

Facility: Cooper Nuclear Station														Date of Exam: June 2021					
Tier	Group	RO K/A Category Points												SRO-Only Points					
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2	G*	Total			
1. Emergency and Abnormal Plant Evolutions	1	3	3	4	N/A			4	3	N/A			3	20			7		
	2	1	1	1	N/A			1	2	N/A			1	7			3		
	Tier Totals	4	4	5	N/A			5	5	N/A			4	27			10		
2. Plant Systems	1	2	3	2	3	2	2	3	2	3	2	2	26			5			
	2	1	1	2	1	1	1	1	1	1	1	1	12	N/A		3			
	Tier Totals	3	4	4	4	3	3	4	3	4	3	3	38			8			
3. Generic Knowledge and Abilities Categories					1		2		3		4		10		1	2	3	4	7
					3		3		2		2								

- Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outline sections (i.e., except for one category in Tier 3 of the SRO-only section, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 radiation control K/A is allowed if it is replaced by a K/A from another Tier 3 category.)
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 outline. Systems or evolutions that do not apply at the facility should be deleted with justification. 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. 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' 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 a category 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.

G\* Generic K/As

- \* These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.
- \*\* These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO)							Form ES-401-1	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#	
295001 (APE 1) Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			04				AK3.04 – Knowledge of the reasons for the following responses as they apply to Partial or Complete Loss of Forced Core Flow Circulation: Reactor SCRAM. (CFR: 41.5 / 45.6)	4.1	1	
295003 (APE 3) Partial or Complete Loss of AC Power / 6				02			AA1.02 – Ability to operate and/or monitor the following as they apply to Partial or Complete Loss of AC Power: Emergency Generators. (CFR: 41.7 / 45.6)	4.5	2	

295004 (APE 4) Partial or Total Loss of DC Power / 6				03	01	AA2.03 – Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of DC Power: Battery parameters. (CFR: 41.10 / 43.5 / 45.13) AA2.01 - Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of DC Power: Partial or complete loss of DC power. (CFR: 41.10 / 43.5 / 45.13)	3-8 4.0	3
295005 (APE 5) Main Turbine Generator Trip / 3					04.02	G2.4.2 – Knowledge of system setpoints, interlocks and automatic actions associated with emergency and abnormal operating procedure entry conditions. (CFR: 41.7 / 45.7 / 45.8)	4.5	4
295006 (APE 6) Scram / 1	02					AK1.02 – Knowledge of the operational implications and/or cause and effect relationships of the following as they apply to SCRAM: Shutdown margin. (CFR: 41.8 to 41.10)	3.6	5
295016 (APE 16) Control Room Abandonment / 7		05			06	AK2.05 – Knowledge of the relationship between Control Room Abandonment and the following systems or components: DC electrical distribution. (CFR: 41.8 / 45.8) AK2.06 – Knowledge of the relationship between Control Room Abandonment and the following systems or components: Safety/relief valves. (CFR: 41.7 / 45.8)	3-5 3.8	6
295018 (APE 18) Partial or Complete Loss of CCW / 8			01			AK3.01 – Knowledge of the reasons for the following responses or actions as they apply to Partial or Complete Loss of Component Cooling Water: Isolation of non-essential heat loads. (CFR: 41.5 / 45.6)	3.4	7
295019 (APE 19) Partial or Complete Loss of Instrument Air / 8				03		AA1.03 – Ability to operate and/or monitor the following as they apply to Partial or Complete Loss of Instrument Air: Air compressors. (CFR: 41.7 / 45.6)	3.5	8
295021 (APE 21) Loss of Shutdown Cooling / 4					07	AA2.07 – Ability to determine and/or interpret the following as they apply to Loss of Shutdown Cooling: Reactor recirculation flow. (CFR: 41.10 / 43.5 / 45.13)	3.8	9
295023 (APE 23) Refueling Accidents / 8					04.20	G2.4.20 – Knowledge of the operational implications of emergency and abnormal operating procedures warnings, cautions, and notes. (CFR: 41.10 / 43.5 / 45.13)	3.8	10
295024 High Drywell Pressure / 5	01					EK1.01 – Knowledge of the operational implications and/or cause and effect relationships of the following as they apply to High Drywell Pressure: Drywell integrity. (CFR: 41.8 to 41.10)	4.3	11
295025 (EPE 2) High Reactor Pressure / 3		12				EK2.12 – Knowledge of the relationship between High Reactor Pressure and the following systems or components: Main and reheat steam system. (CFR: 41.7 / 45.8)	3.1	12
295026 (EPE 3) Suppression Pool High Water Temperature / 5			04			EK3.04 – Knowledge of the reasons for the following responses as they apply to Suppression Pool High Water Temperature: SLCS injection. (CFR: 41.5 / 45.6)	3.6	13

