Facility: Browns Ferry Date of Exam: December 2015

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 & Abnormal Plant Evolutions	1	3	3	4	N/A			4	3	N/A		3	20	4	3	7
	2	1	2	1				1	1			1	7	2	1	3
	Tier Totals	4	5	5				5	4			4	27	6	4	10
2. Plant Systems	1	2	2	3	2	3	3	2	3	2	2	2	26	3	2	5
	2	1	1	1	1	1	1	1	1	2	1	1	12	0 | 2	1	3
	Tier Totals	3	3	4	3	4	4	3	4	4	3	3	38	5	3	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7
		3			3			2			2			2	2	1	2	

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the ATier Totals@ in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ∀1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. *The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics= importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note # 1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295001G2.1.23	Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	4.3	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
295003AK1.06	Partial or Complete Loss of AC / 6	3.8	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Station blackout: Plant-Specific.....
295004AK2.01	Partial or Total Loss of DC Pwr / 6	3.1	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Battery charger.....
295005AK3.01	Main Turbine Generator Trip / 3	3.8	3.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Reactor SCRAM.....
295006AA1.01	SCRAM / 1	4.2	4.2	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RPS.....
295016AK3.01	Control Room Abandonment / 7	4.1	4.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Reactor SCRAM.....
295018AK2.01	Partial or Total Loss of CCW / 8	3.3	3.4	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	System loads.....
295019AA2.02	Partial or Total Loss of Inst. Air / 8	3.6	3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Status of safety-related instrument air system loads (see AK2.1 - AK2.19).....
295021AK2.07	Loss of Shutdown Cooling / 4	3.1	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Reactor recirculation.....
295023AA1.04	Refueling Accidents / 8	3.4	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Radiation Monitoring Equipment
295024EA1.20	High Drywell Pressure / 5	3.5	3.6	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Standby gas treatment/FRVS: Plant-Specific.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295025EK3.06	High Reactor Pressure / 3	4.2	4.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Alternate rod insertion: Plant-Specific.....
295026G2.1.28	Suppression Pool High Water Temp. / 5	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the purpose and function of major system components and controls.
295028EA2.03	High Drywell Temperature / 5	3.7	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor water level
295030G2.4.46	Low Suppression Pool Wtr Lvl / 5	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify that the alarms are consistent with the plant conditions.
295031EK1.02	Reactor Low Water Level / 2	3.8	4.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Natural circulation: Plant-Specific.....
295037EK1.07	SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	3.4	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Shutdown margin.....
295038EA1.01	High Off-site Release Rate / 9	3.9	4.2	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Stack-gas monitoring system: Plant-Specific.....
600000AK3.04	Plant Fire On Site / 8	2.8	3.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in the abnormal procedure for plant fire on site
700000AA2.05	Generator Voltage and Electric Grid Distrurbancecs	3.2	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Operational status of offsite circuit

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295009G2.4.45	Low Reactor Water Level / 2	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to prioritize and interpret the significance of each annunciator or alarm.
295017AA1.06	High Off-site Release Rate / 9	3.2	3.2	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Condenser air removal system: Plant-Specific.....
295020AK2.11	Inadvertent Cont. Isolation / 5 & 7	3.2	3.4	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Standby gas treatment system/FRVS: Plant-Specific....
295029EK2.02	High Suppression Pool Wtr Lvl / 5	3.4	3.6	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	HPCI: Plant specific.....
295032EA2.01	High Secondary Containment Area Temperature / 5	3.8	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Area temperature.....
295034EK1.01	Secondary Containment Ventilation High Radiation / 9	3.8	4.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Personnel protection.....
295036EK3.03	Secondary Containment High Sump/Area Water Level / 5	3.5	3.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Isolating affected systems.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
203000A2.08	RHR/LPCI: Injection Mode	2.9	3.0	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Inadequate room cooling
205000K2.02	Shutdown Cooling	2.5	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Motor operated valves
206000K3.02	HPCI	3.8	3.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Reactor pressure control: BWR-2,3,4
209001G2.1.20	LPCS	4.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to execute procedure steps.
211000K3.01	SLC	4.3	4.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Ability to shutdown the reactor in certain conditions
212000A4.13	RPS	3.4	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Perform individual control rod SCRAM testing
215003K5.03	IRM	3.0	3.1	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Changing detector position
215004K2.01	Source Range Monitor	2.6	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	SRM channels/detectors
215005A4.01	APRM / LPRM	3.2	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	IRM/APRM recorder
215005K5.06	APRM / LPRM	2.5	2.6	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Assignment of LPRM's to specific APRM channels
217000K4.01	RCIC	2.8	2.8	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Prevent water hammer: Plant-Specific

