

Facility: Cooper Nuclear Station		Date of Examination: 6/6/2005
Examination Level (circle one): RO		Operating Test Number:
Administrative Topic (*)	Type Code(s)	Describe Activity to be Performed
Conduct of Operations	N	Verify Valve Position (perform on > 1 mockup valve either at maintenance training building or staged in the training building; at least one valve verified open and close, one valve to be found not in the expected position, SKL034xxxx)
Conduct of Operations	D S	Perform RO Review of Daily Logs, SKL0345019 (collection of a variety of information from panels and the simulator PCIS using procedure 2.0.2, Operations Logs and Reports)
Equipment Control	D	Develop, Verify, and Implement Tagouts, SKL0345034
Radiation Control	M S	Perform Dose Assessment, #2, SKL0345037 (Perform a dose calculation using CNS Dose with data obtained from panel indication and PCIS), NRC developed
Emergency Plan	Not Tested	
NOTE: All items (5 total) are required for SRO's. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C) Control Room (D) Direct from Bank (≤ 3 for RO's, ≤ 4 for SRO's and RO retakes) (N) New or (M) Modified from Bank (≥ 1 required) (P) Previous 2 exams (≤ 1 , randomly selected) (S) Simulator		

Facility: Cooper Nuclear Station		Date of Examination: 6/62005
Exam Level (circle one): RO		Operating Test Number:
Control Room Systems® (8 for RO; 7 for SRO-Instant; 2 or 3 for SRO-Update)		
System / JPM Title	Type Codes (*)	Safety Function
a. Recirc Flow Control System, SKL0342123, Respond to Trip of Reactor Recirc Pump	D S	Reactivity Control
b. Condensate System, SKL0342121, Perform Feedwater Startup from 0 to 350 psig	D L S	Reactor Inventory Control
c. ADS, SKL03420xx, Perform ADS Manual Valve Actuation Surveillance (valve does not close when demanded)	M A S	Reactor Pressure Control
d. RHR Shutdown Cooling Mode, SKL034xxxx, Shutdown Cooling Cooldown Rate Adjustment	L N S	Core Heat Removal
e. Primary Containment & Auxiliaries, SKL0342025, Primary Containment Venting for PCPL	M S	Containment Integrity
f. Reactor Equipment Cooling System, SKL0342144, Separation of REC Critical Loops (REC pump trip)	D S A	Plant Service Systems
g. APRM, SKL0342019, Perform APRM Gain Adjustment for Single Loop Operations (potentiometer malfunction)	D S A	Instrumentation
h. Plant Ventilation Systems, SKL0342075, Respond to Sustained Combustion in Offgas System	D S	Radiological Release
In Plant Systems® (3 for RO; 3 for SRO-Instant; 3 or 2 for SRO-Update)		
i. Uninterruptible Power Supplies, SKL0341095, Respond to No-Break Power Panel Failure	D A E	Electrical
j. RPS, SKL034xxxx, 5.1ASD Failure to SCRAM; NRC developed	N A C	Reactivity Control
k. Reactor Core Isolation Cooling System, SKL034xxxx, Manual Start of the RCIC Turbine per 5.3ALT Strategy	R N	Reactor Inventory Control

(@) All Control Room and In-Plant systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the Control Room

* Type Codes	Criteria for RO / SRO-Instant / SRO-Upgrade
(A) Alternate Path	4 - 6 / 4 - 6 / 2 - 3
(C) Control Room	
(D) Direct from Bank	≤ 9 / ≤ 8 / ≤ 4
(E) Emergency or Abnormal in plant	≥ 1 / ≥ 1 / ≥ 1
(L) Low Power	≥ 1 / ≥ 1 / ≥ 1
(N) New or (M) Modified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 2
(P) Previous 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R) RCA Entry	≥ 1 / ≥ 1 / ≥ 1
(S) Simulator	

Facility: Cooper Nuclear Station		Date of Examination: 6/6/2005
Examination Level (circle one): SRO		Operating Test Number:
Administrative Topic (*)	Type Code(s)	Describe Activity to be Performed
Conduct of Operations	D S	Reportability Determination per procedure 2.0.5 (4 hours, given an event that should have resulted in ECCS discharge into the Reactor Coolant System as a result of a valid signal, SKL0343028, Reportable Occurrence to the NRC, #3)
Conduct of Operations	N	Shift Staffing Determination per procedure 2.0.3 section 10 (given a mode and a partial crew complement, determine what additional crew positions are required); NRC developed
Equipment Control	N	Risk Assessment and Mock Safety Function Determination using procedure 0.26 per procedure 0.49, step 3.5 (evaluation of the schedule, including risk assessment, during periods outside normal office hours, for impact of emergent equipment problems including missed TS/TRM surveillances on scheduled activities & ensure mock safety function determination is performed to assess the impact of missed TS/TRM surveillances on safety-related equipment)
Radiation Control	M	Review and Approve Liquid Radioactive Waste Discharge per procedure 8.8.11, Attachment 1 (complete sections 1-3, provide information for SM to complete section 4, faulted - SM should not approve, SKL03450xx, Approve Radioactive Discharge Release Permit)
Emergency Plan	M	Protective Action Recommendation determination per procedure 5.7.20 and complete the appropriate section(s) of the offsite notification form (CNS Dose is not available; provide data to use Attachments 1 and 2, SKL03430xx, PAR Tabletop)
NOTE: All items (5 total) are required for SRO's. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		