295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5									
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5				05			EA1.05 – Ability to operate and/or monitor the following as they apply to High Drywell Temperature: Safety relief valves. (CFR: 41.7 / 45.6)	3.8	14
295030 (EPE 7) Low Suppression Pool Water Level / 5					05		EA2.05 – Ability to determine and/or interpret the following as they apply to Low Suppression Pool Water Level: ECCS/RCIC pump flow. (CFR: 41.10 / 43.5 / 45.13)	4.1	15
295031 (EPE 8) Reactor Low Water Level / 2						04.18	G2.4.18 – Knowledge of the specific bases for emergency and abnormal operating procedures. (CFR: 41.10 / 43.1 / 45.13)	3.3	16
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	04						EK1.04 – Knowledge of the operational implications and/or cause and effect relationships of the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Hot shutdown boron weight. (CFR: 41.8 to 41.10)	3.7	17
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9		09					EK2.09 – Knowledge of the relationship between High Offsite Radioactivity Release Rate and the following systems or components: Post-accident sample system. (CFR: 41.7 / 45.8)	3.0	18
600000 (APE 24) Plant Fire On Site / 8			04				AK3.04 – Knowledge of the reasons for the following responses or actions as they apply to Plant Fire on Site: Actions contained in the fire response procedures for a plant fire on site. (CFR: 41.5, 41.10 / 45.6 / 45.13)	3.6	19
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6				02			AA1.02 – Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: Turbine/generator controls. (CFR: 41.5 / 41.10 / 45.5 / 45.7 / 45.8)	3.4	20
K/A Category Totals:	3	3	4	4	3	3	Group Point Total:		20

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO)						Form ES-401-1	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
295002 (APE 2) Loss of Main Condenser Vacuum / 3				06			AA1.06 – Ability to operate and/or monitor the following as they apply to Loss of Main Condenser Vacuum: Reactor/turbine pressure regulating system. (CFR: 41.7 / 45.6)	3.6	21
295007 (APE 7) High Reactor Pressure / 3									
295008 (APE 8) High Reactor Water Level / 2									
295009 (APE 9) Low Reactor Water Level / 2									
295010 (APE 10) High Drywell Pressure / 5									
295011 (APE 11) High Containment Temperature (Mark III Containment only) / 5									
295012 (APE 12) High Drywell Temperature / 5						03	AA2.03 – Ability to determine and/or interpret the following as they apply to High Drywell Temperature: Drywell Humidity. (CFR: 41.10 / 43.5 / 45.13)	2.8	22
295013 (APE 13) High Suppression Pool Temperature. / 5						04.31	G2.4.31 – Knowledge of annunciator alarms, indications, or response procedures. (CFR: 41.10 / 45.3)	4.2	23
295014 (APE 14) Inadvertent Reactivity Addition / 1	06						AK1.06 – Knowledge of the operational implications and/or cause and effect relationships of the following as they apply to Inadvertent Reactivity Addition: Reactivity changes. (CFR: 41.8 to 41.10)	4.3	24
295015 (APE 15) Incomplete Scram / 1									
295017 (APE 17) Abnormal Offsite Release Rate / 9									
295020 (APE 20) Inadvertent Containment Isolation / 5 & 7									
295022 (APE 22) Loss of Control Rod Drive Pumps / 1									
295029 (EPE 6) High Suppression Pool Water Level / 5		01					EK2.01 – Knowledge of the relationship between High Suppression Pool Water Level and the following systems or components: RHR/LPCI. (CFR: 41.7 / 45.8)	3.1	25
295032 (EPE 9) High Secondary Containment Area Temperature / 5									
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9									
295034 (EPE 11) Secondary Containment Ventilation High Radiation / 9									
295035 (EPE 12) Secondary Containment High Differential Pressure / 5			02				EK3.02 – Knowledge of the reasons for the following responses or actions as they apply to Secondary Containment High Differential Pressure: Secondary containment ventilations alignment. (CFR: 41.5 / 45.6)	3.7	26
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5									
500000 (EPE 16) High Containment Hydrogen Concentration / 5						05	EA2.05 – Ability to determine and/or interpret the following as they apply to High Containment Hydrogen Concentration: Hydrogen concentration limits for containment. (CFR: 41.10 / 43.5 / 45.13)	3.4	27
K/A Category Point Totals:	1	1	1	1	2	1	Group Point Total:		7