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
218000G2.4.30	ADS	2.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.
218000K1.03	ADS	3.7	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Nuclear boiler instrument system
223002K4.02	PCIS/Nuclear Steam Supply Shutoff	2.7	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Testability
239002K6.02	SRVs	3.4	3.5	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Air (Nitrogen) supply: Plant-Specific
259002A1.07	Reactor Water Level Control	2.6	2.6	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	TDRFP speed: TDRFP
261000K1.03	SGTS	2.9	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Suppression pool
262001A3.01	AC Electrical Distribution	3.1	3.2	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Breaker tripping
262002A1.02	UPS (AC/DC)	2.5	2.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Motor generator outputs
262002K6.03	UPS (AC/DC)	2.7	2.9	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Static inverter
263000A3.01	DC Electrical Distribution	3.2	3.3	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Meters, dials, recorders, alarms and indicating lights
264000A2.06	EDGs	3.4	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Opening normal and/or alternate power to emergency bus

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
300000K3.01	Instrument Air	2.7	2.9	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Containment air system
300000K5.13	Instrument Air	2.9	2.9	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Filters
400000A2.01	Component Cooling Water	3.3	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of CCW pump
400000K6.01	Component Cooling Water	2.7	2.8	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Valves

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
201001A3.06	CRD Hydraulic	2.8	2.8	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Reactor power
201003A1.02	Control Rod and Drive Mechanism	2.8	2.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	CRD drive pressure
202002A3.03	Recirculation Flow Control	3.1	3.0	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Scoop tube operation: BWR-2,3,4 VFD's
215002K4.03	RBM	2.9	3.0	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Initiation point (30%): BWR-3,4,5
223001G2.4.45	Primary CTMT and Aux.	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to prioritize and interpret the significance of each annunciator or alarm.
234000A2.01	Fuel Handling Equipment	3.3	3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Interlock failure
241000K5.05	Reactor/Turbine Pressure Regulator	2.8	2.9	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Turbine inlet pressure vs. turbine load
245000A4.02	Main Turbine Gen. / Aux.	3.1	2.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Generator controls
259001K6.10	Reactor Feedwater	2.5	2.5	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	RFP turbine seal system: TDRFP's-Only
268000K1.03	Radwaste	2.6	2.9	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Reactor building equipment drains: Plant-Specific
272000K2.03	Radiation Monitoring	2.5	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Stack gas radiation monitoring system

KA	NAME / SAFETY FUNCTION:	IR		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO												
286000K3.02	Fire Protection	3.2	3.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Personnel protection

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.1	Conduct of operations	3.8	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of conduct of operations requirements.
G2.1.20	Conduct of operations	4.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to execute procedure steps.
G2.1.29	Conduct of operations	4.1	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.
G2.2.1	Equipment Control	4.5	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.
G2.2.14	Equipment Control	3.9	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for controlling equipment configuration or status
G2.2.7	Equipment Control	2.9	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for conducting special or infrequent tests
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.3.7	Radiation Control	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to comply with radiation work permit requirements during normal or abnormal conditions
G2.4.1	Emergency Procedures/Plans	4.6	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP entry conditions and immediate action steps.
G2.4.21	Emergency Procedures/Plans	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the parameters and logic used to assess the status of safety functions

