

Administered (As-Run) Operating Test and Written Examination Post Examination

Contains the following:

- ES-301-2 Updated Control Room Systems and Facility Walk-Through Test Outline (RO)
- ES-301-2 Updated Control Room Systems and Facility Walk-Through Test Outline (SRO)
- ES-401-3 Updated PWR SRO Examination Outline
- ES-401-4 Updated PWR RO Examination Outline
- 5 RO Administrative JPMs (as administered)
- 5 SRO Administrative JPMs
- 10 Operating Test JPMs
- 4 Dynamic Simulator Scenarios (Scenario 01-03 was not used)
- 1 RO Master Written Examination with References and Answer Key
- 1 SRO Master Written Examination with References and Answer Key

Facility: **Braidwood Units 1 and 2**Date of Examination: **10/15-29/01**Exam Level (circle one): **RO**Operating Test Number: **1****B.1 Control Room Systems**

System / JPM Title	Type Code*	Safety Function
a. CVCS/ Perform Dilution with Failure of 1CV111A. N-26 K/A004A4.07 3.9/3.7	L, D A, S	1
b. PZR Level Control System/ Establish Automatic PZR Level Control with Failed Master Controller. N-77 K/A011A4.04 3.2/2.9	D, A, S	2
c. ECCS/ Decrease SI Accumulator Pressure. N-04 K/A006A4.02 4.0/3.8	L, D S	3
d. Containment Spray System/ Perform Start of 1A CS Pump for Surveillance Test. N-123A K/A026A4.01 4.5/4.3	M, S	5
e. PRM System/ Operate Rad Monitor- Disable Incore Seal Table Monitor Audible Alarm. N-69C K/A073A4.02 3.7/3.7	D, S	7
f. Containment Purge System/ Use Containment Mini-Purge system to Reduce Containment Pressure. N-161 K/A029A1.03 3.0/3.3	L, N S	8
g. Liquid Rad Waste System/ Respond to Increasing Level in RCDT. N-162 K/A068A2.04 3.3/3.3	N, A, S	9

B.2 Facility Walk-Through

a. Steam Dump and Turbine Bypass Control System/ Local Operation of A SG PORV. N-83 K/A041A4.06 2.9/3.1	D	4
b. Loss of DC Power/ Determine Status of DC Bus. N-31 K/A058AA1.03 3.1/3.3	D	6
c. Control Room Evacuation/ Local Emergency start of the 2B AFW Pump from 2AF03J. N-56A K/A013A4.01 4.5/4.8	M, R, A	2

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

Facility: **Braidwood Units 1 and 2**Date of Examination: **10/15-29/01**Exam Level (circle one): **SRO(I)**Operating Test Number: **1****B.1 Control Room Systems**

System / JPM Title	Type Code*	Safety Function
a. CVCS/ Perform Dilution with Failure of 1CV111A. N-26 K/A004A4.07 3.9/3.7	L, D A, S	1
b. PZR Level Control System/ Establish Automatic PZR Level Control with Failed Master Controller. N-77 K/A011A4.04 3.2/2.9	D, A, S	2
c. ECCS/ Decrease SI Accumulator Pressure. N-04 K/A006A4.02 4.0/3.8	L, D S	3
d. Containment Spray System/ Perform Start of 1A CS Pump for Surveillance Test. N-123A K/A026A4.01 4.5/4.3	M, S	5
e. PRM System/ Operate Rad Monitor- Disable Incore Seal Table Monitor Audible Alarm. N-69C K/A073A4.02 3.7/3.7	D, S	7
f. Containment Purge System/ Use Containment Mini-Purge system to Reduce Containment Pressure. N-161 K/A029A1.03 3.0/3.3	L, N S	8
g. Liquid Rad Waste System/ Respond to Increasing Level in RCDT. N-162 K/A068A2.04 3.3/3.3	N, A, S	9

B.2 Facility Walk-Through

a. Steam Dump and Turbine Bypass Control System/ Local Operation of A SG PORV. N-83 K/A041A4.06 2.9/3.1	D	4
b. Loss of DC Power/ Determine Status of DC Bus. N-31 K/A058AA1.03 3.1/3.3	D	6
c. Control Room Evacuation/ Local Emergency start of the 2B AFW Pump from 2AF03J. N-56A K/A013A4.01 4.5/4.8	M, R, A	2

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

Facility: Braidwood/Byron Units 1 and 2

Form ES-401-3

Exam Date: 10/29/2001

Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	4				4	4			4	24
	2	3	3	2				3	3			2	16
	3	0	1	0				0	2			0	3
	Tier Totals	7	8	6				7	9			6	43
2. Plant Systems	1	1	1	2	2	1	2	2	2	2	1	3	19
	2	1	2	2	2	2	1	1	2	2	1	1	17
	3	0	0	1	0	1	0	0	1	0	0	1	4
	Tier Totals	2	3	5	4	4	3	3	5	4	2	5	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					4		5		4		4		17

Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).

2. Actual point totals must match those specified in the table.

3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.

4. Systems/evolutions within each group are identified on the associated outline.

5. The shaded areas are not applicable to the category/tier.

6. The generic 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.

7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

Facility: Braidwood/Byron Units 1 and 2

PWR SR Examination Outline

Printed: 09/21 01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1						X	2.2.19 - Knowledge of maintenance work order requirements.	3.1	1
001	Continuous Rod Withdrawal / 1	X						AK1.06 - Relationship of reactivity and reactor power to rod movement	4.2	1
003	Dropped Control Rod / 1					X		AA2.05 - Interpretation of computer in-core TC map for dropped rod location	3.2*	1
003	Dropped Control Rod / 1	X						AK1.01 - Reason for turbine following reactor on dropped rod event	3.7	1
005	Inoperable/Stuck Control Rod / 1				X			AA1.01 - CRDS	3.4	1
011	Large Break LOCA / 3					X		EA2.04 - Significance of PZR readings	3.9	1
015	Reactor Coolant Pump (RCP) Malfunctions / 4		X					AK2.10 - RCP indicators and controls	2.8	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4		X					AK2.07 - RCP seals	2.9	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4				X			AA1.12 - Reactor coolant loop flow meters	3.1	1
040	Steam Line Rupture / 4	X						AK1.03 - RCS shrink and consequent depressurization	4.2	1

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Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
051	Loss of Condenser Vacuum / 4					X		AA2.01 - Cause for low vacuum condition	2.7*	1
059	Accidental Liquid Radwaste Release / 9	X						AK1.02 - Biological effects on humans of various types of radiation, exposure levels that are acceptable for nuclear power plant personnel, and the units used for radiation-intensity measurements and for radiation exposure levels	3.2*	1
059	Accidental Liquid Radwaste Release / 9						X	2.3.6 - Knowledge of the requirements for reviewing and approving release permits.	3.1	1
062	Loss of Nuclear Service Water / 4						X	2.2.17 - Knowledge of the process for managing maintenance activities during power operations.	3.5	1
062	Loss of Nuclear Service Water / 4			X				AK3.03 - Guidance actions contained in EOP for Loss of nuclear service water	4.2	1
074	Inadequate Core Cooling / 4				X			EA1.12 - RCS temperature and pressure indicators	4.4	1
E01	Rediagnosis / 3		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.8	1
E01	Rediagnosis / 3			X				EK3.1 - Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics	3.3	1

Facility: Braidwood/Byron Units 1 and 2

PWR SR Examination Outline

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E08	Pressurized Thermal Shock / 4			X				EK3.3 - Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations	3.8	1
E09	Natural Circulation Operations / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.5	1
E10	Natural Circulation with Steam Void in Vessel with/without RVLIS / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.9	1
E12	Uncontrolled Depressurization of all Steam Generators / 4			X				EK3.4 - RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated	3.8	1
E14	High Containment Pressure / 5					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.8	1
E14	High Containment Pressure / 5						X	2.2.14 - Knowledge of the process for making configuration changes.	3.0	1

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

Group Point Total: 24

Facility: Braidwood/Byron Units 1 and 2

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Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
007	Reactor Trip / 1					X		EA2.02 - Proper actions to be taken if the automatic safety functions have not taken place	4.6	1
008	Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) / 3					X		AA2.16 - RCS in-core thermocouple indicators; use of plant computer for interpretation	4.1	1
009	Small Break LOCA / 3		X					EK2.03 - S/Gs	3.3*	1
022	Loss of Reactor Coolant Makeup / 2						X	2.2.12 - Knowledge of surveillance procedures.	3.4	1
025	Loss of Residual Heat Removal System (RHRS) / 4	X						AK1.01 - Loss of RHRS during all modes of operation	4.3	1
025	Loss of Residual Heat Removal System (RHRS) / 4				X			AA1.10 - LPI pump suction valve and discharge valve indicators	2.9	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3	X						AK1.02 - Expansion of liquids as temperature increases	3.1	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3		X					AK2.03 - Controllers and positioners	2.8	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.09 - Maximum load change capability of facility	3.1*	1