ES-401	BWR Examination Outline Plant Systems—Tier 2/Group 1 (RO)											Form ES-401-1		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
203000 (SF2, SF4 RHR/LPCI) RHR/LPCI: Injection Mode			04									K3.04 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: Injection Mode will have on the following systems or system parameters: Adequate core cooling. (CFR: 41.7 / 45.4)	4.3	28
			03									K3.03 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: Injection Mode will have on the following systems or system parameters: Automatic depressurization logic. (CFR: 41.7 / 45.4)	4.0	
205000 (SF4 SCS) Shutdown Cooling				08								K4.08 – Knowledge of Shutdown Cooling System (RHR Shutdown Cooling Mode) design features and/or interlocks that provide for the following: Prevent inadvertent vessel draining. (CFR: 41.7)	4.1	29
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection				13								K4.13 – Knowledge of High-Pressure Coolant Injection System design features and/or interlocks that provide for the following: Turbine and pump lubrication. (CFR: 41.7)	3.2	30
					02							K5.02 – Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the High-Pressure Coolant Injection System: Turbine shaft sealing. (CFR: 41.5 / 45.3)	2.6	31
207000 (SF4 IC) Isolation (Emergency) Condenser														
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray						13						K6.13 – Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the Low-Pressure Core Spray System: High drywell pressure. (CFR: 41.7 / 45.7)	4.3	32
209002 (SF2, SF4 HPCS) High-Pressure Core Spray														
211000 (SF1 SLCS) Standby Liquid Control							10					A1.10 – Ability to predict or monitor changes in parameters associated with operation of the Standby Liquid Control System, including: Lights and alarms. (CFR: 41.5 / 45.5)	3.6	33
212000 (SF7 RPS) Reactor Protection								01				A2.01 – Ability to (a) predict the impacts of the following on the Reactor Protection System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: RPS motor-generator set failure. (CFR: 41.5 / 45.6)	3.9	34
215003 (SF7 IRM) Intermediate-Range Monitor									04			A3.04 – Ability to monitor automatic operation of the Intermediate Range Monitor System, including: Control rod block signals. (CFR: 41.7 / 45.7)	3.9	35
215004 (SF7 SRMS) Source-Range Monitor										08		A4.08 – Ability to manually operate and/or monitor in the control room: SRMS channel bypass. (CFR: 41.7 / 45.5 to 45.8)	3.4	36
215005 (SF7 PRMS) Average Power Range Monitor/Local Power Range Monitor		02										K2.02 – Knowledge of electrical power supplies to the following: APRM channels. (CFR: 41.7)	3.7	37
										02. 22		G2.2.22 – Knowledge of limiting conditions for operation and safety limits. (CFR: 41.5 / 43.2 / 45.2)	4.0	38
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling	09											K1.09 – Knowledge of the physical connections and/or cause and effect relationships between the Reactor Core Isolation Cooling System and the following systems: Reactor vessel and internals. (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.3	39
218000 (SF3 ADS) Automatic Depressurization		01										K2.01 – Knowledge of electrical power supplies to the following: ADS logic. (CFR: 41.7)	4.0	40