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295003G2.1.28	Partial or Complete Loss of AC / 6	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the purpose and function of major system components and controls.
295005AA2.08	Main Turbine Generator Trip / 3	3.2	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Electrical distribution status.....
295016AA2.05	Control Room Abandonment / 7	3.8	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Drywell pressure.....
295018AA2.05	Partial or Total Loss of CCW / 8	2.9	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	System pressure.....
295019AA2.01	Partial or Total Loss of Inst. Air / 8	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Instrument air system pressure.....
295025G2.4.30	High Reactor Pressure / 3	2.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.
295031G2.1.25	Reactor Low Water Level / 2	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to interpret reference materials, such as graphs, curves, tables, etc.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295002AA2.01	Loss of Main Condenser Vac / 3	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Condenser vacuum/absolute pressure.....
295010AA2.06	High Drywell Pressure / 5	3.6	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Drywell temperature
295033G2.4.47	High Secondary Containment Area Radiation Levels / 9	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
211000G2.1.19	SLC	3.9	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to use plant computer to evaluate system or component status.
215003G2.2.22	IRM	4.0	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of limiting conditions for operations and safety limits.
261000A2.01	SGTS	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Low system flow
264000A2.07	EDGs	3.5	3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of off-site power during full-load testing
400000A2.02	Component Cooling Water	2.8	3.0	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	High/low surge tank level

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
201001A2.11	CRD Hydraulic	2.6	2.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Valve openings
201003A2.05	Control Rod and Drive Mechanism	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor Scram
215001G2.2.44	Traversing In-core Probe	4.2	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.4	Conduct of operations	3.3	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, no-solo operation, maintenance of active license status, 10CFR55, etc..
G2.1.34	Conduct of operations	2.7	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of primary and secondary chemistry limits
G2.2.14	Equipment Control	3.9	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for controlling equipment configuration or status
G2.2.25	Equipment Control	3.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.4.25	Emergency Procedures/Plans	3.3	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of fire protection procedures.
G2.4.29	Emergency Procedures/Plans	3.1	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the emergency plan.

Facility: Browns Ferry NPP Date of Examination: 11/16/2015

Examination Level: RO Operating Test Number: 15-10

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations - 1	D,R	JPM - 557 Placing an RPS Channel in Trip
Conduct of Operations - 2	N,R	JPM - 675 Determine The Required Action For Control Rod Withdrawal (Calculate Period)
Equipment Control	D,R	JPM – 680 Perform Jet Pump Mismatch And Operability
Radiation Control	P,R	JPM - 544 Review a Radiological Survey Map

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol Room, (S)imulator, Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

Reactor Operator

Conduct of Operation

1. JPM – 557 Title: Placing an RPS Channel in Trip
   Description: Given Turbine Stop Valve #3 limit switches failed the surveillance 3-SR-3.3.1.1.14(8I) Turbine Stop Valve Closure - RPS Trip (Channel A1/A2) and RPT Trip (System A & B) Logic System Functional Test. The RO is going to determine the correct number and location of the RPS Fuses to remove to place the channel in the tripped condition. The task is completed when both fuses are identified in to 3-OI-99 Reactor Protection System. A hard copy of 3-OI-99 will be provided.
   K/A: 2.1.25; Ability to interpret reference materials, such as graphs, curves, tables, etc.

2. JPM – 675 Title: Determine the required action for rod pull (calculate period)
   Description: Provided initial IRM reading and a Doubling Time with a second set of IRM readings, the RO will calculate the current period and determine that it is faster than procedurally allowed and he will indicate that the rod should be reinserted.
   K/A: 2.1.37; Knowledge of procedures, guidelines, or limitations associated with reactivity management.

Equipment Control

1. JPM – 680 Title: Perform Jet Pump Mismatch and Operability SR (Alternate Path)
   Description: Provided with Jet Pump Instrument reading and a copy of the surveillance, the RO is going to determine 2-SR-3.4.2.1, Jet Pump Mismatch and Operability is not met for Jet Pump 15.
   K/A: 2.2.12; Knowledge of surveillance procedures.

Radiation Control

1. JPM – 544 Title: Review a Radiological Survey Map
   Description: Provided an RWP and a Survey Map without equipment being identified, determine if the work in the area can be completed without exceeding exposure limits. The Candidate has to know equipment locations to correctly answer the questions in the JPM.
   K/A: 2.3.7; Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Facility: Browns Ferry NPP Date of Examination: 11/16/2015

Examination Level: SRO Operating Test Number: 15-10

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations	M,R	JPM – 678 Shift Staffing - SRO
Conduct of Operations	N,R	JPM – 677 Fuel Handling / fuel storage, determine compliance with guidelines.
Equipment Control	M,R	JPM – 676 Review Completed SR (SRO)
Radiation Control	P,R	JPM - 544 Review a Radiological Survey Map
Emergency Plan	M,R	JPM – 679 Upgrade PAR on wind shift.