*** Type Codes & Criteria:**

- (C) Control Room
- (D) Direct from Bank (≤ 3 for RO's, ≤ 4 for SRO's and RO retakes)
- (N) New or (M) Modified from Bank (≥ 1 required)
- (P) Previous 2 exams (≤ 1 , randomly selected)
- (S) Simulator

Facility: Cooper Nuclear Station		Date of Examination: 6/62005
Exam Level (circle one): SRO-U		Operating Test Number:
Control Room Systems® (8 for RO; 7 for SRO-Instant; 2 or 3 for SRO-Update)		
System / JPM Title	Type Codes (*)	Safety Function
a. Recirc Flow Control System, SKL0342123, Respond to Trip of Reactor Recirc Pump	Not Tested	
b. Condensate System, SKL0342121, Perform Feedwater Startup from 0 to 350 psig	Not Tested	
c. ADS, SKL03420xx, Perform ADS Manual Valve Actuation Surveillance (valve does not close when demanded)	M A	Reactor Pressure Control
d. RHR Shutdown Cooling Mode, SKL034xxxx, Shutdown Cooling Cooldown Rate Adjustment	L N	Core Heat Removal
e. Primary Containment & Auxiliaries, SKL0342025, Primary Containment Venting for PCPL	Not Tested	
f. Reactor Equipment Cooling System, SKL0342144, Separation of REC Critical Loops (REC pump trip)	D S A	Plant Service Systems
g. APRM, SKL0342019, Perform APRM Gain Adjustment for Single Loop Operations (potentiometer malfunction)	Not Tested	
h. Plant Ventilation Systems, SKL0342075, Respond to Sustained Combustion in Offgas System	Not Tested	
In Plant Systems® (3 for RO; 3 for SRO-Instant; 3 or 2 for SRO-Update)		
i. Uninterruptible Power Supplies, SKL0341095, Respond to No-Break Power Panel Failure	D A E	Electrical
j. RPS, SKL034xxxx, 5.1ASD Failure to SCRAM	Not Tested	
k. Reactor Core Isolation Cooling System, SKL034xxxx, Manual Start of the RCIC Turbine per 5.3ALT Strategy	R N	Reactor Inventory Control

(@) All Control Room and In-Plant systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the Control Room

* Type Codes	Criteria for RO / SRO-Instant / SRO-Upgrade
(A) Alternate Path	4 - 6 / 4 - 6 / 2 - 3
(C) Control Room	
(D) Direct from Bank	≤ 9 / ≤ 8 / ≤ 4
(E) Emergency or Abnormal in plant	≥ 1 / ≥ 1 / ≥ 1
(L) Low Power	≥ 1 / ≥ 1 / ≥ 1
(N) New or (M) Modified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 2
(P) Previous 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R) RCA Entry	≥ 1 / ≥ 1 / ≥ 1
(S) Simulator	

Facility: Cooper Nuclear Station		Date of Examination: 6/6/2005
Exam Level (circle one): SRO-I		Operating Test Number:
Control Room Systems® (8 for RO; 7 for SRO-Instant; 2 or 3 for SRO-Update)		
System / JPM Title	Type Codes (*)	Safety Function
a. Recirc Flow Control System, SKL0342123, Respond to Trip of Reactor Recirc Pump	D S	Reactivity Control
b. Condensate System, SKL0342121, Perform Feedwater Startup from 0 to 350 psig	D L S	Reactor Inventory Control
c. ADS, SKL03420xx, Perform ADS Manual Valve Actuation Surveillance (valve does not close when demanded)	M A	Reactor Pressure Control
d. RHR Shutdown Cooling Mode, SKL034xxxx, Shutdown Cooling Cooldown Rate Adjustment	Not Tested	
e. Primary Containment & Auxiliaries, SKL0342025, Primary Containment Venting for PCPL	M S	Containment Integrity
f. Reactor Equipment Cooling System, SKL0342144, Separation of REC Critical Loops (REC pump trip)	D S A	Plant Service Systems
g. APRM, SKL0342019, Perform APRM Gain Adjustment for Single Loop Operations (potentiometer malfunction)	D S A	Instrumentation
h. Plant Ventilation Systems, SKL0342075, Respond to Sustained Combustion in Offgas System	D S	Radiological Release
In Plant Systems® (3 for RO; 3 for SRO-Instant; 3 or 2 for SRO-Update)		
i. Uninterruptible Power Supplies, SKL0341095, Respond to No-Break Power Panel Failure	D A E	Electrical
j. RPS, SKL034xxxx, 5.1ASD Failure to SCRAM	N A C	Reactivity Control
k. Reactor Core Isolation Cooling System, SKL034xxxx, Manual Start of the RCIC Turbine per 5.3ALT Strategy	R N	Reactor Inventory Control