ES-401	BWR Examination Outline Plant Systems—Tier 2/Group 2 (RO)												Form ES-401-1	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
201001 (SF1 CRDH) CRD Hydraulic														
201002 (SF1 RMCS) Reactor Manual Control			02									K3.02 – Knowledge of the effect that a loss or malfunction of the Reactor Manual Control System will have on the following systems or system parameters: Rod block monitor (CFR: 41.7 / 45.4)	3.4 3.2	54
201003 (SF1 CRDM) Control Rod and Drive Mechanism														
201004 (SF7 RSCS) Rod Sequence Control														
201005 (SF1, SF7 RCIS) Rod Control and Information														
201006 (SF7 RWMS) Rod Worth Minimizer				06								K4.06 – Knowledge of Rod Worth Minimizer System design features and/or interlocks that provide for the following: Correction of out-of-sequence rod positions. (CFR: 41.7)	3.5	55
202001 (SF1, SF4 RS) Recirculation														
202002 (SF1 RSCTL) Recirculation Flow Control					08							K5.08 – Knowledge of the operational implications or cause and effect relationships of the following concepts as they apply to the Recirculation Flow Control System: Reactor water level. (CFR: 41.5 / 45.3)	3.7	56
204000 (SF2 RWCU) Reactor Water Cleanup						02						K6.02 – Knowledge of the effect of the following plant conditions, system malfunctions, or component malfunctions on the Reactor Water Cleanup System: Main condenser. (CFR: 41.7 / 45.7)	2.6	57
214000 (SF7 RPIS) Rod Position Information														
215001 (SF7 TIP) Traversing In-Core Probe														
215002 (SF7 RBMS) Rod Block Monitor														
216000 (SF7 NBI) Nuclear Boiler Instrumentation														
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode														
223001 (SF5 PCS) Primary Containment and Auxiliaries										06		A3.06 – Ability to monitor automatic operation of the PCS and Aux, including: Drywell/suppression chamber differential pressure (CFR: 41.7 / 45.7)	3.9	60
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode							04					A1.04 – Ability to predict and/or monitor changes in parameters associated with operation of the RHR/LPCI: Containment Spray System Mode, including: Suppression pool temperature (Mark I, II) (CFR: 41.5 / 45.5)	3.9	58
							03					A1.03 – Ability to predict and/or monitor changes in parameters associated with operation of the RHR/LPCI: Containment Spray System Mode, including: Suppression chamber pressure (Mark I, II) (CFR: 41.5 / 45.5)	4.4	
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode														
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup								14				A2.14 – Ability to (a) predict the impacts of the following on the Fuel Pool Cooling and Cleanup and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Low system flow. (CFR: 41.5 / 43.5 / 45.6)	3.1	59





Facility: Cooper Nuclear Station		Date of Exam: June 2021				
Category	K/A #	Topic	RO		SRO-only	
			IR	#	IR	#
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement or overtime limitations (reference potential). (CFR: 41.10 / 43.5 / 45.12)	2.9	66		
	2.1.14	Knowledge of criteria or conditions that require plantwide announcements, such as pump starts, reactor trips, and mode changes. (CFR: 41.10, 43.5 / 45.12)	3.1	67		
	2.1.34	Knowledge of RCS or balance of plant chemistry controls, including parameters measures and reasons for the control. (CFR: 41.0 / 43.5 / 45.12)	2.7	68		
	Subtotal			3		
2. Equipment Control	2.2.6	Knowledge of the process for making changes to procedures. (CFR: 41.10 / 43.3 / 45.13)	3.0	69		
	2.2.20	Knowledge of the process for managing troubleshooting activities. (CFR: 41.10 / 43.5 / 45.13)	2.6	70		
	2.2.22	Knowledge of limiting conditions for operation and safety limits (CFR: 41.5 / 43.2 / 45.2)	4.0			
	2.2.41	Ability to obtain and interpret station electrical and mechanical drawings (reference potential). (CFR: 41.10 / 45.12 / 45.13)	3.5	71		
Subtotal				3		
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms or personnel monitoring equipment. (CFR: 41.11 / 41.12 / 43.4 / 45.9)	2.9	72		
	2.3.11	Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)	3.8	73		
	Subtotal				2	
4. Emergency Procedures/Plan	2.4.14	Knowledge of general guidelines for emergency and abnormal operating procedure usage. (CFR: 41.10 / 43.1 / 45.13)	3.8	74		
	2.4.39	Knowledge of RO responsibilities in emergency plan implementing procedures. (CFR: 41.10 / 45.11)	3.9	75		
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions (CFR: 41.10 / 43.5 / 45.13)	3.7			
Subtotal				2		
Tier 3 Point Total				10		