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol Room, (S)imulator, Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)
(S)imulator

Senior Reactor Operator

Conduct of Operation

1. JPM – 678 Title: Shift Staffing - SRO
   Description: Provided with a crew complement, the SRO determines if his staff meets the minimum shift requirements. The list of people appears to be below the minimum; however an SRO can be moved down to an RO position to fill the Crew Complement. The Emergency Responder position is also down one, so a callout is required.
   K/A: 2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc.

2. JPM – 677 Title: Fuel Handling fuel storage, determines compliance with guidelines.
   Description: Provided with Nuclear Fuel Storage physical locations and configurations, the SRO must determine if the fuel is being stored within the guidance of the procedure. In this case there are new fuel bundles stored in locations that are not allowed.
   K/A: 2.1.35 Knowledge of the fuel-handling responsibilities of SROs.

Equipment Control

1. JPM – 676 Title: Review Completed SR (SRO)
   Description: Provided a completed SR-3.4.2.1 that the Unit Operator completed on his shift, the SRO is to review the SR for completeness and accuracy. The SR is filled out incorrectly and identified as meeting the surveillance requirements, however the surveillance requirements are not met and the SRO must identify that and determine the correct LCO.
   K/A: 2.2.22; Knowledge of limiting conditions for operations and safety limits

Radiation Control

1. JPM – 544 Title: Review a Radiological Survey Map
   Description: Provided an RWP and a Survey Map without equipment being identified, determine if the work in the area can be completed without exceeding exposure limits. The Candidate has to know equipment locations to correctly answer the questions in the JPM.
   K/A: 2.3.7; Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Emergency Plan

1. JPM – 679 Title: Upgrade PAR on wind shift
   Description: Provided an EPIP-5 General Emergency declaration form and new information about meteorological conditions determine that the PAR needs to be adjusted to include a new sector for sheltering. That will require the SRO to fill out another form with the new information.
   K/A: 2.4.44; Knowledge of emergency plan protective action recommendations

Facility: Browns Ferry NPP Date of Examination: 11/16/2015

Exam Level: ☒ RO ☐ SRO-I ☐ SRO-U Operating Test No.: 15-10

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)				
	System / JPM Title		Type Code*	Safety Function
a.	JPM 80A	Respond to a Control Rod Drift In. IAW AOI-85-5	A,D,S	1
b.	JPM 276	EHC Auto Cooldown	D,L,S	4
c.	JPM 672A	Loss Of Reference APRM To Rod Block Monitor (RBM)	A,N,S	7
d.	JPM 257A	EOI Appendix-6E Injection Subsystem Lineup CS System II	A,D,EN,L,S	2
e.	JPM 670A	EOI Appendix-11F Alternate RPV Pressure Control Systems: RFPT On Minimum Flow	A,M S	3
f.	JPM 669	EOI-Appendix-14A N2 Makeup To Primary Containment	N,S	5
g.	JPM 631	Restore Offsite Power to 4KV shutdown board at PNL 9-23	D,P,S	6
h.	JPM 190	Respond to Off-Gas Post-Treatment Radiation HI-HI-HI (RO Only)	A,M,P,S	9
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)				
i.	JPM 673	Automatic Start Failure of A & C Fire Pumps	E,N	8
j.	JPM 674	Aligning Emergency EECW Makeup To Spent Fuel Pool	E,N,R	9
k.	JPM 307	Start up and synchronize Unit 3 Preferred MMG Set	D	6

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Reactor Operator

Job Performance Measures

a. JPM 80A Title: Respond to a Control Rod Drift In. IAW AOI-85-5
Description: While performing Surveillance 3.1.3.3, Control Rod Exercise Test for partially withdrawn control rods the ATC Operator will respond to a single control rod drift per AOI-85-5, Rod Drift In. as he continues with the surveillance multiple control rods will begin to drift in and the ATC Operator will respond by inserting a manual scram per AOI-85-5, Rod Drift In. Once scram report is given the JPM will end.