Facility: Braidwood/Byron Units 1 and 2

PWR SR Examination Outline

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Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.45 - Safely parameter display system	4.0*	1
038	Steam Generator Tube Rupture (SGTR) / 3					X		EA2.13 - Magnitude of rupture	3.7	1
060	Accidental Gaseous Radwaste Release / 9						X	2.3.2 - Knowledge of facility ALARA program.	2.9	1
060	Accidental Gaseous Radwaste Release / 9		X					AK2.01 - ARM system, including the normal radiation-level indications and the operability status	2.9*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7			X				AK3.02 - Guidance contained in alarm response for ARM system	3.6	1
E11	Loss of Emergency Coolant Recirculation / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	4.0	1
E16	High Containment Radiation / 9	X						EK1.3 - Annunciators and conditions indicating signals, and remedial actions associated with the High Containment Radiation	3.3	1

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

Group Point Total: 16

Facility: Braidwood/Byron Units 1 and 2

PWR SR Examination Outline

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Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
028	Pressurizer (PZR) Level Control Malfunction / 2					X		AA2.04 - Ammeters and running indicators for CVCS charging pumps	3.1	1
028	Pressurizer (PZR) Level Control Malfunction / 2		X					AK2.02 - Sensors and detectors	2.7	1
E15	Containment Flooding / 5					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	3.2	1

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

Group Point Total: 3

Facility: Braidwood/Byron Units 1 and 2

PWR SRO(mination Outline

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1								X				A2.07 - Effect of reactor trip on primary and secondary parameters and systems	4.4	1
001	Control Rod Drive System / 1									X			A3.04 - Radial imbalance	3.8	1
004	Chemical and Volume Control System (CVCS) / 1						X						K6.10 - Boric acid storage tank/boron injection tank recirculation flow path	3.1	1
013	Engineered Safety Features Actuation System (ESFAS) / 2				X								K4.02 - Containment integrity system reset	4.2	1
013	Engineered Safety Features Actuation System (ESFAS) / 2						X						K6.01 - Sensors and detectors	3.1*	1
014	Rod Position Indication System (RPIS) / 1										X		A4.02 - Control rod mode-select switch	3.2	1
015	Nuclear Instrumentation System / 7	X											K1.02 - Vital ac systems	3.6	1
015	Nuclear Instrumentation System / 7							X					A1.03 - NIS power indication	3.7	1
017	In-Core Temperature Monitor (ITM) System / 7											X	2.1.25 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	3.1	1
017	In-Core Temperature Monitor (ITM) System / 7			X									K3.01 - Natural circulation indications	3.7*	1

Facility: Braidwood/Byron Units 1 and 2

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Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
022	Containment Cooling System (CCS) / 5				X								K4.04 - Cooling of control rod drive motors	3.1	1
022	Containment Cooling System (CCS) / 5									X			A3.01 - Initiation of safeguards mode of operation	4.3	1
056	Condensate System / 4								X				A2.04 - Loss of condensate pumps	2.8*	1
059	Main Feedwater (MFW) System / 4			X									K3.04 - RCS	3.8	1
059	Main Feedwater (MFW) System / 4							X					A1.07 - Feed Pump speed, including normal control speed for ICS	2.6*	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4		X										K2.03 - AFW diesel driven pump	3.8*	1
071	Waste Gas Disposal System (WGDS) / 9					X							K5.04 - Relationship of hydrogen/oxygen concentrations to flammability	3.1	1
071	Waste Gas Disposal System (WGDS) / 9											X	2.1.20 - Ability to execute procedure steps.	4.2	1
072	Area Radiation Monitoring (ARM) System / 7											X	2.2.8 - Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.	3.3	1

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

Group Point Total: 19

Facility: Braidwood/Byron Units 1 and 2

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Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2					X							K5.09 - Relationship of pressure and temperature for water at saturation and subcooling conditions	4.2	1
010	Pressurizer Pressure Control System (PZR PCS) / 3			X									K3.02 - RPS	4.1	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.01 - Reasons for starting charging pump while increasing letdown flow rate	3.2*	1
011	Pressurizer Level Control System (PZR LCS) / 2								X				A2.01 - Excessive letdown	3.1	1
011	Pressurizer Level Control System (PZR LCS) / 2				X								K4.01 - Operation of PZR heater cutout at low PZR level	3.7	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5	X											K1.01 - Containment annulus ventilation system (including pressure limits)	2.5	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5		X										K2.01 - Hydrogen recombiners	2.8*	1
029	Containment Purge System (CPS) / 8								X				A2.01 - Maintenance or other activity taking place inside containment	3.6	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8			X									K3.03 - Spent fuel temperature	3.3	1
039	Main and Reheat Steam System (MRSS) / 4					X							K5.08 - Effect of steam removal on reactivity	3.6	1
062	A.C. Electrical Distribution System / 6		X										K2.01 - Major system loads	3.4	1

PWR SRO(mination Outline

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Facility: Braidwood/Byron Units 1 and 2

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Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
064	Emergency Diesel Generator (ED/G) System / 6											X	2.2.5 - Knowledge of the process for making changes in the facility as described in the safety analysis report.	2.7	1
064	Emergency Diesel Generator (ED/G) System / 6									X			A3.07 - Load sequencing	3.7*	1
073	Process Radiation Monitoring (PRM) System / 7							X					A1.01 - Radiation levels	3.5	1
073	Process Radiation Monitoring (PRM) System / 7										X		A4.01 - Effluent release	3.9	1
086	Fire Protection System (FPS) / 8				X								K4.03 - Detection and location of fires	3.7	1
103	Containment System / 5									X			A3.01 - Containment isolation	4.2	1

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

Group Point Total: 17

PWR SRO(mination Outline

Printed: 09/01/001

Facility: Braidwood/Byron Units 1 and 2

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Plant Systems - Tier 2 / Group 3

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4											X	2.2.27 - Knowledge of the refueling process.	3.5	1
005	Residual Heat Removal System (RHRS) / 4								X				A2.02 - Pressure transient protection during cold shutdown	3.7	1
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5					X							K5.02 - Method of forming a steam bubble in the PZR	3.4	1
045	Main Turbine Generator (MT/G) System / 4			X									K3.01 - Remainder of the plant	3.2	1

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

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/28/2000

PWR SRO Examination Outline

Form ES-401-5

Facility: Braidwood/Byron Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.4	Knowledge of shift staffing requirements.	3.4	1
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	2.1.12	Ability to apply technical specifications for a system.	4.0	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
Category Total:				4
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.6	1
	2.2.10	Knowledge of the process for determining if the margin of safety, as defined in the basis of any technical specification is reduced by a proposed change, test or experiment.	3.3	1
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	3.5	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.1	1
	2.2.27	Knowledge of the refueling process.	3.5	1
Category Total:				5
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.	3.1	1
Category Total:				4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/28/20

PWR SRO Examination Outline

Form ES-401-5

Facility: Braidwood/Byron Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Emergency Procedures/Plan	2.4.11	Knowledge of abnormal condition procedures.	3.6	1
	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	3.3	1
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.6	1
	2.4.48	Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.	3.8	1

Category Total: 4

Generic Total: 17

Facility: Braidwood/Byron Units 1 and 2

Form ES-401-4

Exam Date: 10/29/2001Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	3	4	3				4	1			1	16
	2	5	3	3				3	2			1	17
	3	0	1	0				0	1			1	3
	Totals Tier	8	8	6				7	4			3	36
2. Plant Systems	1	2	2	2	3	1	2	2	2	3	2	2	23
	2	2	2	2	2	2	2	2	2	1	3	0	20
	3	1	1	1	1	1	0	0	1	2	0	0	8
	Tier Totals	5	5	5	6	4	4	4	5	6	5	2	51
3. Generic Knowledge And Abilities				Cat 1		Cat 2		Cat 3		Cat 4			
				3		3		4		3		13	
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category /tier.</p> <p>6. The generic 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.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>													

Facility: Braidwood/Byron Units 1 and 2

PWR Reactor Examination Outline

Printed: 09/2 01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
005	Inoperable/Stuck Control Rod / 1				X			AA1.01 - CRDS	3.6	1
015	Reactor Coolant Pump (RCP) Malfunctions / 4		X					AK2.10 - RCP indicators and controls	2.8*	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4		X					AK2.07 - RCP seals	2.9	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4				X			AA1.12 - Reactor coolant loop flow meters	2.8*	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3	X						AK1.02 - Expansion of liquids as temperature increases	2.8	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3		X					AK2.03 - Controllers and positioners	2.6	1
040	Steam Line Rupture / 4	X						AK1.03 - RCS shrink and consequent depressurization	3.8	1
051	Loss of Condenser Vacuum / 4					X		AA2.02 - Conditions requiring reactor and/or turbine trip	3.9	1
062	Loss of Nuclear Service Water / 4			X				AK3.03 - Guidance actions contained in EOP for Loss of nuclear service water	4.0	1
069	Loss of Containment Integrity / 5						X	2.1.25 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	2.8	1