(@) All Control Room and In-Plant systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the Control Room

* Type Codes	Criteria for RO / SRO-Instant / SRO-Upgrade
(A) Alternate Path	4 - 6 / 4 - 6 / 2 - 3
(C) Control Room	
(D) Direct from Bank	≤ 9 / ≤ 8 / ≤ 4
(E) Emergency or Abnormal in plant	≥ 1 / ≥ 1 / ≥ 1
(L) Low Power	≥ 1 / ≥ 1 / ≥ 1
(N) New or (M) Modified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 2
(P) Previous 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R) RCA Entry	≥ 1 / ≥ 1 / ≥ 1
(S) Simulator	

Facility: Cooper Nuclear Station										Date of Exam: June 3, 2005							
Tier	Group	RO K/A Category Points											SRO Only				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2	G*	Total	
1.	1	2	3	2	N/A			5	3	N/A			5	20	4	3	7
	2	1	3	0				2	0				1	7	1	2	3
	Totals	3	6	2				7	3				6	27	5	5	10
2.	1	4	2	2	2	2	2	4	3	3	1	1	26	2	3	5	
	2	1	0	1	2	0	2	0	1	2	1	2	12	1	2	3	
	Totals	5	2	3	4	2	4	4	4	5	2	3	38	3	5	8	
3. Generic Knowledge and Abilities Categories											1	3	10	1	1	7	
											2	3		2	2		
											3	2		3	2		
											4	2		4	2		
Note:	<p>1. Ensure that at least 2 topics from every applicable KA category are sampled within each tier of the RO and SRO-only outlines (i.e. except for Category 1 in Tier 3 of the SRO-only outline, the Tier Totals in each KA category shall not be less than 2).</p> <p>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.</p> <p>3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate KA statements.</p> <p>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.</p> <p>5. Absent a plant-specific priority only those KA's having an importance rating of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and KA categories.</p> <p>7. (*) The generic (G) KA's in Tiers 1 and 2 shall be selected from Section 2 of KA Catalog but the topics must be relevant to the applicable evolution or system.</p> <p>8. On the following pages enter the KA numbers, a brief description of each topic, the topic's importance ratings 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. Use duplicate pages for RO and SRO-only exams.</p> <p>9. For Tier 3 select topics from Section 2 of the KA Catalog and enter the KA numbers, descriptions, IR's and point totals on Form ES 401-3. Limit SRO selections to KA's that are linked to 10 CFR 55.43.</p>																

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 (RO)									
E/APE#/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	KA Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation		1	1				Relation between loss of forced core flow circulation and the reactor or turbine pressure regulating system	3.3	AK2.04
							Reasons for reduced loop operating requirements as applies to loss of forced core flow circulation	3.2	AK3.05
295003 Partial or Complete Loss of AC	1						Operational implications of failsafe component design applied to partial or complete loss of AC power	2.6	AK1.05
295004 Partial or Total Loss of DC Pwr					1		Determine or interpret the cause of partial or complete loss of DC power	3.2	AA2.01
295005 Main Turbine Generator Trip				1			Monitor or operate RPS as applies to main turbine generator trip	3.6	AA1.02
295006 SCRAM						1	Ability to prioritize and interpret the significance of each annunciator and alarm	3.3	2.4.45
295016 Control Room Abandonment					1		Ability to determine or interpret reactor power as applies to CR abandonment	4.1	AA2.01
295018 Partial or Total Loss of CCW			1				Reasons for reactor power reduction as applied to partial or total loss of CCW	3.3	AK3.02
295019 Partial or Total Loss of Inst Air						1	Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation	3.7	2.1.07
295021 Loss of Shutdown Cooling						1	Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entry conditions	3.9	2.4.02
295023 Refueling Accident				1			Monitor or operate radiation monitoring equipment as applies to refueling accidents	3.4	AA1.04
295024 High Drywell Pressure				1			Operate or monitor RPS as applies to high drywell pressure	3.9	EA1.05
295025 High Reactor Pressure		1					Relationship with Safety Relief Valves	4.1	EK2.05
295026 Suppression Pool High Water Temperature		1					Relationship between suppression pool cooling and high water temperature	3.9	EK2.01
295027 High Containment Temperature							Not Applicable to Cooper		
295028 High Drywell Temperature						1	Verify alarm setpoints and operate controls as identified in the alarm response manual	3.3	2.4.50
295030 Low Suppression Pool Water Level				1			Monitor or operate RCIC as applies	3.4	EA1.02