K/A: 201002 Reactor Manual Control System A2.02; Ability to (a) predict the impacts of the following on the REACTOR MANUAL CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Rod Drift Alarm

b. JPM 276 Title: EHC Auto Cooldown
Description: The BOP Operator will commence a cooldown of the reactor plant to 20 psig utilizing Main Turbine Bypass Valves with EHC Auto Cooldown function per OI-47, Turbine-Generator System. Once the initial cooldown has commenced the US will direct the BOP Operator to adjust the setpoint to 100 psig. After setpoint has been changed the JPM will end.

K/A: 239001Main and Reheat Steam System: A4.09 Ability to manually operate and/or monitor in the control room: Reactor pressure

c. JPM 672A Title: Loss Of Reference APRM To Rod Block Monitor (RBM)
Description: The ATC Operator will begin raising reactor power to achieve 40% per Control Rod Movement Data Sheet for placing Feedwater Heaters and Moisture Separator Drain System in service. As reactor power is raised, APRM Ch 2 will fail downscale and impose a Control Rod Withdrawal Block which requires the APRM to be bypassed, to allow control rod movement. Once the Control Rod Withdrawal Block is cleared, and rod movement has continued, the JPM will end.

K/A: 215002 Rod Block Monitor System A2.03; Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of associated reference APRM channel: BWR-3,4,5

Reactor Operator

Job Performance Measures

d. JPM 257A Title: EOI Appendix-6E Injection Subsystem Lineup CS System II
Description: The ATC Operator has been directed to inject water into the RPV and restore water level using Core Spray System II per EOI-Appendix-6E, Injection Subsystems Lineup Core Spray System II. The operator will determine that FCV-75-51, CORE SPRAY SYS II OUTBD INJECT VALVE and FCV-75-53, CORE SPRAY SYS II INBD INJECT VALVE are not in proper alignment. Once the alignment is corrected, injection flow to RPV is established and reactor water level is > TAF (-162 in) the JPM will end.

K/A: 209001 Low Pressure Core Spray System A4.08 Ability to manually operate and/or monitor in the control room: Reactor water level

e. JPM 670A Title: EOI Appendix-11F Alternate RPV Pressure Control Systems: RFPT On Minimum Flow
Description: The BOP Operator has been directed to lower reactor pressure to 800 – 1000 psig by placing A RFPT in Alternate Pressure Control per EOI-Appendix-11F. As speed reaches 350 RPM the A RFPT will trip and require the operator to start B RFPT for pressure control. Once 2B RFPT is in service and reactor pressure is lowering the JPM will end.

K/A: 239001 Main and Reheat Steam System A1.01 Ability to predict and/or monitor changes in parameters associated with operating the MAIN AND REHEAT STEAM SYSTEM controls including: Main steam pressure

f. JPM 669 Title: EOI-Appendix-14A N2 Makeup To Primary Containment
Description: The BOP Operator has been directed to lower Drywell Hydrogen Concentration per EOI-Appendix-14A. The operator will need to determine that Drywell Hydrogen Concentration is greater than Suppression Chamber Hydrogen Concentration and begin purging the Drywell. Once Drywell Hydrogen Concentration begins to lower the JPM will end.

K/A: 223001 Primary Containment System and Auxiliaries A2.04**;** Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High containment/drywell hydrogen concentration

Reactor Operator

Job Performance Measures

g. JPM 631 Title: Restore Offsite Power to 4KV shutdown board at PNL 9-23
Description: The BOP Operator has been directed to restore offsite power to 4KV Shutdown Board IAW 0-OI-82. The operator will parallel offsite to the running Diesel Generator, Once the Diesel Generator is separated from the grid the JPM will end.

K/A: 262001 A.C. Electrical Distribution; A4.02 Ability to manually operate and/or monitor in the control room: Synchroscope, including understanding of running and incoming voltages

h. JPM 190 Title: Respond to Off-Gas Post-Treatment Radiation HI-HI-HI(RO Only)
Description: The BOP Operator will respond to OFF-GAS POST TREATMENT RADIATION HI-HI-HI annunciator. The operator will close FCV-66-28, OFF-GAS SYSTEM ISOLATION VALVE and then perform immediate actions of AOI-66-2, Off-gas Post-treatment Radiation Hi-Hi-Hi. The operator will reduce core flow to 50-60% and then insert a manual reactor scram. The operator will continue with subsequent actions. Once the standby Stack Dilution fan is started the JPM will end.

