY PROCEDURES/PLAN Knowledge of emergency and abnormal operating procedures layout, symbols, and icons (CFR: 41.10 / 45.13)	3.4	40
41	(207000) (SF4 IC) ISOLATION (EMERGENCY) CONDENSER										х		(207000A4.07) Ability to manually operate and/or monitor the (SF4 IC) ISOLATION (EMERGENCY) CONDENSER in the control room: (CFR: 41.7 / 45.5 to 45.8) System initiation	4.2	10
42	(207000) (SF4 IC) ISOLATION (EMERGENCY) CONDENSER			x									(207000K3.01) Knowledge of the effect that a loss or malfunction of the (SF4 IC) ISOLATION (EMERGENCY) CONDENSER will have on the following systems or system parameters: (CFR: 41.7 / 45.4) Reactor pressure	3.8	55
43	(209001) (SF2, SF4 LPCS) LOW PRESSURE CORE SPRAY SYSTEM							x					(209001A1.04) Ability to predict and/or monitor changes in parameters associated with operation of the (SF2, SF4 LPCS) LOW PRESSURE CORE SPRAY SYSTEM including: (CFR: 41.5 / 45.5) Reactor pressure	4.1	52
44	(211000) (SF1 SLCS) STANDBY LIQUID CONTROL SYSTEM									x			(211000A3.06) Ability to monitor automatic operation of the (SF1 SLCS) STANDBY LIQUID CONTROL SYSTEM including: (CFR: 41.7 / 45.7) RWCU system isolation	4.1	54

45	(211000) (SF1 SLCS) STANDBY LIQUID CONTROL SYSTEM	x								(211000K2.01) (SF1 SLCS) STANDBY LIQUID CONTROL SYSTEM Knowledge of electrical power supplies to the following: (CFR: 41.7) SLCS pumps	3.6	11
46	(212000) (SF7 RPS) REACTOR PROTECTION SYSTEM			x						(212000K5.02) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the (SF7 RPS) REACTOR PROTECTION SYSTEM (CFR: 41.5 / 45.3) Logic channel arrangements	4.1	12
47	(215003) (SF7 IRM) INTERMEDIATE RANGE MONITOR SYSTEM		x							(215003K4.10) Knowledge of (SF7 IRM) INTERMEDIATE RANGE MONITOR SYSTEM design features and/or interlocks that provide for the following: (CFR: 41.7) Automatically bypassing IRM rod block signals	3.6	53
48	(215004) (SF7 SRMS) SOURCE RANGE MONITOR SYSTEM							x		(215004A4.04) Ability to manually operate and/or monitor the (SF7 SRMS) SOURCE RANGE MONITOR SYSTEM in the control room: (CFR: 41.7 / 45.5 to 45.8) SRMS drive control switches	3.5	13
49	(215005) (SF7 PRMS) AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR						x			(215005A3.03) Ability to monitor automatic operation of the (SF7 PRMS) AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR including: (CFR: 41.7 / 45.7) Meters and recorders	3.6	26
50	(218000) (SF3 ADS) AUTOMATIC DEPRESSURIZATION SYSTEM				x					(218000K6.06) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the (SF3 ADS) AUTOMATIC DEPRESSURIZATION SYSTEM: (CFR: 41.7 / 45.7) DC power	4.0	14
51	(223002) (SF5 PCIS) PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF								x	(223002) (SF5 PCIS) PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUTOFF (291001K1.09) VALVES (CFR: 41.7) The stroke test for a valve, including the use of a stopwatch	2.7	59
52	(239002) (SF3 SRV) SAFETY RELIEF VALVES					x				(239002A2.03) Ability to (a) predict the impacts of the following on the (SF3 SRV) SAFETY RELIEF VALVES and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Stuck-open SRV	4.6	42
53	(259002) (SF2 RWLCS) REACTOR WATER LEVEL CONTROL SYSTEM				x					(259002K6.02) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the (SF2 RWLCS) REACTOR WATER LEVEL CONTROL SYSTEM: (CFR: 41.7 / 45.7) AC power	3.3	43