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Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 (RO)									
E/APE#/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	KA Topic(s)	IR	#
295031 Reactor Low Water Level						1	Ability to located CR switches and indications and determine they reflect the desired plant line up	4.2	2.1.31
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown					1		Determine or interpret reactor water level as applied to SCRAM w/ATWS condition	4.1	EA2.02
295038 High Offsite Release Rate			1				Knowledge of the reasons for control room ventilation isolation during conditions of high offsite release rate.	3.0	EK3.03
600000 Plant Fire On Site	1						Operational implications of fire fighting as applies to plant fire on site	2.9	AK1.02
KA Category Totals	2	3	3	4	3	5	Group Point Total:		20

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 (RO)									
E/APE#/Name/Safety Function	K 1	K 2	K 3	A 1	A 2	G	KA Topic(s)	IR	#
295002 Loss of Main Condenser Vacuum									
295007 High Reactor Pressure							Determine or interpret reactor water level as applies to high reactor pressure [Delete]	3.7	AA2.03
295008 High Reactor Water Level				1			Monitor or operate HPCI as applies to high reactor water level	3.1	AA1.04
295009 Low Reactor Water Level		1					Relations between reactor water level control and low reactor water level	3.9	AK2.02
295010 High Drywell Pressure									
295011 High Containment Temp.							Not Applicable to Cooper		
295012 High Drywell Temperature									
295013 High Suppression Pool Temp.		1					Relation of suppression pool cooling	3.6	AK2.01
295014 Inadvertent Reactivity Addition						1	Ability to perform pre-startup procedures for the facility including operating those controls associated with plant equipment that could affect reactivity	3.7	2.2.01
295015 Incomplete SCRAM									
295017 High Offsite Release Rate	1						Operational implications of high offsite release rate as affects protection of the general public	3.8	AK1.02
295020 Inadvertent Containment Isol									
295022 Loss of CRD Pumps				1			Ability to operate and/or monitor the CRD hydraulic system as it applies to the Loss of CRD Pumps.	3.1	AA1.01
295029 High Suppression Pool Level									
295032 High Secondary Containment Area Temperature		1					Relation between CNMT area temperature and leak detection system concepts	3.6	EK2.07
295033 High Secondary Containment Area Radiation Levels									
295034 Secondary Containment Ventilation High Radiation									
295035 Secondary Containment High Differential Pressure									
295036 Secondary Containment High Sump / Area Water Level									
500000 High CTMT Hydrogen Conc.									
KA Category Point Total	1	3	0	2	0	1	Group Point Total:		7

Plant Systems- Tier 2 / Group 1 (RO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	KA Topics	IR	#
203000 RHR LPCI: Injection Mode			1									Effect of malfunction on water vl.	4.3	K3.01
205000 Shutdown Cooling				1								Design & Interlocks providing for reactor cool down rate	3.6	K4.05
206000 HPCI	1											Connections with Keep Fill systm	4.0	K1.09
207000 Isolation Condenser												Not applicable to Cooper		
209001 LPCS							1					Predict/monitor System Lineup	3.3	A1.08
209002 HPCS												Not applicable to Cooper		
211000 SLC	1										1	Relation with plant air systems	2.5	K1.03
												Ability to apply Tech Specs	2.9	2.1.12
212000 RPS		1										Knowledge of electrical power systems to RPS M/G sets	3.2	K2.01
215003 IRM					1							Operational implications of changing detector positions	3.0	K5.03
215004 Source Range Monitors		1										Electrical power supplies to SRM channels or detectors	2.6	K2.01
215005 ARPM / LPRM									1			Monitor automatic operations of max. disagreement of flow comparator channels	3.3	A3.06
217000 RCIC							1					Predict/monitor Supp. Pool Level	3.3	A1.07
218000 ADS						1		1				Effect of malfunction on ADS valve air supply	3.8	K6.04
												Predict impact of small break LOCA on ADS and mitigate	4.1	A2.01
223002 PCIS / Nuclear Steam Supply Shutoff							1					Predict / Monitor changes assoc. with individual relay status	2.6	A1.04
239002 Safety Relief Valves	1									1		Connections with nuclear boiler instrumentation system	3.5	K1.03
												Monitor SRV and acoustical mnt.	3.6	A3.04
259002 Reactor Water Level Control									1			Monitor auto operations and changes in main steam flow	3.2	A3.03
261000 Standby Gas Treatment Sys										1		Monitor or operate fans from the Control Room	3.0	A4.03
262001 AC Electrical Distribution	1											Physical connections with offsite power	3.4	K1.03