K/A: 271000 Offgas System: A2.16; Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of offgas system loop seals (2.9/3.2)

i. JPM 673A Title: Automatic Start Failure of A & C Fire Pumps
Description: The Operator has been directed to start A and C Electric Fire Pumps per 0-OI-26, High Pressure Fire Protection System from the 4KV Shutdown Boards. The operator will start A and C Fire Pumps from their local breaker cubicles. Once both fire pumps have been started the JPM will end.

K/A: 286000 Fire Protection System A2.08; Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to actuate when required

Reactor Operator

Job Performance Measures

j. JPM 674 Title: Aligning Emergency EECW Makeup To Spent Fuel Pool
Description: The Operator has been directed to align EECW Makeup to Unit 2 Spent Fuel Pool per 2-AOI-78-1 Attachment 2. The operator will locate and align EECW to Spent Fuel Pool by utilizing fire hoses and isolation valves. Once the lineup is made and water is flowing into the Spent Fuel Pool the JPM will end.

K/A: 233000 Fuel Pool Cooling and Clean-up; A2.02; Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low pool level

k. JPM 307 Title: Start up and synchronize Unit 3 Preferred MMG Set
Description: The Operator has been directed to synchronize the Unit 3 Unit Preferred MMG Set per 0-OI-57C. The operator will perform local operations to synchronize U3 MMG set to the Battery Board. Once Unit 3 MMG Set has been transferred per 0-OI-57C the JPM will end.

K/A: 262002 Uninterruptable Power Supply (A.C./D.C.) A1.02; Ability to predict and/or monitor changes in parameters associated with operating the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) controls including: Motor generator outputs

Facility: Browns Ferry NPP Date of Examination: 11/16/2015

Exam Level: ☐ RO ☒ SRO-I ☐ SRO-U Operating Test No.: 15-10

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)				
	System / JPM Title		Type Code*	Safety Function
a.	JPM 80A	Respond to a Control Rod Drift In. IAW AOI-85-5	A,D,S	1
b.	JPM 276	EHC Auto Cooldown	D,L,S	4
c.	JPM 672A	Loss Of Reference APRM To Rod Block Monitor (RBM)	A,N,S	7
d.	JPM 257A	EOI Appendix-6E Injection Subsystem Lineup CS System II	A,D,EN,L,S	2
e.	JPM 670A	EOI Appendix-11F Alternate RPV Pressure Control Systems: RFPT On Minimum Flow	A,M S	3
f.	JPM 669	EOI-Appendix-14A N2 Makeup To Primary Containment	N,S	5
g.	JPM 631	Restore Offsite Power to 4KV shutdown board at PNL 9-23	D,P,S	6
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)				
i.	JPM 673	Automatic Start Failure of A & C Fire Pumps	E,N	8
j.	JPM 674	Aligning Emergency EECW Makeup To Spent Fuel Pool	E,N,R	9
k.	JPM 307	Start up and synchronize Unit 3 Preferred MMG Set	D	6

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Senior Reactor Operator Instant

Job Performance Measures

a. JPM 80A Title: Respond to a Control Rod Drift In. IAW AOI-85-5
Description: While performing Surveillance 3.1.3.3, Control Rod Exercise Test for partially withdrawn control rods, the ATC Operator will respond to a single control rod drift per AOI-85-5, Rod Drift In. As he continues with the surveillance, multiple control rods will begin to drift in and the ATC Operator will respond by inserting a manual scram per AOI-85-5, Rod Drift In. Once scram report is given the JPM will end.

K/A: 201002 Reactor Manual Control System A2.02; Ability to (a) predict the impacts of the following on the REACTOR MANUAL CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Rod Drift Alarm

b. JPM 276 Title: EHC Auto Cooldown
Description: The BOP Operator will commence a cooldown of the reactor plant to 20 psig utilizing Main Turbine Bypass Valves with EHC Auto Cooldown function per OI-47, Turbine-Generator System. Once the initial cooldown has commenced the US will direct the BOP Operator to adjust the setpoint to 100 psig. After setpoint has been changed the JPM will end.