54	(261000) (SF9 SGTS) STANDBY GAS TREATMENT SYSTEM	×								(261000K1.10) Knowledge of the physical connections and/or cause and effect relationships between the (SF9 SGTS) STANDBY GAS TREATMENT SYSTEM and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) Instrument air system	3.6	27
55	(261000) (SF9 SGTS) STANDBY GAS TREATMENT SYSTEM				x					(261000K4.04) Knowledge of (SF9 SGTS) STANDBY GAS TREATMENT SYSTEM design features and/or interlocks that provide for the following: (CFR: 41.7) Radioactive particulate filtration	4.1	41
56	(262001) (SF6 AC) AC ELECTRICAL DISTRIBUTION								x	(262001A4.06) Ability to manually operate and/or monitor the (SF6 AC) AC ELECTRICAL DISTRIBUTION in the control room: (CFR: 41.7 / 45.5 to 45.8) Instrumentation switches	3.1	28
57	(262002) (SF6 UPS) UNINTERRUPTABLE POWER SUPPLY (AC/DC)		x							(262002K2.01) (SF6 UPS) UNINTERRUPTABLE POWER SUPPLY (AC/DC) Knowledge of electrical power supplies to the following: (CFR: 41.7) Static switch/inventor	3.3	15
58	(263000) (SF6 DC) DC ELECTRICAL DISTRIBUTION						x			(263000A1.02) Ability to predict and/or monitor changes in parameters associated with operation of the (SF6 DC) DC ELECTRICAL DISTRIBUTION including: (CFR: 41.5 / 45.5) Lights and alarms	3.8	29
59	(264000) (SF6 EGE) EMERGENCY GENERATORS (DIESEL/JET)							x		(264000A2.07) Ability to (a) predict the impacts of the following on the (SF6 EGE) EMERGENCY GENERATORS (DIESEL/JET) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Loss of offsite power	3.5	46
60	(300000) (SF8 IA) INSTRUMENT AIR SYSTEM			x						(300000K3.11) Knowledge of the effect that a loss or malfunction of the (SF8 IA) INSTRUMENT AIR SYSTEM will have on the following systems or system parameters: (CFR: 41.7 / 45.4) Extraction steam system	3.0	30
61	(400000) (SF8 CCS) COMPONENT COOLING WATER SYSTEM	x								(400000K1.03) Knowledge of the physical connections and/or cause and effect relationships between the (SF8 CCS) COMPONENT COOLING WATER SYSTEM and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) Radiation monitoring systems	3.1	47
62	(510000) (SF4 SWS) SERVICE WATER SYSTEM			x						(510000K3.09) Knowledge of the effect that a loss or malfunction of the (SF4 SWS*) SERVICE WATER SYSTEM will have on the following systems or system parameters: (CFR: 41.7 / 45.4) Fire protection system	2.7	31

63	(206000) (SF2, SF4 HPCI) HIGH PRESSURE COOLANT INJECTION SYSTEM											x	(206000) (SF2, SF4 HPCI) HIGH PRESSURE COOLANT INJECTION SYSTEM (G2.1.39) CONDUCT OF OPERATIONS Knowledge of conservative decision making practices (CFR: 41.10/ 43.5 / 45.12)	4.3	91
64	(259002) (SF2 RWLCS) REACTOR WATER LEVEL CONTROL SYSTEM								x				(259002A2.03) Ability to (a) predict the impacts of the following on the (SF2 RWLCS) REACTOR WATER LEVEL CONTROL SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Loss of reactor water level input	3.9	76
65	(263000) (SF6 DC) DC ELECTRICAL DISTRIBUTION											x	(263000) (SF6 DC) DC ELECTRICAL DISTRIBUTION (G2.2.21) EQUIPMENT CONTROL Knowledge of pre- and post-maintenance operability requirements (CFR: 41.10 / 43.2)	4.1	89
66	(264000) (SF6 EGE) EMERGENCY GENERATORS (DIESEL/JET)								x				(264000A2.11) Ability to (a) predict the impacts of the following on the (SF6 EGE) EMERGENCY GENERATORS (DIESEL/JET) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Failure of emergency generator to start/load	4.3	88
67	(300000) (SF8 IA) INSTRUMENT AIR SYSTEM								x				(300000A2.01) Ability to (a) predict the impacts of the following on the (SF8 IA) INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Air dryer and filter malfunctions	3.3	90
۲	K/A Category Totals:	2	3	3	2	3	2	2	2/ 3	2	3	2/ <mark>2</mark>	Group Point Total:		26/ <mark>5</mark>