Facility: Braidwood/Byron Units 1 and 2

PWR Reactor Examination Outline

Printed: 09/1 01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
074	Inadequate Core Cooling / 4				X			EA1.12 - RCS temperature and pressure indicators	4.1	1
E08	Pressurized Thermal Shock / 4			X				EK3.3 - Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations	3.7	1
E08	Pressurized Thermal Shock / 4	X						EK1.3 - Annunciators and conditions indicating signals, and remedial actions associated with the Pressurized Thermal Shock	3.5	1
E09	Natural Circulation Operations / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.5	1
E10	Natural Circulation with Steam Void in Vessel with/without RVLIS / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.6	1
E12	Uncontrolled Depressurization of all Steam Generators / 4			X				EK3.4 - RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated	3.5	1

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

Group Point Total: 16

Facility: Braidwood/Byron Units 1 and 2

PWR Reactor Examination Outline

Printed: 09/01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1	X						AK1.06 - Relationship of reactivity and reactor power to rod movement	4.0	1
003	Dropped Control Rod / 1	X						AK1.01 - Reason for turbine following reactor on dropped rod event	3.2	1
009	Small Break LOCA / 3		X					EK2.03 - S/Gs	3.0	1
022	Loss of Reactor Coolant Makeup / 2						X	2.2.12 - Knowledge of surveillance procedures.	3.0	1
025	Loss of Residual Heat Removal System (RHRS) / 4	X						AK1.01 - Loss of RHRS during all modes of operation	3.9	1
025	Loss of Residual Heat Removal System (RHRS) / 4				X			AA1.10 - LPI pump suction valve and discharge valve indicators	3.1*	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.09 - Maximum load change capability of facility	2.7*	1
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.45 - Safety parameter display system	3.9*	1
038	Steam Generator Tube Rupture (SGTR) / 3					X		EA2.13 - Magnitude of rupture	3.1*	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
059	Accidental Liquid Radwaste Release / 9	X						AK1.02 - Biological effects on humans of various types of radiation, exposure levels that are acceptable for nuclear power plant personnel, and the units used for radiation-intensity measurements and for radiation exposure levels	2.6	1
060	Accidental Gaseous Radwaste Release / 9		X					AK2.01 - ARM system, including the normal radiation-level indications and the operability status	2.6	1
061	Area Radiation Monitoring (ARM) System Alarms / 7			X				AK3.02 - Guidance contained in alarm response for ARM system	3.4	1
E01	Radiagnosis / 3		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.5	1
E01	Radiagnosis / 3			X				EK3.1 - Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics	3.0	1
E02	SI Termination / 3					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.5	1
E11	Loss of Emergency Coolant Recirculation / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.9	1

Facility: Braidwood/Byron Units 1 and 2

PWR Reactor Examination Outline

Printed: 09/11/01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E16	High Containment Radiation / 9	X						EK1.3 - Annunciators and conditions indicating signals, and remedial actions associated with the High Containment Radiation	3.0	1

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

Group Point Total: 17

Facility: Braidwood/Byron Units 1 and 2

PWR Reactor Examination Outline

Printed: 09/11/01

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
028	Pressurizer (PZR) Level Control Malfunction / 2		X					AK2.02 - Sensors and detectors	2.6	1
036	Fuel Handling Incidents / 8					X		AA2.03 - Magnitude of potential radioactive release	3.1*	1
E15	Containment Flooding / 5						X	2.1.16 - Ability to operate plant phone, paging system, and two-way radio.	2.9	1

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

Group Point Total: 3

Facility: Braidwood/Byron Units 1 and 2

PWR RO(mination Outline

Printed: 0/ 2001

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1								X				A2.07 - Effect of reactor trip on primary and secondary parameters and systems	4.1	1
001	Control Rod Drive System / 1									X			A3.04 - Radial imbalance	3.5	1
003	Reactor Coolant Pump System (RCPS) / 4		X										K2.02 - CCW pumps	2.5*	1
004	Chemical and Volume Control System (CVCS) / 1						X						K6.10 - Boric acid storage tank/boron injection tank recirculation flow path	2.7	1
004	Chemical and Volume Control System (CVCS) / 1											X	2.3.10 - Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
013	Engineered Safety Features Actuation System (ESFAS) / 2				X								K4.02 - Containment integrity system reset	3.9	1
013	Engineered Safety Features Actuation System (ESFAS) / 2						X						K6.01 - Sensors and detectors	2.7*	1
015	Nuclear Instrumentation System / 7	X											K1.02 - Vital ac systems	3.4	1
015	Nuclear Instrumentation System / 7							X					A1.03 - NIS power indication	3.7	1
017	In-Core Temperature Monitor (ITM) System / 7			X									K3.01 - Natural circulation indications	3.5*	1
017	In-Core Temperature Monitor (ITM) System / 7										X		A4.01 - Actual in-core temperatures	3.8	1

Facility: Braidwood/Byron Units 1 and 2

PWR RO(mination Outline

Printed: 01 2001

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
022	Containment Cooling System (CCS) / 5				X								K4.04 - Cooling of control rod drive motors	2.8	1
022	Containment Cooling System (CCS) / 5									X			A3.01 - Initiation of safeguards mode of operation	4.1	1
056	Condensate System / 4								X				A2.04 - Loss of condensate pumps	2.6	1
059	Main Feedwater (MFW) System / 4			X									K3.04 - RCS	3.6	1
059	Main Feedwater (MFW) System / 4							X					A1.07 - Feed Pump speed, including normal control speed for ICS	2.5*	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4		X										K2.03 - AFW diesel driven pump	4.0*	1
068	Liquid Radwaste System (LRS) / 9	X											K1.02 - Waste gas vent header	2.5	1
068	Liquid Radwaste System (LRS) / 9				X								K4.01 - Safety and environmental precautions for handling hot, acidic, and radioactive liquids	3.4	1
071	Waste Gas Disposal System (WGDS) / 9					X							K5.04 - Relationship of hydrogen/oxygen concentrations to flammability	2.5	1
071	Waste Gas Disposal System (WGDS) / 9											X	2.1.22 - Ability to determine Mode of Operation.	2.8	1
072	Area Radiation Monitoring (ARM) System / 7									X			A3.01 - Changes in ventilation alignment	2.9*	1

PWR RO (mination Outline

Printed: 08/2001

Facility: Braidwood/Byron Units 1 and 2

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
072	Area Radiation Monitoring (ARM) System / 7										X		A4.01 - Alarm and interlock setpoint checks and adjustments	3.0*	1

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

Group Point Total: 23

PWR RO (mination Outline

Printed: 06 :001

Facility: Braidwood/Byron Units 1 and 2

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-4

Sys/Ex #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2					X							K5.09 - Relationship of pressure and temperature for water at saturation and subcooling conditions	3.7	1
006	Emergency Core Cooling System (ECCS) / 2						X						K6.13 - Pumps	2.8	1
006	Emergency Core Cooling System (ECCS) / 2							X					A1.09 - Pump amperage, including start, normal and locked	2.8	1
010	Pressurizer Pressure Control System (PZR PCS) / 3			X									K3.02 - RPS	4.0	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.01 - Reasons for starting charging pump while increasing letdown flow rate	2.8*	1
011	Pressurizer Level Control System (PZR LCS) / 2								X				A2.01 - Excessive letdown	3.2	1
011	Pressurizer Level Control System (PZR LCS) / 2				X								K4.01 - Operation of PZR heater cutout at low PZR level	3.3	1
012	Reactor Protection System / 7										X		A4.04 - Bistable, trips, reset and test switches	3.3*	1
012	Reactor Protection System / 7		X										K2.01 - RPS channels, components, and interconnections	3.3	1
014	Rod Position Indication System (RPIS) / 1										X		A4.02 - Control rod mode-select switch	3.4	1
029	Containment Purge System (CPS) / 8								X				A2.01 - Maintenance or other activity taking place inside containment	2.9	1

PWR RO (mination Outline

Printed: 06/01/001

Facility: Braidwood/Byron Units 1 and 2

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
029	Containment Purge System (CPS) / 8	X											K1.02 - Containment radiation monitor	3.3	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8			X									K3.03 - Spent fuel temperature	3.0	1
039	Main and Reheat Steam System (MRSS) / 4					X							K5.08 - Effect of steam removal on reactivity	3.6	1
062	A.C. Electrical Distribution System / 6		X										K2.01 - Major system loads	3.3	1
064	Emergency Diesel Generator (ED/G) System / 6									X			A3.07 - Load sequencing	3.6*	1
073	Process Radiation Monitoring (PRM) System / 7							X					A1.01 - Radiation levels	3.2	1
073	Process Radiation Monitoring (PRM) System / 7										X		A4.01 - Effluent release	3.9	1
079	Station Air System (SAS) / 8	X											K1.01 - IAS	3.0	1
086	Fire Protection System (FPS) / 8				X								K4.03 - Detection and location of fires	3.1	1