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Plant Systems- Tier 2 / Group 1 (RO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	KA Topics	IR	#
262002 UPS (AC-DC)			1				1					Design & interlocks which provide for transfer from preferred to alternate power	3.1	K4.01
												Predict/monitor changes assoc. with motor generator outputs	2.5	A1.02
263000 DC Electrical Distribution			1									Effect of malfunction on systems with DC components	3.4	K3.03
264000 EDG's				1			1					Operations implications of paralleling AC power sources	3.4	K5.05
												Predict consequences of over/under-excited operation and mitigate	2.9	A2.04
300000 Instrument Air								1				Predict effect of air dryer and filter malfunctions and mitigate	2.9	A2.01
400000 CCW						1						Effect of loss or malfunction of pumps will have on CCW	3.0	K6.05
KA Category Point Totals:	4	2	2	2	2	2	4	3	3	1	1	Group Point Total:	26	

Plant Systems- Tier 2 / Group 2 (RO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	KA Topics	IR	#
201001 CRD Hydraulic														
201002 RMCS														
201003 Control Rod and Drive Mechanism														
201004 RSCS												Not Applicable to Cooper		
201005 RCIS												Not Applicable to Cooper		
201006 RWM														
202001 Recirculation														
202002 Recirc Flow Control														
204000 RWCU														
214000 RPIS										1		Monitor or operate from the control room control rod drive temperature	2.8	A4.03
215001 Traversing In-Core Probe														
215002 Rod Block Monitor														
216000 Nuclear Boiler Instrum.														
219000 RHR LPCI: Torus / Pool Cooling Mode									1			Monitor automatic operation including valve operation	3.3	A3.01
223001 Primary CNMT & Aux.						1						Monitor automatic operation and Drywell pressure	4.3	A3.05
226001 RHR LPCI: Containment Spray Mode											1	Knowledge of the bases for prioritizing safety functions	3.0	2.4.22
23000 RHR LPCI: Torus / Pool Spray Mode														
233000 Fuel Pool Cooling & Cleanup														
234000 Fuel Handling Equip.														
239001 Main & Reheat Steam				1								Design & interlocks pertaining to equalization of MSIV pressure prior to opening	3.3	K4.09
239003 MSIV Leakage Control	1											Relationship with SBGTS	2.9	K1.02

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Plant Systems- Tier 2 / Group 2 (RO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	KA Topics	IR	#
241000 Reactor / Turbine Pressure Regulator														
245000 Main Turbine Generator & Auxiliaries														
256000 Reactor Condensate					1							Effect of main steam system loss or malfunction on condensate system	2.9	K6.10
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas									1			Monitor auto operation of indicating lights and alarms	2.9	A3.05
272000 Radiation Monitoring											1	Operator responsibilities during all modes of operation	3.0	2.1.2
286000 Fire Protection			1									Effect of loss or malfunction on personnel protection	3.2	K3.02
288000 Plant Ventilation														
290001 Secondary Containment														
290003 Control Room HVAC								1				Predict impact of initiation or reconfiguration and mitigate abnormal conditions	3.1	A2..01
290002 Reactor Vessel Internals				1								Design & interlocks provide for natural circulation	3.3	K4.05
KA Category Point Totals	1	0	1	2	0	2	0	1	2	1	2	Group Point Total	12	

Average IR for Tier 1, Group 1	3.52	Tier Total	20
Average IR for Tier 1, Group 2	3.63	Tier Total	07
Average IR for Tier 2, Group 1	3.12	Tier Total	26
Average IR for Tier 2, Group 2	2.91	Tier Total	12
Average IR for Tier 3	3.06	Tier Total	10
Average IR for RO Exam	3.23	Exam Total	75