Tier / Group	Randomly Selected K/A	Reason for Rejection
<b>RO T1/G1</b> 295004 AA2.03	295004 AA2.01	(Q#3) Could not develop a psychometrically sound RO level question with three plausible distractors. Replaced 295004 AA2.03 with AA2.01. Tier totals are not affected by this change.
<b>RO T1/G1</b> 295016 AK2.05	295016 AK2.06	(Q#6) Could not develop a psychometrically sound RO level question with three plausible distractors. Since CNS procedures for control room abandonment do not require actions directly related to DC electrical distribution, could not develop a question that satisfies the intent of Tier 1. Replaced 295016 AK2.05 with AK2.06. Tier totals are not affected by this change.
<b>RO T3</b> G2.2.20	G2.2.22	(Q#70) Could not develop a psychometrically sound RO level question with three plausible distractors. Replaced G2.2.20 with G2.2.22. Tier totals are not affected by this change.
<b>RO T2/G1</b> 263000 A3.03	263000 A3.02	(Q#49) Replaced K/A 263000 A3.03 regarding auto transfers of DC distribution with K/A 263000 A3.02, because CNS DC distribution does not utilize auto transfers, only manual. Tier totals are not affected by this change.
<b>RO T2/G1</b> 400000 K1.18	400000 K1.13	(Q#52) Replaced K/A 400000 K1.18, related to reactor condensate system, with K/A 400000 K1.13, related to RWCU, because REC (CCWS) at CNS does not interface with reactor condensate system. Tier totals are not affected by this change.
<b>RO T2/G2</b> 226001 A1.04	226001 A1.03	(Q#58) Replaced K/A 226001 A1.04, related to suppression pool temperature, with K/A 226001 A1.03, related to suppression chamber pressure, because could not develop a psychometrically sound RO level question with three plausible distractors. Tier totals are not affected by this change.
<b>RO T2/G2</b> 239003 G2.1.23	510001 G2.1.23	(Q#62) Replaced K/A 239003 G1.1.23, related to MSIV LCS, with K/A 510001 G2.1.23, related to Circulating Water System, because CNS does not have a system specific MSIV LCS. Tier totals are not affected by this change.
<b>RO T2/G2</b> 245000 K2.01	245000 K2.04	(Q#63) Replaced K/A 245000 K2.01, related to stator water cooling pumps, with K/A 245000 K2.04, related to seal oil pumps, since CNS does not have stator water cooling pumps because the generator stator is cooled by gaseous hydrogen. Tier totals are not affected by this change.
<b>RO T2/G1</b> 203000 K3.04	203000 K3.03	(Q#28) Replaced K/A 203000 K3.04, related to adequate core cooling, with K/A 203000 K3.03, related to ADS logic, because Q#16 already tests the adequate core cooling concept. Tier totals are not affected by this change.
<b>RO T3</b> G2.4.39	G2.4.5	(Q#75) Replaced K/A G2.4.39, related to RO responsibilities during Emergency Plan implementation, with G2.4.5, related to organization of abnormal/emergency operating procedures, because could not develop a psychometrically sound question with three plausible distractors at the RO level.

Revision statement:

Rev 2

- For Q#3, replaced original K/A 295004 AA2.03 related to battery parameters with 295004 AA2.03 related to loss of DC power, since CNS procedures for loss of DC do not require operators to assess battery parameters, and assessment of battery parameters is SRO level for TS 3.8.6. Tier totals were not affected by this change.
- For Q#6, replaced original K/A 295016 AK2.05 related to DC electrical distribution with 295016 AK2.06 related to SRVs, since CNS procedures for control room abandonment do not address actions directly related to DC electrical distribution that are at the required RO knowledge level.
- For Q#54, corrected IR for K/A 201002 K3.02 from 3.4 to 3.2.
- For Q#70, replaced original K/A G2.2.20 with G2.2.22 because ROs do not manage troubleshooting activities at CNS. That is SRO only level.
- For Q#49, replaced K/A 263000 A3.03 regarding auto transfers of DC distribution with K/A 263000 A3.02, because CNS DC distribution does not utilize auto transfers, only manual.