K/A Category Totals: 2 2 2 2 2 2 2 2 1 3 0

Group Point Total: 20

Facility: Braidwood/Byron Units 1 and 2

PWR RO(mination Outline

Printed: 01/01/2001

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4								X				A2.02 - Pressure transient protection during cold shutdown	3.5	1
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5					X							K5.02 - Method of forming a steam bubble in the PZR	3.1	1
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5									X			A3.01 - Components which discharge to the PRT	2.7*	1
008	Component Cooling Water System (CCWS) / 8				X								K4.02 - Operation of the surge tank, including the associated valves and controls	2.9	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5	X											K1.01 - Containment annulus ventilation system (including pressure limits)	2.5*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5		X										K2.01 - Hydrogen recombiners	2.5*	1
045	Main Turbine Generator (MT/G) System / 4			X									K3.01 - Remainder of the plant	2.9	1
103	Containment System / 5									X			A3.01 - Containment isolation	3.9	1

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

Group Point Total: 8

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/28/20

PWR RO Examination Outline

Form ES-401-5

Facility: Braidwood/Byron Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.0	1
	2.1.30	Ability to locate and operate components, including local controls.	3.9	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
Category Total:				3
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	3.4	1
	2.2.27	Knowledge of the refueling process.	2.6	1
Category Total:				3
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
	2.3.11	Ability to control radiation releases.	2.7	1
Category Total:				4
Emergency Procedures/Plan	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	2.9	1
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.8	1
	2.4.39	Knowledge of the RO's responsibilities in emergency plan implementation.	3.3	1
Category Total:				3
Generic Total:				13

FINAL AS-ADMINISTERED OPERATING TEST

FOR THE BRAIDWOOD INITIAL EXAMINATION - OCTOBER 2001

FINAL AS-ADMINISTERED ADMINISTRATIVE JPMS

FOR THE BRAIDWOOD INITIAL EXAMINATION - OCTOBER 2001

JOB PERFORMANCE MEASURE

TASK TITLE: Perform Calorimetric Using Process Plant Computer (w/o Channel Adjustment)

JPM No.: N-08

REV: 10

TPO No.: IV.C.NI-05

K&A No.: (015A1.01)

TASK No.: NI-004

K&A IMP: 3.5 /3.8

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 1-4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 12 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BwOSR 3.3.1.2-1, Rev. 6, Unit 1 Power Range High Flux Setpoint Daily Channel Calibration (Computer Calorimetric).

MATERIALS:

Copy of 1BwOSR 3.3.1.2-1, Plant Process Computer, transparent tape.

TASK STANDARDS:

1. Perform actions required to run calorimetric program on plant process computer.
2. Adjust NIs if necessary.
3. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at 100% power, steady state.
3. Unit 2 is at 100% power.

INITIATING CUES:

1. You have been directed by the US to perform the calorimetric using the process computer per 1BwOSR 3.3.1.2-1.

RECORD START TIME _____

Note: If asked at any time what the trend on computer points T8000-T8009 (Computer room temperatures), report that the temperatures are steady. If questioned about the Liebert Unit, report that it has been off line for 4 hours.

- | | | |
|---|---|-----------------|
| *1. Refer to 1BwOSR 3.3.1.2-1.

(CUE: After examinee
locates procedure,
provide a copy.

If asked, all
Prerequisites,
Precautions,
Limitations and
Actions have been
met.) | Locate and refer to
1BwOSR 3.3.1.2-1. On
Data Sheet D-2:

o RECORD the date and
time.
o RECORD Gross MWe.
o RECORD Control Bank
Positions.
o Sign for all
prerequisites met.
• RECORD the % Power
from the NIS Drawers. | □ □ □ |
| *2. Access the Plant Process
Computer Program for the
Calorimetric. | Access the Plant Process
Computer Program for the
Calorimetric as follows:

• SELECT OPCON (OTHER)
page.

• POSITION mouse cursor
to within the black
background area to
enable keyboard
function.

• DEPRESS 'F8' (or click
on 'MISC') button to
select function menu.

• Tab to Function Number
field and TYPE '23'.

• DEPRESS 'RETURN'
(EXECUTE) key. | □ □ □ |

PERFORMANCE CHECKLIST

STANDARDS

SAT

UNSAT

N/A

- *3. Create Calorimetric report from the plant process computer.

Perform the following to create a Calorimetric Report from the plant process computer:

☐☐☐

(CUE: If asked cue long form and trend typer as output device.)

- TYPE '2' as the time span for a 10 minute average.
- TYPE '2' as the report format for a long output.
- TYPE '2' for trend typer as the output device.

(CUE: All blowdown flows are correct as entered.)

- VERIFY each S/G loop blowdown flow.
- DEPRESS 'RETURN' (EXECUTE).

(Note: It is not desired to perform an Appendix C Review of all manually entered process computer points.)

- REVIEW the printout percent power value for Quality.

(CUE: The quality of all values on the report are good.)

- *4. Determine if an adjustment is required for each operable power range channel.

DETERMINE if an adjustment is required for each operable power range channel as follows:

☐☐☐

- RECORD percent power value for each operable channel from the printout in block 10.
- DETERMINE the power difference by subtracting the calorimetric power from the NIS power for each channel and RECORD the results in block 11.

(CUE: All Block 11 values are positive numbers and less than 2%.)

- DETERMINE that NO adjustments are necessary because block 11 values for all channels are positive numbers less than 2%.
- CHECK 'NO' boxes for each channel in block 12.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

5. Attach the computer printout in the space provided on data sheet D-3 and indicate 'YES' in block 22.

(CUE: As SM, sign computer printout if asked.

As US acknowledge completion of surveillance.)

COMPLETE the Data sheets as follows:

- Obtain Shift Manager's or designee's signature on the printout.
- ATTACH the signed printout to data sheet D-3.
- INDICATE 'YES' in both boxes of block 22.
- o Report completion of surveillance to US.

☐ ☐ ☐

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Determine Shutdown Margin Inadequate from Calculation

JPM No.: N-125

REV: 2

TPO No.: IV.C.GP-03

K&A No.: (001A4.11)

TASK No.: RK-005

K&A IMP: 3.5/4.1

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 2-6

JPM TIME: _____ MINUTES

CRITICAL TIME: N/A

APPROX COMPLETION TIME 30 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BwOSR 3.1.1.1-2, Rev. 1, Unit One Shutdown Margin Surveillance During Operation.
2. BwCB (Various), Braidwood Curve Book, Unit 1.
3. 1BwOL 3.1.4, LCOAR Rod Group Alignment Limits Tech Spec LCO 3.1.4 Rev. 2.

MATERIALS:

1. Copy of 1BwOSR 3.1.1.1-2.
2. BwCB (Various), Braidwood Curve Book, Unit 1.
3. Braidwood Technical Requirements Manual TRM

TASK STANDARDS:

1. Perform the required actions of 1BwOSR 3.1.1.1-2 Rev. 1, Unit 1 Shutdown Margin Surveillance During Operation.
2. Determine Shutdown Margin unacceptable for current plant conditions.
3. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at 100% power with all control systems in automatic except rod control which is in manual.

INITIATING CUES:

1. 28 minutes ago it was determined rods M-4 and M-12 are inoperable and immovable due to excessive friction. The Qualified Nuclear Engineer is informed.
2. The US has directed you to perform 1BwOSR 3.1.1.1-2, per LCOAR 1BwOL 3.1.4. Condition A, Required Action A.1.1. and inform him of the results.

Examiner's Note: Hand NR-1 separately from LCOAR to examinee. Key has range of acceptable values.

Note to Evaluator: For either In Plant, or Simulator performance of this JPM, the Actual Shutdown Margin is to be calculated by the JPM Evaluator prior to JPM performance by the examinee. Fill in the Actual Values blanks with your pre-calculated data. KEY has ranges of acceptable values depending on graph interpretation.

Provide CUES ONLY if actual plant/ simulator conditions are not available.

RECORD START TIME _____

- | | | | | | |
|-----|--|--|--------------------------|--------------------------|--------------------------|
| 1. | Refer to 1BwOSR 3.1.1.1-2.

(CUE: After examinee
locates correct
procedure, provide a
copy.
All Prerequisites
have been met.) | Locate and Open 1BwOSR
3.1.1.1-2. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| *2. | Document the "Present
Conditions".

(CUE: When asked, provide
partially filled in
NR-1. Core Average
Burnup is 10000
EFPH.)

Conversion factor is
(EFPH X 1.8462) -
870.795.

18462-870.795
= 17591.205

MWD/MTU is 17591.205.

Tave is 586 deg F.

Reactor Power level
is 100%.

(CUE: RCS Boron is 325 ppm
1 hr ago, no changes
since.) | Determine and record the
following:

• Date and Time (step
F.1.a).

• Core Average Burnup
from 1BwOS NR-1 (step
F.1.b).

◦ EFPH to MWD/MTU
conversion factor from
BwCB-1, Table 4-1
(step F.1.c).

◦ Convert Burnup in EFPH
to Burnup in MWD/MTU
by MULTIPLYING the
present Core EFPH by
the EFPH to MWD/MTU
conversion factor
(step F.1.d).