Generic Knowledge and Abilities Outline (Tier 3)							
Category	KA #	Topic	RO		SRO Only		
			IR	#	IR	#	
1. Conduct of Operations	2..1.10	Knowledge of conditions and limitations in the facility license	2.7	1			
	2..1.28	Knowledge of the purpose and function of major system components and controls.	3.2	1			
	2..1.33	Ability to recognize indications for system operating parameters which are entry conditions for technical specifications.	2.7	1			
	Subtotal			3			
2. Equipment Control	2..2.22	Knowledge of limiting conditions for operations and safety limits	3.4	1			
	2..2.30	Knowledge of RO duties in the CR during fuel handling	3.5	1			
	2..2.34	Knowledge of the process for determining the internal and external effects on core reactivity	2.8	1			
	Subtotal			3			
3. Radiation Control	2..3.01	Knowledge of 10 CFR 20 and related facility radiation control requirements	2..6	1			
	2..3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure	2..9	1			
	Subtotal			2			
4. Emergency Procedures and Plan	2..4.46	Ability to verify that alarms are consistent with plant conditions	3.5	1			
	2..4.49	Ability to perform without reference to procedures those actions which require immediate operations of system components and controls	3.3	1			
	Subtotal			2			
Tier 3 Point Total					10		

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 (SRO)					
E/APE#/Name/Safety Function	A 2	G	KA Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation		1	Knowledge of limiting conditions for operations and safety limits	4.1	2.2.22
295003 Partial or Complete Loss of AC					
295004 Partial or Total Loss of DC Pwr					
295005 Main Turbine Generator Trip	1		Ability to determine or interpret feedwater temperature as applied to a main turbine generator trip	2.7	AA2.06
295006 SCRAM					
295016 Control Room Abandonment					
295018 Partial or Total Loss of CCW					
295019 Partial or Total Loss of Inst Air		1	Knowledge of annunciators, alarms, and indications, and use of the response instructions	3.4	2.4.31
295021 Loss of Shutdown Cooling					
295023 Refueling Accident					
295024 High Drywell Pressure			Ability to determine or interpret suppression pool level as applied to high drywell pressure [Deleted]		
295025 High Reactor Pressure	1		Ability to determine or interpret suppression pool temperature as applied to high reactor pressure	4.1	EA2.03
295026 Suppression Pool High Water Temperature					
295027 High Containment Temperature		1	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications	4.0	2.1.33
295028 High Drywell Temperature	1		Ability to determine and/or interpret the following as they apply to high drywell temperature: Reactor Water Level.	3.9	EA2.03
295030 Low Suppression Pool Water Level	1		Ability to determine or interpret drywell / suppression pool differential pressure as applied to low suppression pool water level	3.7	EA2.04
295031 Reactor Low Water Level					
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown					
295038 High Offsite Release Rate					
600000 Plant Fire On Site					
KA Category Totals	4	3	Group Point Total:		7

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 (SRO)					
E/APE#/Name/Safety Function	A 2	G	KA Topic(s)	IR	#
295002 Loss of Main Condenser Vacuum					
295007 High Reactor Pressure		1	Knowledge of surveillance procedures	3.4	2.2.12
295008 High Reactor Water Level					
295009 Low Reactor Water Level					
295010 High Drywell Pressure					
295011 High Containment Temp.			Not Applicable to Cooper		
295012 High Drywell Temperature					
295013 High Suppression Pool Temp.					
295014 Inadvertent Reactivity Addition					
295015 Incomplete SCRAM					
295017 High Offsite Release Rate		1	Knowledge of symptom-based EOP mitigation strategies	4.0	2.4.6
295020 Inadvertent Containment Isol					
295022 Loss of CRD Pumps					
295029 High Suppression Pool Level					
295032 High Secondary Containment Area Temperature					
295033 High Secondary Containment Area Radiation Levels					
295034 Secondary Containment Ventilation High Radiation	1		Ability to determine or interpret ventilation radiation levels	4.2	EA2.01
295035 Secondary Containment High Differential Pressure					
295036 Secondary Containment High Sump / Area Water Level					
500000 High CTMT Hydrogen Conc.					
KA Category Point Total	1	2	Group Point Total:		3

Plant Systems- Tier 2 / Group 1 (SRO)					
System # / Name	A	G	KA Topics	IR	#
203000 RHR LPCI: Injection Mode		1	Knowledge of the process for managing maintenance activities during shutdown operations	3.5	2.2.18
205000 Shutdown Cooling					
206000 HPCI		1	Ability to execute procedure steps	4.2	2.1.20
207000 Isolation Condenser			Not Applicable to Cooper		
209001 LPCS					
209002 HPCS			Not Applicable to Cooper		
211000 SLC					
212000 RPS					
215003 IRM		1	Ability to determine Mode of Operation	3.3	2.1.22
215004 Source Range Monitor					
215005 ARPM / LPRM					
217000 RCIC					
218000 ADS					
223002 PCIS / Nuclear Steam Supply Shutoff					
239002 SRV's					
259002 Reactor Water Level Control					
261000 Standby Gas Treatment System					
262001 AC Electrical Distribution	1		Ability to predict the impact of opening a disconnect under load and....correct, control or mitigate the consequences	3.6	A2.08
262002 UPS (AC-DC)					
263000 DC Electrical Distribution					
264000 Emergency Diesel Generators	1		Ability to predict the impacts of synchronization of the emergency generator with other electrical supplies, and....correct, control or mitigate the consequences	3.6	A2.05
300000 Instrument Air					
400000 CCW					
KA Category Point Totals:	2	3	Group Point Total:	5	