Rev 3

- For Q#52, replaced K/A 400000 K1.18, related to reactor condensate system, with K/A 400000 K1.13, related to RWCU, because REC (CCWS) at CNS does not interface with reactor condensate system.
- For Q#58, replaced K/A 226001 A1.04, related to suppression pool temperature, with K/A 226001 A1.03, related to suppression chamber pressure, because could not develop a psychometrically sound RO level question with three plausible distractors.
- For Q#62, replaced K/A 239003 G1.1.23, related to MSIV LCS, with K/A 510001 G2.1.23, related to Circulating Water System, because CNS does not have a system specific MSIV LCS.
- For Q#63, replaced K/A 245000 K2.01, related to stator water cooling pumps, with K/A 245000 K2.04, related to seal oil pumps, since CNS does not have stator water cooling pumps because the generator stator is cooled by gaseous hydrogen.
- For Q#28, replaced K/A 203000 K3.04, related to adequate core cooling, with K/A 203000 K3.03, related to ADS logic, because Q#16 already tests the adequate core cooling concept.

Rev 4

- For Q#75, replaced K/A G2.4.39, related to RO responsibilities during Emergency Plan implementation, with G2.4.5, related to organization of abnormal/emergency operating procedures, because could not develop a psychometrically sound question with three plausible distractors at the RO level.

Facility: <u>Cooper Nuclear Station</u>		Date of Examination: <u>6/28/2021</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>CN-2021-6</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, D	A5, SKL034-20-114 – Determine shift staffing requirements for a mode change (Procedure 2.0.3) K/A G2.1.5 (3.9)
Conduct of Operations	R, N	A6, Interpret plant conditions to diagnose jet pump failure and determine required action (Procedure 2.4RXPWR, Attachment 2) K/A G2.1.7 (4.7), 2.1.25 (4.2)
Equipment Control	R, M	A7, Determine whether mode change is allowed based on plant conditions <a href="#">(Modified version of NRC 2017-3 JPM A5, changed from RCIC inoperable initially to DG2 inoperable)</a> K/A 2.2.22 (4.7)
Radiation Control	R, N	A8, Approve Radioactive Discharge Release Permit <a href="#">(New JPM involves identifying errors that prevent SM approval of a LRW discharge, Section 4 of the discharge form)</a> K/A G2.3.6 (3.8)
Emergency Plan	R, D	A9, SKL034-50-77 - Interpret plant conditions to determine Emergency Classification for ATWS <3% power (Procedure 5.7.1) K/A G2.4.41 (4.6)
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes and Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs and RO retakes) (2) (N)ew or (M)odified from bank ( $\geq 1$ ) (3) (P)revious 2 exams ( $\leq 1$ , randomly selected) (0)		