K/A: 239001Main and Reheat Steam System: A4.09 Ability to manually operate and/or monitor in the control room: Reactor pressure

c. JPM 672 Title: Loss Of Reference APRM To Rod Block Monitor (RBM)
Description: The ATC Operator will begin raising reactor power to achieve 40% per Control Rod Movement Data Sheet for placing Feedwater Heaters and Moisture Separator Drain System in service. As reactor power is raised, APRM Ch 2 will fail downscale and impose a Control Rod Withdrawal Block which requires the APRM to be bypassed to allow control rod movement. Once the Control Rod Withdrawal Block is cleared, and rod movement has continued, the JPM will end.

K/A: 215002 Rod Block Monitor System A2.03; Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of associated reference APRM channel: BWR-3,4,5

Senior Reactor Operator Instant

Job Performance Measures

d. JPM 257A Title: EOI Appendix-6E Injection Subsystem Lineup CS System II
Description: The ATC Operator has been directed to in water into the RPV and restore water level using Core Spray System II per EOI-Appendix-6E, Injection Subsystems Lineup Core Spray System II. The operator will determine that FCV-75-51, CORE SPRAY SYS II OUTBD INJECT VALVE and FCV-75-53, CORE SPRAY SYS II INBD INJECT VALVE are not in proper alignment. Once the alignment is corrected, injection flow to RPV is established and reactor water level is > TAF (-162 in) the JPM will end.

K/A: 209001 Low Pressure Core Spray System A4.08 Ability to manually operate and/or monitor in the control room: Reactor water level

e. JPM 670A Title: EOI Appendix-11F Alternate RPV Pressure Control Systems: RFPT On Minimum Flow
Description: The BOP Operator has been directed to lower reactor pressure to 800 – 1000 psig by placing A RFPT in Alternate Pressure Control per EOI-Appendix-11F. As speed reaches 350 RPM the A RFPT will trip and require the operator to start B RFPT for pressure control. Once 2B RFPT is in service and reactor pressure is lowering the JPM will end.

K/A: 239001 Main and Reheat Steam System A1.01 Ability to predict and/or monitor changes in parameters associated with operating the MAIN AND REHEAT STEAM SYSTEM controls including: Main steam pressure

f. JPM 669 Title: EOI-Appendix-14A N2 Makeup To Primary Containment With
Description: The BOP Operator has been directed to lower Drywell Hydrogen Concentration per EOI-Appendix-14A. The operator will need to determine that Drywell Hydrogen Concentration is greater than Suppression Chamber Hydrogen Concentration and begin purging the Drywell. Once Drywell Hydrogen Concentration begins to lower the JPM will end.

K/A: 223001 Primary Containment System and Auxiliaries A2.04**;** Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High containment/drywell hydrogen concentration

Senior Reactor Operator Instant

Job Performance Measures

g. JPM 631 Title: Restore Offsite Power to 4KV shutdown board at PNL 9-23
Description: The BOP Operator has been directed to restore offsite power to 4KV Shutdown Board IAW 0-OI-82. The operator will parallel offsite to the running Diesel Generator, Once the Diesel Generator is separated from the grid the JPM will end.

K/A: 262001 A.C. Electrical Distribution A4.02 Ability to manually operate and/or monitor in the control room: Synchroscope, including understanding of running and incoming voltages

i. JPM 673A Title: Automatic Start Failure of A & C Fire Pumps
Description: The Operator has been directed to start A and C Electric Fire Pumps per 0-OI-26, High Pressure Fire Protection System from the 4KV Shutdown Boards. The operator will start A and C Fire Pumps from their local breaker cubicles. Once both fire pumps have been started the JPM will end.

K/A: 286000 Fire Protection System A2.08; Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to actuate when required

j. JPM 674 Title: Aligning Emergency EECW Makeup To Spent Fuel Pool
Description: The Operator has been directed to align EECW Makeup to Unit 2 Spent Fuel Pool per 2-AOI-78-1 Attachment 2. The operator will locate and align EECW to Spent Fuel Pool by utilizing fire hoses and isolation valves. Once the lineup is made and water is flowing into the Spent Fuel Pool the JPM will end.