ES-4.1	-BWR				E	BWR B	Exami	inatio	n Outl	ine (D	resde	en Sta	ition)		
	Emergency and Abnormal Plant Evolutions—Tier 2/Group 2 (RO/SRO)														
Item #	System / Name	K1	К2	К3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	Q#
68	(201001) (SF1 CRDH) CRD HYDRAULIC SYSTEM	x											(201001K1.08) Knowledge of the physical connections and/or cause and effect relationships between the (SF1 CRDH) CRD HYDRAULIC SYSTEM and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) Reactor manual control system	4.2	57
69	(201002) (SF1 RMCS) REACTOR MANUAL CONTROL SYSTEM						x						(201002K6.04) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the (SF1 RMCS) REACTOR MANUAL CONTROL SYSTEM: (CFR: 41.7 / 45.7) RPIS	3.5	67
70	(201003) (SF1 CRDM) CONTROL ROD AND DRIVE MECHANISM							x					(201003A1.04) Ability to predict and/or monitor changes in parameters associated with operation of the (SF1 CRDM) CONTROL ROD AND DRIVE MECHANISM including: (CFR: 41.5 / 45.5) CRD mechanism temperature	3.0	68
71	(201006) (SF1, SF7 RWM) ROD WORTH MINIMIZER					x							(201005K5.08) Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the (SF1, SF7 RWM) ROD WORTH MINIMIZER: (CFR: 41.5 / 45.3) Rod pattern limits	3.3	37
72	(219000) (SF5 RHR SPC) RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE									x			(219000A3.01) Ability to monitor automatic operation of the (SF5 RHR SPC) RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE including: (CFR: 41.7 / 45.7) Valve operation	3.9	32
73	(230000) (SF5 RHR SPS) RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE						x						(230000K6.08) Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the (SF5 RHR SPS) RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE: (CFR: 41.7 / 45.7) Nuclear boiler instrumentation	3.3	74
74	(233000) (SF9 FPCCU) FUEL POOL COOLING/CLEANUP		x										(233000K2.01) (SF9 FPCCU) FUEL POOL COOLING/CLEANUP Knowledge of electrical power supplies to the following: (CFR: 41.7) Fuel pool cooling pumps	3.1	58

75	(245000) (SF4 MTGEN) MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS			x									(245000K3.08) Knowledge of the effect that a loss of malfunction (SF4 MTGEN) MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS will have on the following systems or system parameters: (CFR: 41.7 / 45.4) Reactor/turbine pressure regulating system	3.7	65
76	(256000) (SF2 CDS) CONDENSATE SYSTEM											x	(256000) (SF2 CDS) CONDENSATE SYSTEM (291004K1.01) PUMPS (CFR: 41.3) (CENTRIFUGAL) Identification, symptoms, and consequences of cavitation	3.2	17
77	(271000) (SF9 OG) OFFGAS SYSTEM				x								(271000K4.08) Knowledge of (SF9 OG) OFFGAS SYSTEM design features and/or interlocks that provide for the following: (CFR: 41.7) Automatic system isolation	3.7	33
78	(290003) (SF9 CRV) CONTROL ROOM VENTILATION								x				(290003A2.06) Ability to (a) predict the impacts of the following on the (SF9 CRV) CONTROL ROOM VENTILATION and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Breaches of control room envelope	3.2	64
79	(202001) (SF1, SF4 RS) RECIRCULATION SYSTEM								x				(202001A2.01) Ability to (a) predict the impacts of the following on the (SF1 RS) RECIRCULATION SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 43.5 / 45.6) Jet pump failure	4.1	77
80	(214000) (SF7 RPIS) ROD POSITION INFORMATION SYSTEM								x				(214000A2.01) Ability to (a) predict the impacts of the following on the (SF7 RPIS) ROD POSITION INFORMATION SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: (CFR: 41.5 / 45.6) Failed reed switches	3.3	92
81	(215002) (SF7 RBMS) ROD BLOCK MONITOR SYSTEM											x	(215002) (SF7 RBMS) ROD BOCK MONITOR SYSTEM (G2.2.22) EQUIPMENT CONTROL Knowledge of limiting conditions for operation and safety limits (CFR: 41.5 / 43.2 / 45.2)	4.0	99
ĸ	A Category Totals:	1	1	1	1	1	2	1	1/ <mark>2</mark>	1	0	1/ 1	Group Point Total:		11/ <mark>3</mark>