Facility: <u>Cooper Nuclear Station</u>	Date of Examination: <u>6/28/2021</u>	
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test Number: <u>CN-2021-6</u>	
Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U		
System/JPM Title	Type Code*	Safety Function
S1. SKL034-20-22, Respond to Control Rod Drift  (Alt Path – During Control Rod Exercise Testing per Procedure 6.CRD.301, control rod 26-07 will drift in, requiring the examinee to enter Procedure 2.4CRD, CRD Trouble, and fully insert the control rod)  K/A 201003 A2.03 (4.7/4.2)	S, M, A	1
S2. Place RCIC in standby from isolated condition  (Alt. Path – RCIC steam line break occurs during warming and auto isolation fails, requiring manual isolation of RCIC steam supply IAW procedure 2.0.3, Conduct of Operations)  K/A 217000 A4.03 (3.8)	S, N, A	2
S3. SKL034-20-107, Lowering DEH Pressure Setpoint in TARGET Mode IAW Procedure 2.2.77.1, DEH System Operations Hard Card  (If ever used for ILT NRC, not used from 2012 to present)  K/A 241000 A4.06 (4.2)	S, D, L	3
S4. SKL034-20-17 - Conduct RR Pump Quick Restart (Mode 3) IAW Procedure 2.4RR, Reactor Recirculation Abnormal  (Alternate Path - RR Pump A vibration will rise above the danger setpoint when the pump is started and RR-MO-53A, PUMP DISCHARGE VLV is opened, requiring the operator to trip RR Pump A IAW the alarm card.)  (For ILT NRC, this is first time used)  K/A 202001 A4.01 (4.0)	S, D, A, L	4
S5. Place RHR Pump B in Suppression Pool Cooling supported by RHR Service Water Pump B IAW Procedure 2.2.69.3, RHR System Operations Hard Card and Procedure 2.2.71  (Alt. Path – After RHR Pump B is in-service, RHRSWB Pump B will trip, requiring placing RHRSWB Pump D in service IAW the alarm card)  KA 219000 A4.02 (4.2)	S, N, A, EN, L	5

<p>S6. SKL034-20-26, Operate Service Water Backups for Critical Loop Cooling (Align Service Water Cross-tie to REC) IAW Procedure 5.2REC, Loss of REC  (For ILT NRC, last used 2018-9)  400000 A2.01 (3.9)</p>	<p>S, D, L</p>	<p>8</p>
<p>S7. Start SGT B for HPCI operation for level control post-scrum. Procedure 2.2.73, Standby Gas Treatment System, Section 8.  (Alt Path – Prefilter high D/P will alarm for the preferred SGT filter train, requiring shifting SGT trains per the alarm card)  Modified version of 2020-4 NRC JPM S8, the failure, high moisture, was replaced with prefilter high D/P.  KA 261000 A4.03 (3.7)</p>	<p>S, M, A, EN, L</p>	<p>9</p>
<p>S8. N/A</p>		

<p>In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U</p>		
<p>P1. SKL034-10-130, Locally Align RHRSW Crosstie for RPV Injection IAW Procedure 5.8.4, Alternate Injection Subsystems (Table 4)  (For ILT NRC, last used 2017-3)  K/A 510000 K1.07 (3.5)</p>	<p>D, L, E</p>	<p>4</p>
<p>P2. SKL034-10-69, Conduct Alternate Pressure Control (Failure- to-Scram) using Steam Jet Air Ejectors (local valve alignments) IAW Procedure 5.8.12, RPV Pressure Control Systems (Failure to Scram) (Table 12)  (If ever used for ILT NRC, not used from 2012 to present)  K/A 295025 EK1.07 (4.2), EK2.12 (3.1)</p>	<p>D, R, L, E</p>	<p>3</p>
<p>P3. SKL034-40-27, Transfer 125VDC Bus A to its emergency source IAW Procedure 2.2.25.1, 125 VDC Electrical System (Div 1)  (If ever used for ILT NRC, not used from 2012 to present)  KA 263000 K4.01 (3.5)</p>	<p>D</p>	<p>6</p>
<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.</p>		
<p>* Type Codes</p>	<p>Criteria for R /SRO-I/SRO-U (Actual)</p>	

(A)lternate path	4-6/4-6 /2-3	(-5/-)
(C)ontrol room		
(D)irect from bank	≤ 9/≤ 8/≤ 4	(-6/-)
(E)mergency or abnormal in-plant	≥ 1/≥ 1/≥ 1	(-2/-)
(EN)gineered safety feature	≥ 1/≥ 1/≥ 1 (control room system)	(-2/-)
(L)ow-Power/Shutdown	≥ 1/≥ 1/≥ 1	(-7/-)
(N)ew or (M)odified from bank including 1(A)	≥ 2/≥ 2/≥ 1	(-4/-)
(P)revious 2 exams	≤ 3/≤ 3/≤ 2 (randomly selected)	(-10/-)
(R)CA	≥ 1/≥ 1/≥ 1	(-11/-)
(S)imulator		