K/A: 233000 Fuel Pool Cooling and Clean-up; A2.02; Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low pool level

Senior Reactor Operator Instant

Job Performance Measures

k. JPM 307 Title: Start up and synchronize Unit 3 Preferred MMG Set
Description: The Operator has been directed to synchronize the Unit 3 Unit Preferred MMG Set per 0-OI-57C. The operator will perform local operations to synchronize U3 MMG set to the Battery Board. Once Unit 3 MMG Set has been transferred per 0-OI-57C the JPM will end.

K/A: 262002 Uninterruptable Power Supply (A.C./D.C.) A1.02; Ability to predict and/or monitor changes in parameters associated with operating the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) controls including: Motor generator outputs

Facility: Browns Ferry NPP Date of Examination: 11/16/2015

Exam Level: ☐ RO ☐ SRO-I ☒ SRO-U Operating Test No.: 15-10

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)				
	System / JPM Title		Type Code*	Safety Function
b.	JPM 276	EHC Auto Cooldown	D,L,S	4
c.	JPM 672A	Loss Of Reference APRM To Rod Block Monitor (RBM)	A,N,S	7
d.	JPM 257A	EOI Appendix-6E Injection Subsystem Lineup CS System II	A,D,EN,L,S	2
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)				
i.	JPM 673	Automatic Start Failure of A & C Fire Pumps	E,N	8
j.	JPM 674	Aligning Emergency EECW Makeup To Spent Fuel Pool	E,N,R	9

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Senior Reactor Operator Upgrade

Job Performance Measures

b. JPM 276 Title: EHC Auto Cooldown
Description: The BOP Operator will begin commence a cooldown of the reactor plant to 20psig utilizing Main Turbine Bypass Valves with EHC Auto Cooldown function per OI-47, Turbine-Generator System. Once the initial cooldown has commenced the US will direct the BOP Operator to adjust the setpoint to 100 psig. After setpoint has been changed the JPM will end.

K/A: 239001Main and Reheat Steam System: A4.09 Ability to manually operate and/or monitor in the control room: Reactor pressure

c. JPM 672A Title: Loss Of Reference APRM To Rod Block Monitor (RBM)
Description: The ATC Operator will begin raising reactor power to achieve 40% per Control Rod Movement Data Sheet for placing Feedwater Heaters and Moisture Separator Drain System in service. As reactor power is raised, APRM Ch 2 will fail downscale and impose a Control Rod Withdrawal Block which requires the APRM to be bypassed to allow control rod movement. Once the Control Rod Withdrawal Block is cleared and rod movement has continued the JPM will end.

K/A: 215002 Rod Block Monitor System A2.03; Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of associated reference APRM channel: BWR-3,4,5

d. JPM 257A Title: EOI Appendix-6E Injection Subsystem Lineup CS System II
Description: The ATC Operator has been directed to inject water into the RPV and restore water level using Core Spray System II per EOI-Appendix-6E, Injection Subsystems Lineup Core Spray System II. The operator will determine that FCV-75-51, CORE SPRAY SYS II OUTBD INJECT VALVE and FCV-75-53, CORE SPRAY SYS II INBD INJECT VALVE are not in proper alignment. Once the alignment is corrected, injection flow to RPV is established and reactor water level is > TAF (-162 in) the JPM will end.

K/A: 209001 Low Pressure Core Spray System A4.08 Ability to manually operate and/or monitor in the control room: Reactor water level

Senior Reactor Operator Upgrade

Job Performance Measures

i. JPM 673A Title: Automatic Start Failure of A & C Fire Pumps
Description: The Operator has been directed to start A and C Electric Fire Pumps per 0-OI-26, High Pressure Fire Protection System from the 4KV Shutdown Boards. The operator will start A and C Fire Pumps from their local breaker cubicles. Once both fire pumps have been started the JPM will end.

K/A: 286000 Fire Protection System A2.08; Ability to (a) predict the impacts of the following on the FIRE PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to actuate when required

j. JPM 674 Title: Aligning Emergency EECW Makeup To Spent Fuel Pool
Description: The Operator has been directed to align EECW Makeup to Unit 2 Spent Fuel Pool per 2-AOI-78-1 Attachment 2. The operator will locate and align EECW to Spent Fuel Pool by utilizing fire hoses and isolation valves. Once the lineup is made and water is flowing into the Spent Fuel Pool the JPM will end.

K/A: 233000 Fuel Pool Cooling and Clean-up; A2.02; Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low pool level