Form 4.1-COMMON Common Examination Outline

ES-4.1-COMMON		COMMON Examination Outline (Dresden)					
Facility:	Dresden Sta	tion		Da	te of Exam:	04/20/2023	3
		Generic Knowledge and Abilities Outline (Tier 3)) (RO/ <mark>S</mark> F	(O)			
_					RO	SRO-C	Dnly
Category	K/A #	Торіс	Item #	IR	Q#	IR	Q#
	G2.1.4	(G2.1.4) CONDUCT OF OPERATIONS Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo- operation, maintenance of active license status, 10 CFR Part 55. (CFR: 41.10 / 45.13)	82	3.3	71		
1	G2.1.29	(G2.1.29) CONDUCT OF OPERATIONS Knowledge of how to conduct system lineups, such as valves, breakers, or switches (CFR: 41.10 / 45.1 / 45.12)	83	4.1	16		
Conduct of Operations	G2.1.37	(G2.1.37) CONDUCT OF OPERATIONS Knowledge of procedures, guidelines, or limitations associated with reactivity management (CFR: 41.1 / 41.5 / 41.10 / 43.6 / 45.6)	84			4.6	94
	G2.1.25	(G2.1.25) CONDUCT OF OPERATIONS Ability to interpret reference materials, such as graphs, curves, and tables (reference potential) (CFR: 41.10 / 43.5 / 45.12)	85			4.2	78
		Subtotal			2		2
	G2.2.12	(G2.2.12) EQUIPMENT CONTROL Knowledge of surveillance procedures (CFR: 41.10 / 43.2 / 45.13)	86	3.7	72		
	G2.2.38	(G2.2.38) EQUIPMENT CONTROL Knowledge of conditions and limitations in the facility license (CFR: 41.7 / 41.10 / 43.1 / 45.13)	87	3.6	34		
2. Equipment Control	G2.2.20	(G2.2.20) EQUIPMENT CONTROL Knowledge of the process for managing troubleshooting activities (CFR: 41.10 / 43.5 / 45.13)	88			3.8	98
	G2.2.25	(G2.2.25) EQUIPMENT CONTROL Knowledge of the bases in technical specifications for limiting conditions for operation and safety limits (SRO Only) (CFR: 43.2)	89			4.2	93
		Subtotal			2		2
	G2.3.11	(G2.3.11) RADIATION CONTROL Ability to control radiation releases (CFR: 41.11 / 43.4 / 45.10)	90	3.8	60		
3. Radiation Control	G2.3.6	(G2.3.6) RADIATION CONTROL Ability to approve liquid or gaseous release permits (CFR: 41.13 / 43.4 / 45.10)	91			3.8	79
		Subtotal			1		1
	G2.4.39	(G2.4.39) EMERGENCY PROCEDURES/PLAN Knowledge of RO responsibilities in emergency plan implementing procedures (CFR: 41.10 / 45.11)	92	3.9	18		
4. Emergency Procedures / Plan	G2.4.30	(G2.4.30) Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator (CFR: 41.10 / 43.5 / 45.11)	93			4.1	80
	G2.4.40	(G2.4.40) EMERGENCY PROCEDURES/PLAN Knowledge of SRO responsibilities in emergency plan implementing procedures (SRO Only) (CFR: 43.5 / 45.11)	94			4.5	81
		Subtotal			1		2
		Tier 3 Point Total			6		7

Form 4.1-COMMON Common Examination Outline

ES-4.1-COMMON		COMMON Examination Outline (Dresden)				
Facility:	Dresden Sta	tion		Da	te of Exam:	4/20/2023
		Theory (Tier 4) (RO)				
Cotogony	K/A #	Topio	Itom #		RO	
Calegory	N/A #	Τομισ	item#	IR	Q#	
	292004	(292004K1.05) REACTIVITY COEFFICIENTS (CFR: 41.1) Define the fuel temperature (Doppler) coefficient of reactivity	95	2.9	35	
Reactor Theory	292005	(292005K1.09) CONTROL RODS (CFR: 41.1) Explain direction of change in the magnitude of CRW for a change in moderator temperature, void fraction, control rod density, and xenon	96	2.6	4	
	292007	(292007K1.01) FUEL DEPLETION AND BURNABLE POISONS (CFR: 41.1) Define burnable poison and state its use in the reactor	97	3.1	63	
		Subtotal			3	
	293006	(293006K1.18) FLUID STATICS AND DYNAMICS (CFR: 41.14) Explain how operating a centrifugal pump at shutoff head may cause overheating of the pump and describe methods used to avoid overheating	98	2.7	69	
Thermodynamics	293009	(293009K1.42) CORE THERMAL LIMITS (CFR: 41.14) For the following plant operating or accident condition, identify which of the three core thermal limits are most limiting: Increase in reactor pressure	99	3.3	73	
	293010	(293010K1.02) BRITTLE FRACTURE AND VESSEL THERMAL STRESS (CFR: 41.14) State the definition of nil-ductility transition temperature	100	2.7	70	
		Subtotal			3	
		Tier 4 Point Total			6	