Plant Systems- Tier 2 / Group 2 (SRO)					
System # / Name	A 2	G	KA Topics	IR	#
201001 CRD Hydraulic					
201002 RMCS					
201003 Control Rod and Drive Mechanism			Ability to perform specific system and integrated plant procedures during different modes of plant operations [Deleted]	4.0	2.1.23
201004 RSCS			Not Applicable to Cooper		
201005 RCIS			Not Applicable to Cooper		
201006 RWM					
202001 Recirculation	1		Ability to predict the impacts of recirculation scoop tube lockup on the recirculation system and on the basis of the prediction use procedures to correct, control, or mitigate the consequences of the abnormal conditions or operations.	3.4	A2.09
202002 Recirc Flow Control					
204000 RWCU					
214000 RPIS					
215001 Traversing In-Core Probe					
215002 Rod Block Monitor					
216000 Nuclear Boiler Instrumentation					
219000 RHR LPCI: Torus / Pool Cooling Mode					
223001 Primary CNMT & Aux.					
226001 RHR LPCI: Containment Spray Mode					
23000 RHR LPCI: Torus / Pool Spray Mode					
233000 Fuel Pool Cooling & Cleanup		1	Ability to obtain and interpret station reference materials...which contain performance data	3.1	2.1.25
234000 Fuel Handling Equip.		1	Ability to track limiting conditions for operations	3.8	2.2.23
239001 Main & Reheat Steam					
239003 MSIV Leakage Control					
241000 Reactor / Turbine Pressure Regulator					
245000 Main Turbine Generator & Auxiliaries					

256000 Reactor Condensate				
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Plant Systems- Tier 2 / Group 2 (RO / SRO)					
System # / Name	A 2	G	KA Topics	IR	#
259001 Reactor Feedwater					
268000 Radwaste					
271000 Offgas					
272000 Radiation Monitoring					
286000 Fire Protection					
288000 Plant Ventilation					
290001 Secondary Containment					
290003 Control Room HVAC					
290002 Reactor Vessel Internals			Deleted		
KA Category Point Totals	1	2	Group Point Total	3	

Average IR for Tier 1, Group 1	3.69	Tier Total	7
Average IR for Tier 1, Group 2	3.87	Tier Total	3
Average IR for Tier 2, Group 1	3.64	Tier Total	5
Average IR for Tier 2, Group 2	3.76	Tier Total	3
Average IR for Tier 3	3.43	Tier Total	7
Average IR for SRO Exam	3.64	Exam Total	25

Generic Knowledge and Abilities Outline (Tier 3)						
Category	KA #	Topic	RO		SRO Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.14	Knowledge of system status criteria which require notification of plant personnel			3.3	1
	Subtotal					1
2. Equipment Control	2.2.14	Knowledge of the process for making configuration changes			3.0	1
	2.2.26	Knowledge of refueling administrative requirements			3.7	1
	Subtotal					2
3. Radiation Control	2.3.3	Knowledge of SRO responsibilities for auxiliary systems outside the control room (waste disposal and handling systems)			2.9	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized			3.1	1
	Subtotal					2
4. Emergency Procedures and Plan	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal or emergency operations			4.0	1
	2.4.44	Knowledge of emergency plan protective action recommendations			4.0	1
	Subtotal					2
Tier 3 Point Total						7