◦ Core Average
Temperature (step
F.1.e).

• Power Level (step
F.1.f).

• Present Boron
Concentration (step
F.1.g). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*3. Determine total worth due
to rods.

Determine total worth due
to rods and record the
following:

☐ ☐ ☐

(CUE: Control Bank D 215.)

Actual Value: _____
Examinee Value: _____

3041.5pcm - 10pcm =
3031.5pcm

3094.8pcm + 3031.5pcm
= 6126.3pcm

Actual Value: _____
Examinee Value: _____

- Control Bank position
(step F.2.a).

- Remaining worth of the
Control Banks from
BwCB-1 figure 2 or 2a
based on recorded
position in step
F.2.a. (step F.2.b).

- SUBTRACT the Control
Bank remaining worth
from the Control Bank
total worth to obtain
the total available
worth due to Control
Bank position. (step
F.2.c).

- ADD the Shutdown Bank
worth (from BwCB-1,
Table 4-1) plus the
total available
Control Bank worth
(F.2.c.) and record
the total worth due to
rods (step F.2.d).

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*4. Determine actual
reactivity available due
to rods.

Determine and record
actual reactivity due to
rods as follows:

☐ ☐ ☐

2

- Number of immovable or untrippable control rods (step F.3.a).

847.3pcm

- Highest stuck rod worth from BwCB-1 Table 4-1 (step F.3.b).

2 x 2000 = 4000

- MULTIPLY the number of immovable or untrippable control rods (step F.3.a) by 2000pcm (step F.3.c).

6126.3-4000-847.3 =
1279pcm

- Total rod worth (F.2.d) minus worth of immovable or untrippable rods (F.3.c.) minus highest stuck rod worth (F.3.b) = actual reactivity available due to rods (step F.3.d).

Actual Value: _____

Examinee Value: _____

*5. Determine current Power
Defect.

Determine and record the
current power defect for
this Boron Concentration
and Power Level from
either:

☐ ☐ ☐

-2362pcm

- Figure 17A or
- Table 2-1

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*6. Perform Shutdown Margin
Verification.

VERIFY Shutdown Margin as
follows:

☐ ☐ ☐

1279pcm + (-) 2362pcm
= -1083pcm

- ADD total corrected rod worth (F.3.d) to the power defect (F.4) (Step F.5.a).

1300pcm

- Record the Shutdown Margin Limit for Modes 1 and 2 from the COLR (step F.5.b).

-1083pcm \leq 1300pcm

- VERIFY the available shutdown reactivity recored in step F.5.a is geater than or equal to the minimum required Shutdown Margin Limit recorded in step F.5.b. (Step F.5.c).

Actual Value: _____
Examinee Value: _____

(CUE: As US acknowledge
inadequate SDM and
will take the
appropriate actions.)

- Inform US that Shutdown Margin is NOT met and LCOAR 1BwOL TRM 3.1.h needs to be initiated.

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Perform Offsite AC Power Availability Weekly Surveillance

JPM No.: N-75

REV: 6

TPO No.: IV.C.AP-04

K&A No.: (062K1.04)

TASK No.: AP-017

K&A IMP: 3.7/4.2

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 26 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance.

MATERIALS:

Copy of 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance.

TASK STANDARDS:

1. Complete Surveillance 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance.
2. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at 100% power.
3. Unit 2 is at 100% power.
4. Unit 2 4KV ESF buses are being supplied from Unit 2 SATs.
5. All Unit 2 Switchyard and 4KV breakers are available.

INITIATING CUES:

1. The 1A EDG has just been declared inoperable and the US has directed you to perform 1BwOSR 3.8.1.1 Rev. 0, Unit One Offsite AC Power Availability Weekly Surveillance, subsection F.1.0, steps F.1.1 through F.1.16.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

1. Record Initial Data.

On the Modes 1-4 Data Sheet,

☐☐☐

(CUE: All Prerequisites,
Precautions,
Limitations and
Actions have been
met.)

RECORD:

Unit 1 Mode

Unit 2 Mode

2. Check 345 KV Transmission Line Status.

At OPM03J,

☐☐☐

OBSERVE:

AC amperes, MW, MVAR, and
KV for All Lines.

On the Modes 1-4 Data Sheet,

CIRCLE:

(CUE: All 345 KV
Transmission Lines
are energized.)

"ENERGIZED" for each:

☐☐☐

- Line 0104
- Line 2001
- Line 2002
- Line 0103
- Line 2003
- Line 2004

3. Indicate all closed and open switchyard breakers

Check status of all 345 KV Swyd breakers

On the Data Sheet Drawing of the 345 KV swyd,

☐☐☐

(CUE: All Swyd breakers
indicate closed.)

INDICATE:

Closed breakers with 'X'

Open breakers with 'O'

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*4. Trace paths for
 independent power sources
 to the unit 1 and 2 SATs.

On the Data Sheet Drawing
of the 345 KV Swyd,

TRACE:

- Single path along the
dashed lines from any
energized offsite
power source to the
Unit 1 SAT banks.

☐

☐

☐

(CUE: All 345 KV
 Transmission Lines
 are energized.)

- Second path along the
dashed lines from a
second independent
energized offsite
power source to the
Unit 2 SAT banks.
(Can't retrace any
portion of the first
path)

☐

☐

☐

5. Verify two independent
 paths exist from offsite
 power sources to the Unit
 SAT banks. (Step 1.6)

On the Modes 1-4 Data
Sheet,

VERIFY:

Two independent paths
exist from the offsite
power sources through the
swyd to the UNIT SAT
Banks.

☐

☐

☐

6. Verify Normal (Bus 4) and
 Alternate (Bus 14) power
 are energized.

At OPM03J,
On the Modes 1-4 Data
sheet,

OBSERVE and RECORD

STATUS:

- Bus alive lights lit
for buses 4 and 14.
- Bus Voltmeter
indications for buses
4 and 14.

☐

☐

☐

(CUE: Bus 4 alive light is
 lit.
 Bus 14 bus alive
 light is lit.
 Bus voltage indicated
 on buses 4 and 14.)

- Place 'Xs' under
'ENERGIZED' in step
1.7.
- Place 'Xs' under 'YES'
in steps 1.8 and 1.9.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

7. Determine status of Normal and Alternate Power SATs.

At 1PM01J and 1PM02J,
On the Modes 1-4 Data Sheet,

OBSERVE and RECORD
STATUS:

☐ ☐ ☐

(CUE: All X and Y windings
 for both SATs at each
 unit are energized.)

- X or Y winding AC MW and AC amperes indications for each SAT at each unit.

- Place X in 'ENERGIZED' column.

8. Determine availability status of Normal and Alternate supply breakers to each unit 1 4160V ESF bus

On the Modes 1-4 Data Sheet,

OBSERVE and RECORD
STATUS:

☐ ☐ ☐

(CUE: All normal ESF bus
 feed breakers
 indicate closed, all
 crosstie breakers are
 available.)

- ACB 1412 (X in Closed Box).
- ACB 1414 (X in Avail Box).
- ACB 2414 (X in Avail Box).
- ACB 2412 (X in Closed Box).
- ACB 1422 (X in Closed Box).
- ACB 1424 (X in Avail Box).
- ACB 2424 (X in Avail Box).
- ACB 2422 (X in Closed Box).

9. Determine supply configuration to the 4160V ESF buses

On the Modes 1-4 Data Sheet,

OBSERVE and RECORD
STATUS:

☐ ☐ ☐

(CUE: All normal ESF bus
 feed breakers
 indicate closed, all
 crosstie breakers are
 available.)

- ESF BUS 141 (X in FROM SAT 142-1 box).
- ESF Bus 142 (X in FROM SAT 142-2 box).
- ESF BUS 241 (X in FROM SAT 242-1 box).
- ESF BUS 242 (X in FROM SAT 242-2 box).

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

10. Determine capabilities of Unit 1 and Unit 2 SATs to supply Unit 1 ESF buses.

After Reviewing the status of the sources and configuration, On the Modes 1-4 Data sheet,

RECORD STATUS:

☐ ☐ ☐

- Unit 1 SAT capable of supplying bus 141 (X in 'YES' box).
- Unit 2 SAT capable of supplying bus 141 (X in 'YES' box).
- Unit 1 SAT capable of supplying bus 142 (X in 'YES' box).
- Unit 2 SAT capable of supplying bus 142 (X in 'YES' box).

(CUE: Unit Supervisor will verify the acceptance criteria.)

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Perform Local Start of CC HX Outlet Radiation Monitor (2PR09J)

JPM No.: N-133

REV: 3

TPO No.: IV.C.AR-03

K&A No.: (073A4.02)

TASK No.: AR-005

K&A IMP: 3.7/3.7

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3,6

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 15 MINUTES

EVALUATION METHOD:

LOCATION:

____ PERFORM
 X SIMULATE

X IN PLANT
____ SIMULATOR

GENERAL REFERENCES:

1. BwOP AR/PR-1, Rev. 10, Startup of Skid Mounted Process Radiation Monitors.

MATERIALS:

Copy of BwOP AR/PR-1; CAT-60 key, or picture of inside of RM-80 cabinet (if available).