Facility: COOPER	Scenario No.: 2	Op-Test No.: 1
Examiners: <u>Paul Gage</u>	Operators: _____	
<u>Steve Garchow</u>	_____	
<u>Kelly Clayton</u>	_____	
Plant Status:	The plant is operating at 60% power with instructions to continue the power ascension to 100%. The A1 Reactor Feedpump LO Pump and D1 Sump Pump are both tagged out due to a motor failure. The Sentinal Status is Green.	
Turnover:	The plant is operating at 60% power with instructions to continue the power ascension to 100%. The A1 Reactor Feedpump LO Pump and D1 Sump Pump are both tagged out due to motor failures. The Sentinal Status is Green. Reactor engineering is working on the computer program used to calculate AGAFs. Assume all AGAFs are in specification unless otherwise notified by the STA.	
Scenario:	<p>The plant is operating at 60% power with instructions to continue the power ascension to 100%. The crew will raise power greater than 70% before the first event is called in. The “A1” Feed Pump Lube Oil Pump and Sump Pump D1 are tagged out for maintenance.</p> <p>Following the power ascension, an accumulator fault due to low N2 pressure is received. Following the Tech Spec assessments, an inadvertent initiation of HPCI occurs. The crew should respond per 2.4CSCS and the Technical Specifications.</p> <p>After the Tech Spec assessment is complete, a tube rupture occurs in feedwater heater A5. This will require a diagnosis since the alarm clears. Eventually the crew will have to commence a plant shutdown. Once the shutdown is underway, an unisolable steam line leak will develop on the HPCI steam line. The automatic isolation for the steam supply valves will not function and the valves cannot be closed from the control room. The crew is expected to take action EOP-05, Secondary Containment Control and scram the plant before one area reaches a Maximum Safe Operating Temperature (MSOT).</p> <p>Due to a hydraulic lock, many control rods will fail to insert. The crew should respond to the ATWS per EOP-06A, 7A and 5.8.3. Power level should be ~ 10% after the Recirculation pump trip, so RPV water level will have to be lowered. Control rods can be inserted via RMCS.</p> <p>The secondary containment temperatures will continue to rise, resulting in MSOT in 2 areas. The crew is expected to take action iaw EOP-6B and perform an Emergency Depressurization. After the Emergency Depressurization is complete and RPV water level is being controlled, the control rods will insert the next time the scram is reset and scrambled again.</p> <p>The scenario will terminate when the RPV has been depressurized, control rods have been inserted. and RPV water level has been restored to +15 to +40”.</p>	
Event	Malf. No.	Event Description

Facility: COOPER

Scenario No.: 3

Op-Test No.:1

Examiners: Paul Gage **Operators:** _____
Steve Garchow _____
Kelly Clayton _____

Plant Status: The plant is operating at 100% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity

Turnover: The plant is operating at 100% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity.

Scenario: The plant is operating at 100% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity. When the Technical Specification assessment is complete, a bus ground results in a loss of MCC "F". The loss of MCC F causes a trip of RFPT A due to low lube oil pressure, A1 pump tagged out, requiring a power reduction to maintain reactor water level and to reduce heat load to the capacity of the remaining pump. When conditions have stabilized, RFP "B" vibrations increase to the point that the pump must be tripped. The crew will scram the reactor and trip the last remaining RFP. When RCIC initiates, a break develops on the "A" feedwater line inside the drywell. HPCI fails to automatically start, but may be manually started. RCIC will not inject due to the location of the leak. The feedwater line check valve leaks, and the leak continues. HPCI can maintain RPV water level for the selected leak size. Containment sprays will be required by the EOPs. Drywell sprays will be initiated. Drywell sprays will fail to isolate on low containment pressure. The operator must either maintain pressure by controlling spray flowrate or manually isolate drywell sprays when containment becomes negative before air is drawn into the primary containment. The scenario ends when RPV water level is being restored to the normal band, drywell pressure is being controlled and classifications have been made.

Event No.	Malf. No.	Event Type*	Event Description
1.	Initiated by turnover	N (RO)	Power reduction of 100 MWE
2.	Trigger 1	T, I (RO, BOP, SRO)	Drywell Pressure Instrument Fails UPSC (PC-PS-12C)
	Trigger 2	C (All)	Loss of MCC E/Loss of REPT

Facility: COOPER	Scenario No.: 4	Op-Test No.: 1
Examiners: <u>Paul Gage</u>		
Operators: _____		
<u>Steve Garchow</u> _____		
<u>Kelly Clayton</u> _____		
 Plant Status: The plant is operating at 75% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with the exception of Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 are out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity		
 Turnover: The plant is operating at 75% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with the exception of Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 are out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity.		
 Scenario: The plant is operating at 75% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with the exception of Rx Feed Pump Lube Oil Pump A1 and Sump Pump D1 are out of service. Southeast Nebraska is in a severe thunderstorm warning, which includes intense electrical storm activity. A surveillance testing the operability of main steam isolation valve 80A fails resulting in one MSL being isolated. A lightning strike on the grid results in the loss of the 69kV OPPD Nebraska City Line and requires performing a tech spec surveillance. When the Technical Specification assessment is complete, a MSL radiation monitor fails upscale. When the assessment of this is complete, APRM Channel B fails INOP. When the actions for the APRM are complete, a loss of off-site power, reactor scram, and a steam leak into primary containment occur. Later in the scenario EDG-2 fails. The scenario ends when RPV water level is being restored to the normal band, drywell pressure is being controlled and classifications have been made.		

Event No.	Malf. No.	Event Type*	Event Description
1.	Trigger 1	N (SRO, RO)	Power reduction to < 70% using control rods and recirc flow
2.	Trigger 2	C, T (BOP,	Surveillance 6.MS.201 Section 5 (Failure of MSIV MOV-80A to open)