TASK STANDARDS:

1. Locally startup 2PR09J per BwOP AR/PR-1.
2. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are a Unit 2 Equipment Operator Nuclear (EON).
2. Both Units are at 100% power.
3. Maintenance has recently been performed on 2PR09J CC HX Outlet Radiation Monitor.
4. An attempt was made to start 2PR09J from the Control Room and failed.
5. Further discussion/investigation determined that there might be a problem with the alignment of the monitor.

INITIATING CUES:

1. The WEC has directed you to start the 2PR09J locally per BwOP AR/PR-1, Step F.3.a. The US has verified the Monitor Data Base as correct for 2PR09J and has informed Rad Protection that you'll be performing BwOP AR/PR-1.

Examiner's Note: Hand copy of BwOP AR/PR-1 to examinee.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

- | | | | | |
|--|---|---|---|---|
| 1. Refer to BwOP AR/PR-1,
step F.3.a. for startup of
2PR09J. | Refer to BwOP AR/PR-1,
step F.3.a for startup of
2PR09J. | □ | □ | □ |
| (CUE: All Prerequisites,
Precautions,
Limitations and
Actions have been
met.) | | | | |
| 2. Verify the Hand/Off/Auto
switch is in the Off
position. | Determine the Sample Pump
Control Switch position
as follows: | □ | □ | □ |
| (CUE: Hand/Off/Auto switch
is in OFF position.) | | | | |
| • VERIFY/PLACE the
HAND/OFF/AUTO switch
in the OFF position. | | | | |
| *3. Place the local main power
disconnect switch in the
on position. | VERIFY power available to
the skid as follows: | □ | □ | □ |
| (CUE: Disconnect switch is
in OFF position until
examinee simulates
placing it in ON
position. Examinee
may contact control
room prior to
energizing skid, if
so acknowledge.) | | | | |
| • PLACE the LOCAL MAIN
POWER DISCONNECT
Switch in the ON
position. | | | | |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

4. Check the status of the circuits inside the RM-80 cabinets.

CHECK the status of the circuits inside the RM-80 cabinets as follows:

☐ ☐ ☐

(CUE: Examinee should unlock and open door and check lights.

Provide cue only if opening door is prohibited by plant conditions or use picture of inside of cabinet if available:

Green GO LED is flashing.

Red NO GO LED is off.

Red LOSS OF COUNTS LED is off.)

- GREEN 'GO' LED is FLASHING.

- RED 'NO GO' LED is OFF.

- RED 'LOSS OF COUNTS' LED is OFF.

5. Determine that the monitor data base is correct.

CHECK the MONITOR DATA BASE is correct as follows:

☐ ☐ ☐

- Determines from the initiating cue that the Monitor Data Base is correct.

Note: The switch in the next JPM step is the same switch that was manipulated to OFF in JPM step 2.

- *6. Place the sample pump control switch in the Auto position.

VERIFY/PLACE the HAND/OFF/AUTO switch for the Sample Pump in the AUTO position.

☐ ☐ ☐

(CUE: HAND/OFF/AUTO switch for the sample pump is in AUTO position. If asked, Green light is lit.)

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

7. Check if Sample Pump is running.

CHECK if Sample Pump is RUNNING (determines step F.3.a.8 is not required).

☐ ☐ ☐

(Note: Sample pump should be running and you will be able to see Amps/flow, feel air circulation and feel vibration of the pump.)

(CUE: Indications are as you see them at the skid. If asked as U-2 NSO, report flow light is lit on 2PR09J.)

8. Check instrument available light is on at the RM-80 door.

CHECK that the INSTRUMENT AVAILABLE light on the door of the RM-80 is ON.

☐ ☐ ☐

(CUE: Instrument available light is lit.)

9. Check that the monitor status is normal operating condition.

CHECK that the Monitor Status is NORMAL OPERATING CONDITION as follows:

☐ ☐ ☐

(CUE: As U-2 NSO, report that the 2PR09J is operating properly.)

- Contacts NSO in control room to verify normal operating condition of monitor.

10. Complete the Electrical lineup per BwOP AR/PR-E4.

Complete the electrical line up per BwOP AR/PR-E4.

☐ ☐ ☐

(CUE: Electrical lineup is being completed by another operator.)

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Activate the Emergency Response Data System (ERDS).

JPM No.: N-160

REV: 0

TPO No.: IV.F.ZP-04

K&A No.: (2.4.29)

TASK No.: ZP-007

K&A IMP: 2.6 / 4.0

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 2,3

JPM TIME: _____ MINUTES

CRITICAL TIME: N/A

APPROX COMPLETION TIME 11 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. EP-AA-114, Notifications, Attachment 8, ERDS Activation, Rev.0.

MATERIALS: Copy of EP-AA-114, Attachment 8.
PC with GSEP Program Group/ Suite.

TASK STANDARDS:

1. Activate the electronic data link (ERDS).
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are an extra NSO.
2. The Emergency Response Data System (ERDS) is not yet activated.

INITIATING CUES:

1. Plant conditions changed resulting in an upgrade of the Emergency classification from Unusual Event to Alert.
2. The Shift Manager has directed you to activate the Emergency Response Data System per EP-AA-114 for Unit 1 per Attachment 8.

Examiner's Note: Do Not allow examinee to select REAL Mode. See note next page.

RECORD START TIME _____

Note: To prevent actual activation of the ERDS, when the examinee gets to the point of selecting the mode (REAL, SIMULATOR, or EXERCISE) for ERDS activation from the GSEP Suite, ask which mode he would select. (Correct answer is REAL). Cue the examinee to select SIMULATOR.

- | | | | | | |
|-----|--|--|--------------------------|--------------------------|--------------------------|
| 1. | Refer to EP-AA-114,
Attachment 8. | Locate and Open
• EP-AA-114, Attachment
8. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| *2. | Refer to EP-AA-114,
Attachment 8. | Perform the following
from PC keyboard:

• START MENU

• SITE APPS

• GSEP SUITE Rev 2.2

• ANSWER Question REAL

• SELECT SIMULATOR | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | (CUE: Ask which mode
examinee intends to
select prior to
actual selection, cue
the examinee to
select SIMULATOR.) | | | | |
| *3. | Select ERDS Icon. | Perform the following to
activate ERDS:

• SELECT ERDS Icon

• At the next screen,
SELECT Braidwood
Station.

• Click OK.

• At the next screen,
enter the password
"SCOUT".

• Click OK.

• Compare the status of
ERDS programs on the
screen to verify ERDS
is on for the
appropriate unit(s).

• Click "TURN ON" button
for Unit 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Review Calorimetric Surveillance

JPM No.: S-42

REV: 1

TPO No.: IV.C.NI-05

K&A No.: (015A1.01)

TASK No.: NI-004

K&A IMP: 3.5 /3.8

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3, 4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 10 MINUTES

EVALUATION METHOD:

 X PERFORM
 SIMULATE

LOCATION:
 IN PLANT
 X SIMULATOR

GENERAL REFERENCES:

1. 1BWOSR 3.3.1.2-1, Rev. 6, Unit 1 Power Range High Flux Setpoint Daily Channel Calibration (Computer Calorimetric).

MATERIALS:

Copy of Completed/Ready for review 1BWOSR 3.3.1.2-1.

TASK STANDARDS:

1. Perform review of calorimetric data collected by NSO.
2. Determine if adjustment of NIs is necessary.
3. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are the Unit Supervisor.
2. The Unit is at 100% power, steady state.
3. Unit 2 is at 100% power.

INITIATING CUES:

1. The Unit NSO has completed the required calorimetric surveillance and has asked for your review.

Note: Hand examinee completed calorimetric D-2 data sheet #1, with the 4 page printout of the calorimetric results from the JPM. (pages 7-10)

RECORD START TIME _____

Note: This JPM is performed by having the examinee review the D-2 Data sheet from the surveillance. The first data sheet is complete through block 12 but has 1 mistake in it. The examinee must locate the mistake to pass the JPM prior to signing block 16, Review Authorization.

- | | | | | | |
|----|---|---|--------------------------|--------------------------|--------------------------|
| 1. | Refer to completed 1BwOSR 3.3.1.2-1. | Review the data sheet for completeness/errors for blocks 1 and 2: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | (CUE: Ensure D-2 Data Sheet #1 is handed to examinee with the printout of the calorimetric data.) | <ul style="list-style-type: none">• Date: Today• Time: 10 minutes ago• Mwe Gross: Current (1257.0)• Control Bank Position: Current for C1 (228), C2 (228), D1 (215), D2 (215).• NSOs Signature. | | | |
| 2. | Review blocks 3 and 10. | Review blocks 3 and 10 for completeness/errors: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <ul style="list-style-type: none">• Initial NIS Drawer Front Panel Meter Power filled in.• Calculated Calorimetric Power from printout filled in. | | | |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

- *3. Review the Calculated power difference and determines channel N-44 is negative.

Review the data in block 11 and 12, and determines 1 mistake exists:

☐ ☐ ☐

- Check absolute difference between data in blocks 3 and 10.
- Determine N-44 difference is negative.

(Note: If examinee discovers the N-44 mistake, and either wants the NSO to complete boxes 13-15 or wants to do it himself, cue the examinee that the data has been taken and hand him D-2 data sheet #2. Go to JPM step 4.

If at any time before the examinee signs the Review Authorization block 16, he discovers he missed the mistake, then treat it like he had discovered the mistake, and provide D-2 data sheet #2, after he states boxes 13-15 need to be filled in.)

- Correct block 11 for calculated power difference for N-44. Line-out, date and initial or have the NSO correct/re-do it.
- Correct block 12 for N-44 to a "YES" box for requiring channel adjustments. Line-out, date and initial or have the NSO correct/re-do it.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

- *4. Verify the calculation that determines to what power N-44 must be adjusted.

DETERMINE the power channel N-44 needs to be adjusted to as follows:

☐ ☐ ☐

(Note: The examinee will have been given a D-2 data sheet in the previous step, with the appropriate boxes 13-15 numbers filled in. He needs to verify the subtraction and determination of the indicated power the adjustments must result in for N-44.)

- Ensure the present percent power values are filled in block 13.
- VERIFY the corrected calculated power difference from block 11 in block 14.
- VERIFY/SUBTRACT the power difference from the present indicated power and the value as the Power to adjust the NIS channels to in block 15.

(CUE: Adjustments to N-44 complete. Hand D-2 data sheet #3 to examinee.)

- Direct the NSO to make adjustments to N-44.
- Sign the "Review Authorization", block 16.

(Note: If the examinee has NOT identified and corrected the mistake (N-44) by the time he signs Block 16, "Review Authorization", then the JPM performance is UNSAT.)

- Review the printout and check box 22.a. "YES".

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Determine Shutdown Margin Incorrectly Calculated and Inadequate

JPM No.: S-43

REV: 0

TPO No.: IV.C.GP-03

K&A No.: (001A4.11)

TASK No.: RK-005

K&A IMP: 3.5/4.1

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 5

JPM TIME: _____ MINUTES

CRITICAL TIME: N/A

APPROX COMPLETION TIME 16 MINUTES

EVALUATION METHOD:

LOCATION:

☒ PERFORM
☐ SIMULATE

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. 1BwOSR 3.1.1.1-2, Rev. 1, Unit One Shutdown Margin Surveillance During Operation.
2. BwCB (Various), Braidwood Curve Book, Unit 1.
3. 1BwOL 3.1.4, LCOAR Rod Group Alignment Limits Tech Spec LCO 3.1.4 Rev. 2.

MATERIALS:

1. Copy of completed 1BwOSR 3.1.1.1-2.
2. BwCB (Various), Braidwood Curve Book, Unit 1.
3. Braidwood Technical Requirements Manual TRM

TASK STANDARDS:

1. Review for completeness/correctness 1BwOSR 3.1.1.1-2 Rev. 1, Unit 1 Shutdown Margin Surveillance During Operation (within 20 minutes).
2. Determine Shutdown Margin was incorrectly calculated and is unacceptable for current plant conditions.
3. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are Unit Supervisor on the unit.
2. The Unit is at 100% power with all control systems in automatic except rod control which is in manual.

INITIATING CUES:

1. 40 minutes ago it was determined rods M-4 and M-12 are inoperable and immovable due to excessive friction. The Qualified Nuclear Engineer is informed.
2. The NSO has completed 1BwOSR 3.1.1.1-2, per LCOAR 1BwOL 3.1.4. Condition A, Required Action A.1.1. and has given it to you for review. No other NSOs are available at this time.
3. Review the completed surveillance and inform the Shift Manager of the results.

Note to Evaluator: For either In Plant, or Simulator performance of this JPM, the Actual Shutdown Margin is to be calculated by the JPM Evaluator prior to JPM performance by the examinee. Fill in the Actual Values blanks with your pre-calculated data.

Provide CUES ONLY if actual plant/ simulator conditions are not available.

RECORD START TIME _____

1. Reviews the completed
1BWOSR 3.1.1.1-2.

Reviews the following:

☐ ☐ ☐

(CUE: Provide partially
filled in NR-1 if
asked. Core Average
Burnup is 10000
EFPH.)

- Date and Time (step
F.1.a).
- Core Average Burnup
from 1BWOS NR-1 (step
F.1.b).
- EFPH to MWD/MTU
conversion factor from
BwCB-1, Table 4-1
(step F.1.c).

Conversion factor is
(EFPH X 1.8462) -
870.795.

18462-870.795=
17591.205.

MWD/MTU is 17591.205.

- Convert Burnup in EFPH
to Burnup in MWD/MTU
by MULTIPLYING the
present Core EFPH by
the EFPH to MWD/MTU
conversion factor
(step F.1.d).

Tave is 586 deg F.

- Core Average
Temperature (step
F.1.e).

Reactor Power level
is 100%.

- Power Level (step
F.1.f).

(CUE: RCS Boron is 325 ppm
1 hr ago, no changes
since.)

- Present Boron
Concentration (step
F.1.g).

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

2. Reviews/Determines total
 worth due to rods.

Reviews/Determines total
worth due to rods and
checks the following
recorded:

☐ ☐ ☐

(CUE: Control Bank D 215.)

Actual Value: _____

Examinee Value: _____

- Control Bank position
(step F.2.a).

- Remaining worth of the
Control Banks from
BwCB-1 figure 2 or 2a
based on recorded
position in step
F.2.a. (step F.2.b).

3041.5pcm - 10pcm =
3031.5pcm

- SUBTRACT the Control
Bank remaining worth
from the Control Bank
total worth to obtain
the total available
worth due to Control
Bank position. (step
F.2.c).

3094.8pcm + 3031.5pcm
= 6126.3pcm

- ADD the Shutdown Bank
worth (from BwCB-1,
Table 4-1) plus the
total available
Control Bank worth
(F.2.c.) and record
the total worth due to
rods (step F.2.d).

Actual Value: _____

Examinee Value: _____

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

3. Reviews/Determines actual reactivity available due to rods.

Reviews/Determines and checks actual reactivity due to rods recorded as follows:

☐ ☐ ☐

2

- Number of immovable or untrippable control rods (step F.3.a).

847.3pcm

- Highest stuck rod worth from BwCB-1 Table 4-1 (step F.3.b).

2 x 2000 = 4000

- MULTIPLY the number of immovable or untrippable control rods (step F.3.a) by 2000pcm (step F.3.c).

6126.3-4000-847.3 = 1279pcm

- Total rod worth (F.2.d) minus worth of immovable or untrippable rods (F.3.c.) minus highest stuck rod worth (F.3.b) = actual reactivity available due to rods (step F.3.d).

Actual Value: _____
Examinee Value: _____

4. Review/Determine current Power Defect.

Using either:

- o Figure 17A or
- o BwCB Table 2-1

☐ ☐ ☐

-2362pcm

Reviews the current power defect for this Boron Concentration and Power Level.

PERFORMANCE CHECKLIST

*5. Perform Shutdown Margin Verification.

(Note: Examinee must identify mistake in this calculation. The power defect is a negative value. The mistake is the NSO added the absolute value of the power defect, instead of subtracting it. Step 5.a.

1279pcm + (-) 2362pcm
= -1083pcm

1300pcm

-1083 ≤ 1300pcm

Actual Value: _____
Examinee Value: _____

(CUE: As SM acknowledge inadequate SDM and will take the appropriate actions.)

STANDARDS

SAT UNSAT N/A

Performs the following to review the Shutdown Margin VERIFICATION as follows:

- ADD total corrected rod worth (F.3.d) to the power defect (F.4) (Step F.5.a).

- Record the Shutdown Margin Limit for Modes 1 and 2 from the COLR (step F.5.b).

- VERIFY the available shutdown reactivity recorded in step F.5.a is greater than or equal to the minimum required Shutdown Margin Limit recorded in step F.5.b. (Step F.5.c).

- Inform SM that Shutdown Margin is NOT met and LCOAR 1BwOL TRM 3.1.h needs to be initiated.

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Review Offsite AC Power Availability Weekly Surveillance

JPM No.: N-75a

REV: 6

TPO No.: IV.C.AP-04

K&A No.: (062K1.04)

TASK No.: AP-017

K&A IMP: 3.7/4.2

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 4

JPM TIME: _____ MINUTES

CRITICAL TIME: NA

APPROX COMPLETION TIME 7 MINUTES

EVALUATION METHOD:

X PERFORM
_____ SIMULATE

LOCATION:

_____ IN PLANT
 X SIMULATOR

GENERAL REFERENCES:

1. 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance.

MATERIALS:

Copy of completed 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance.

TASK STANDARDS:

1. Review the completed surveillance 1BwOSR 3.8.1.1 Rev. 0; Unit One Offsite AC Power Availability Weekly Surveillance and determine it does not meet acceptance criteria.
2. Demonstrates the use of good Core Work Practices (CWP).

TASK CONDITIONS:

1. You are the Unit 1 Unit Supervisor.
2. Unit 1 is at 100% power.
3. Unit 2 is at 100% power.
4. Unit 2 4KV ESF buses are being supplied from Unit 2 SATs.
5. All Unit 2 Switchyard and 4KV breakers are available.

INITIATING CUES:

1. The 1A EDG has just been declared inoperable and you directed the NSO to perform 1BwOSR 3.8.1.1 Rev. 0, Unit One Offsite AC Power Availability Weekly Surveillance, subsection F.1.0, steps F.1.1 through F.1.16. He has just handed you the surveillance for your review. You are to conduct the Unit Supervisor review.

RECORD START TIME _____

Note: Provide cues only if not performing in the simulator.

- | | | | | | |
|----|---|---|--------------------------|--------------------------|--------------------------|
| 1. | Review Initial Data. | On the Modes 1-4 Data Sheet, | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | (CUE: All Prerequisites, Precautions, Limitations and Actions have been met.) | REVIEW:
Unit 1 Mode
Unit 2 Mode | | | |
| 2. | Review/Check 345 KV Transmission Line Status. | On the Modes 1-4 Data Sheet 345KV Swyd drawing (page D-6), | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | REVIEW:
"ENERGIZED" for each: | | | |
| | (CUE: All 345 KV Transmission Lines are energized.) | <ul style="list-style-type: none">• Line 0104• Line 2001• Line 2002• Line 0103• Line 2003• Line 2004 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Review the surveillance to indicate all closed and open switchyard breakers | Check status of all 345 KV Swyd breakers
On the Data Sheet Drawing of the 345 KV swyd, | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | (CUE: All Swyd breakers indicate closed.) | REVIEW:
Closed breakers with 'X'
Open breakers with 'O' | | | |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

- *4. Review the paths traced for independent power sources to the Unit 1 and 2 SATs.

On the Data Sheet Drawing of the 345 KV Swyd,
REVIEW:

- Single path along the dashed lines from any energized offsite power source to the Unit 1 SAT banks.

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- Second path along the dashed lines from a second independent energized offsite power source to the Unit 2 SAT banks.
(Can't retrace any portion of the first path)

☐ ☐ ☐

- o Return the Surveillance to the NSO to re-do/correct.

(Note: Examinee must identify the fact that the selected lines are on the same tower and per the note, this is what makes the acceptance criteria NOT met. If the examinee does NOT identify the mistake, he fails this JPM. If he signs the cover sheet without comment signifying it is UNSAT, then the examinee has failed the JPM.)

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Review a Liquid Release Package.

JPM No.: S-41

REV: 0

TPO No.: VIII.C.HP-001

K&A No.: (G2.3.6)

TASK No.: S-HP-001

K&A IMP: 2.1 / 3.1

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 3

JPM TIME: _____ MINUTES

CRITICAL TIME: N/A

APPROX COMPLETION TIME 10 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. BwOP WX-501T1, Rev. 15, "Liquid Release Tank 0WX01T release Form."
2. BwOP WX-501T2, Rev. 3, "Release Time Table."
3. Release Calculation form.

MATERIALS: Copy of BwOP WX-501T1 (filled in through step E.9).

TASK STANDARDS:

1. Complete applicable portions of steps E.10, and Section F of BwOP WX-501T1.
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are the Control Room Supervisor.
2. All plant systems and controls are normal for the current plant conditions.

INITIATING CUES:

1. Liquid Release package paperwork L-01-042 is complete through step E.9, and is ready for your review.
2. The SM has directed you to complete sections E and F as applicable, and then inform the SM of the results of your review.

Note: Hand the partially completed package to the examinee.

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

RECORD START TIME _____

1. Refer to partially completed BwOP WX-501T1, Section E.10.

(CUE:

Reads Step E.10, notices no signature (yet) and turns back to beginning of section E (page 18).

☐☐☐

2. Reviews steps E.1-5.

(CUE:

Reviews steps E.1-5:

☐☐☐

- Step 1 initialed.
- Step 2 initialed and Low Flow circled.
- Steps 3a and 3b initialed and values filled in for alarm setpoints.
- Steps 4a and 4b initialed and values filled in for alarm setpoints.
- Steps 5a, 5b, and 5c initialed.

- *3. Determines step E.6, should be complete and is not initialed.

(CUE: As SM, ask what is wrong with the paperwork. After the examinee states the interlock check for the low flow release path was not performed, conclude the JPM.

Reviews step E.6 and determines release may not be performed:

☐☐☐

- Step 6 not initialed as performed.
- Informs SM release paperwork not completed properly.
- Does NOT sign step E.10.
- Does NOT sign step F.1.

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK TITLE: Perform Transfer of Command and Control to the TSC.

JPM No.: S-40

REV: 0

TPO No.: VII.F.ZP-022-A

K&A No.: (2.4.38)

TASK No.: S-ZP-022

K&A IMP: 2.2 / 4.0

TRAINEE: _____

EVALUATOR: _____

DATE: _____

The Trainee: PASSED _____ this JPM.

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

CRITICAL ELEMENTS: (*) 1-5

JPM TIME: _____ MINUTES

CRITICAL TIME: N/A

APPROX COMPLETION TIME 9 MINUTES

EVALUATION METHOD:

☒ PERFORM
☐ SIMULATE

LOCATION:

☐ IN PLANT
☒ SIMULATOR

GENERAL REFERENCES:

1. EP-AA-112 Emergency Response Organization (ERO)/ Emergency Response Facility (ERF) Activation and Operation, Attachment 5 Command and Control Turnover Briefing Form, Rev. 1.

MATERIALS: Copy of EP-AA-112 Attachment 5.

TASK STANDARDS:

1. Fill out and perform the turnover of Command and Control to the TSC in accordance with Attachment 5 of EP-AA-112.
2. Demonstrates the use of good Core Work Practices.

TASK CONDITIONS:

1. You are the Shift Manager / Acting Station Director.
2. Perform the turnover of Command and Control to the TSC during a Site Emergency.

INITIATING CUES:

1. Unit 1 is in an emergency situation resulting in a reactor trip and safety injection. Conditions have degraded and you declared a Site Emergency under EAL FS1 30 minutes ago.
2. Entry into 1BwFR-H.1, "Loss of Secondary Heat Sink" has been entered and implemented.
3. The TSC is fully activated and ready in all aspects to assume Command and Control. A rough log has been kept.

Note: Hand copy of rough log and partially completed Acting Station Director Checklist to examinee.

RECORD START TIME _____

Note: Use the KEY to evaluate the information transmitted to the TSC to effect the turnover.

- | | | |
|---|---|---------------------|
| *1. Refer to EP-AA-112
Attachment 5.

(CUE: After locating
Attachment 5, provide
a copy.)

(Note: Information to fill
out the turnover form
is available from the
rough log. No cues
need be given.) | Locate and Open
EP-AA-112 Attachment 5
and fill out the
following information:

• Current Classification
EAL.
• Time.
• Unit.
• Conditions met to
determine this
classification.
• Utility Message #
• State Message #
• Time for both
• Latest ENS Time | □ □ □ |
| *2. Perform turnover.

(CUE: As communicator in
the TSC, answer YES
to each of the parts
of question #3 on the
turnover form.) | Determines TSC ready to
perform non-delegable
functions (Circles YES
for each on form):

• Classify events.
• Determine PARs and
make notifications.
• Authorize exposures
beyond 10CFR20 limits.
• Authorize use of
thyroid blocking
agents. | □ □ □ |
| *3. Determines TSC will
perform NARS, ENS, HPN,
and environs Teams.

(CUE: As a communicator in
the TSC, if asked
you'll perform the
NARS, ENS, HPN and
Environs Teams reply
yes.) | Upon transfer of command
and control, determines
TSC will perform the
following functions
(Circles TSC for each on
form):

• NARS
• ENS
• HPN
• Environs Teams. | □ □ □ |

PERFORMANCE CHECKLIST

STANDARDS

SAT UNSAT N/A

*4. Transfers other pertinent
 information.

Transfers other pertinent
information:

☐ ☐ ☐

(CUE: As a communicator in
 the TSC, acknowledge
 the information
 transferred from the
 control room for
 question #5 on the
 form. Do NOT provide
 answers, only
 acknowledge what is
 said.)

- ERDS Activated (YES)
- In-plant Teams (YES)
- Assembly (YES)
- Rad Concerns (NO)
- Offsite Assistance
 Requested (NO)
- Evacuation (NO)

*5. Determines TSC has Command
 and Control.

Determines TSC has
Command and Control:

☐ ☐ ☐

- Ready to receive
 Command and Control
 (Circles TSC and YES).
- Command and Control
 transferred (Circles
 TSC, and logs Time.)
- Acknowledges TSC has
 command and control.
- o Announces transfer to
 control room team.

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS: