

REVISED EXAMINATION OUTLINE - ES-401-1 AND ES-401-2

FOR THE MONTICELLO INITIAL EXAMINATION - SEP 2003

| Facility: <i>Monticello</i> Date of Exam: <i>9/22/03</i> Exam Level: <i>RO</i> | | | | | | | | | | | | | | |
|---|-------------|---------------------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-----|-------------|----|
| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total | |
| | | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G * | | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 2 | 3 | 2 | | | | 2 | 3 | | | | 1 | 13 |
| | 2 | 2 | 5 | 5 | | | | 4 | 2 | | | | 1 | 19 |
| | 3 | 0 | 1 | 1 | | | | 1 | 1 | | | | 0 | 4 |
| | Tier Totals | 4 | 9 | 8 | | | | 7 | 6 | | | | 2 | 36 |
| 2. Plant Systems | 1 | 2 | 2 | 2 | 4 | 1 | 2 | 4 | 3 | 3 | 4 | 1 | 28 | |
| | 2 | 1 | 2 | 1 | 2 | 2 | 0 | 2 | 3 | 2 | 2 | 2 | 19 | |
| | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 4 | |
| | Tier Totals | 3 | 4 | 3 | 7 | 3 | 3 | 7 | 6 | 5 | 7 | 3 | 51 | |
| 3. Generic Knowledge and Abilities | | | | Cat 1 | | Cat 2 | | Cat 3 | | Cat 4 | | 13 | | |
| | | | | 4 | | 2 | | 4 | | 3 | | | | |
| <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. 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 exam must total 100 points.</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 SRO 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> | | | | | | | | | | | | | | |

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|---|------|--------|
| 295006 | SCRAM / 1 | | | X | | | | AK3.06 - Recirculation pump speed reduction: Plant-Specific | 3.2 | 1 |
| 295006 | SCRAM / 1 | | | | | X | | AA2.06 - Cause of reactor SCRAM | 3.5 | 1 |
| 295007 | High Reactor Pressure / 3 | | X | | | | | AK2.03 - RHR/LPCI: Plant-Specific | 3.1 | 1 |
| 295007 | High Reactor Pressure / 3 | | | | | X | | AA2.02 - Reactor power | 4.1* | 1 |
| 295009 | Low Reactor Water Level / 2 | | X | | | | | AK2.03 - Recirculation system | 3.1 | 1 |
| 295010 | High Drywell Pressure / 5 | | X | | | | | AK2.02 - Drywell/suppression chamber differential pressure: Mark-I&II | 3.3 | 1 |
| 295010 | High Drywell Pressure / 5 | | | | X | | | AA1.05 - Drywell/suppression vent and purge | 3.1 | 1 |
| 295024 | High Drywell Pressure / 5 | X | | | | | | EK1.01 - Drywell integrity: Plant-Specific | 4.1 | 1 |
| 295025 | High Reactor Pressure / 3 | | | | | | X | 2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 3.7 | 1 |
| 295031 | Reactor Low Water Level / 2 | | | X | | | | EK3.01 - Automatic depressurization system actuation | 3.9 | 1 |
| 295031 | Reactor Low Water Level / 2 | | | | X | | | EA1.10 - Control rod drive | 3.6 | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | X | | EA2.06 - Reactor pressure | 4.0 | 1 |
| 500000 | High Containment Hydrogen Concentration / 5 | X | | | | | | EK1.01 - Containment integrity | 3.3 | 1 |

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

Group Point Total: 13

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295001 | Partial or Complete Loss of Forced Core Flow Circulation / 1 | | X | | | | | AK2.04 - Reactor/turbine pressure regulating system: Plant-Specific | 3.3 | 1 |
| 295002 | Loss of Main Condenser Vacuum / 3 | | | | | X | | AA2.02 - Reactor power: Plant-Specific | 3.2 | 1 |
| 295008 | High Reactor Water Level / 2 | | X | | | | | AK2.11 - Main steam | 3.1 | 1 |
| 295012 | High Drywell Temperature / 5 | X | | | | | | AK1.01 - Pressure/temperature relationship | 3.3 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | X | | | | AK3.01 - Suppression pool cooling operation | 3.6 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | | | X | | AA2.01 - Suppression pool temperature | 3.8 | 1 |
| 295016 | Control Room Abandonment / 7 | | X | | | | | AK2.02 - Local control stations: Plant-Specific | 4.0* | 1 |
| 295016 | Control Room Abandonment / 7 | | | X | | | | AK3.03 - Disabling control room controls | 3.5 | 1 |
| 295017 | High Off-Site Release Rate / 9 | | X | | | | | AK2.12 - Standby gas treatment/FRVS | 3.4 | 1 |
| 295018 | Partial or Complete Loss of Component Cooling Water / 8 | | | X | | | | AK3.05 - Placing standby heat exchanger in service | 3.2 | 1 |
| 295018 | Partial or Complete Loss of Component Cooling Water / 8 | | | | | | X | 2.1.20 - Ability to execute procedure steps. | 4.3 | 1 |
| 295019 | Partial or Complete Loss of Instrument Air / 8 | | | | X | | | AA1.03 - Instrument air compressor power supplies | 3.0 | 1 |
| 295026 | Suppression Pool High Water Temperature / 5 | | | X | | | | EK3.04 - †SBLC injection | 3.7 | 1 |
| 295028 | High Drywell Temperature / 5 | | | | X | | | EA1.05 - ADS | 3.7 | 1 |

Facility: Monticello Nuclear Generating

BWR ROK Minimization Outline

Printed: 09/02/20

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295030 | Low Suppression Pool Water Level / 5 | | | | X | | | EA1.05 - HPCI | 3.5 | 1 |
| 295030 | Low Suppression Pool Water Level / 5 | | X | | | | | EK2.08 - SRV discharge submergence | 3.5 | 1 |
| 295033 | High Secondary Containment Area Radiation Levels / 9 | X | | | | | | EK1.02 - Personnel protection | 3.9 | 1 |
| 295034 | Secondary Containment Ventilation High Radiation / 9 | | | X | | | | EK3.02 - Starting SBTG/FRVS: Plant-Specific | 4.1 | 1 |
| 295038 | High Off-Site Release Rate / 9 | | | | X | | | EA1.07 - Control room ventilation: Plant-Specific | 3.6 | 1 |

K/A Category Totals: 2 5 5 4 2 1

Group Point Total: 19

Facility: Monticello Nuclear Generating

BWR ROK Commissioning Outline

Printed: 09/02/20

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3 Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|--|------|--------|
| 295032 | High Secondary Containment Area Temperature / 5 | | X | | | | | EK2.05 - Temperature sensitive instrumentation | 3.2 | 1 |
| 295035 | Secondary Containment High Differential Pressure / 5 | | | | X | | | EA1.02 - SBTG/FRVS | 3.8 | 1 |
| 295036 | Secondary Containment High Sump/Area Water Level / 5 | | | | | X | | EA2.03 - Cause of the high water level | 3.4 | 1 |
| 295036 | Secondary Containment High Sump/Area Water Level / 5 | | | X | | | | EK3.01 - Emergency depressurization | 2.6 | 1 |

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

Group Point Total: 4

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 201001 | Control Rod Drive Hydraulic System / 1 | | | | | | | | | X | | | A3.03 - System pressure | 2.7 | 1 |
| 201002 | Reactor Manual Control System / 1 | | | | | | | X | | | | | A1.04 - Overall reactor power | 3.6 | 1 |
| 202002 | Recirculation Flow Control System / 1 | | | | X | | | | | | | | K4.06 - Recirculation pump adequate NPSH: Plant-Specific | 3.1 | 1 |
| 203000 | RHR/LPCI: Injection Mode (Plant Specific) / 2 | | X | | | | | | | | | | K2.03 - Initiation logic | 2.7* | 1 |
| 203000 | RHR/LPCI: Injection Mode (Plant Specific) / 2 | | | | | | | | X | | | | A2.17 - Keep fill system failure | 3.3 | 1 |
| 206000 | High Pressure Coolant Injection System / 2 | | | | | | | | | | X | | A4.10 - System pumps: BWR-2, 3, 4 | 3.7 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | | | | X | | | | | | | | K4.05 - Pump minimum flow | 2.6 | 1 |
| 212000 | Reactor Protection System / 7 | | | | | | | | | X | | | A3.04 - System status lights and alarms | 3.9* | 1 |
| 215003 | Intermediate Range Monitor (IRM) System / 7 | | | | | | | | | | X | | A4.05 - Trip bypasses | 3.4 | 1 |
| 215004 | Source Range Monitor (SRM) System / 7 | | | X | | | | | | | | | K3.01 - RPS | 3.4 | 1 |
| 215004 | Source Range Monitor (SRM) System / 7 | | | | | | | | | | X | | A4.04 - SRM drive control switches | 3.2 | 1 |
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | X | | | | | | | | | | | K1.04 - LPRM channels | 3.6 | 1 |

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Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | | | | | | | X | | | | | A1.05 - Lights and alarms | 3.3 | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | X | | | | | | | | | K3.14 - High pressure coolant injection: Plant-Specific | 3.8 | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | | | | | X | | | | | A1.01 - Recorders and meters | 3.4 | 1 |
| 217000 | Reactor Core Isolation Cooling System (RCIC) / 2 | | | | X | | | | | | | | K4.04 - Prevents turbine damage: Plant-Specific | 3.0 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | X | | | | | | | | | | | K1.03 - Containment/drywell atmosphere control | 3.2 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | | | | | | | | X | | | | A2.03 - Safety/relief valve leaking or stuck open | 4.0 | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | | | | | | | | | X | | | A3.03 - SPDS/ERIS/CRIDS/GDS: Plant-Specific | 2.5* | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | | | | X | | | | | | | | K4.05 - Single failures will not impair the function ability of the system | 2.9 | 1 |
| 239002 | Relief/Safety Valves / 3 | | | | | | X | | | | | | K6.03 - A.C. power: Plant-Specific | 2.7* | 1 |
| 239002 | Relief/Safety Valves / 3 | | | | | | | | | | X | | A4.06 - Reactor water level | 3.9 | 1 |
| 241000 | Reactor/Turbine Pressure Regulating System / 3 | | | | | | | X | | | | | A1.07 - Bypass valve position | 3.8 | 1 |

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 241000 | Reactor/Turbine Pressure Regulating System / 3 | | | | | X | | | | | | | K5.04 - Turbine inlet pressure vs. reactor pressure | 3.3 | 1 |
| 259001 | Reactor Feedwater System / 2 | | X | | | | | | | | | | K2.01 - Reactor feedwater pump(s): Motor-Driven-Only | 3.3 | 1 |
| 259001 | Reactor Feedwater System / 2 | | | | | | | | X | | | | A2.05 - Loss of applicable plant air systems | 3.0 | 1 |
| 259002 | Reactor Water Level Control System / 2 | | | | | | | | | | | X | 2.4.45 - Ability to prioritize and interpret the significance of each annunciator or alarm. | 3.3 | 1 |
| 261000 | Standby Gas Treatment System / 9 | | | | | | X | | | | | | K6.03 - Emergency diesel generator system | 3.0 | 1 |

K/A Category Totals: 2 2 2 4 1 2 4 3 3 4 1

Group Point Total: 28

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 201006 | Rod Worth Minimizer System (RWM) (Plant Specific) / 7 | | | | | | | X | | | | | A1.03 - Latched group indication: P-Spec(Not-BWR6) | 2.9 | 1 |
| 205000 | Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | X | | | | | | | K5.02 - Valve operation | 2.8 | 1 |
| 205000 | Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | | | X | | | | | A1.05 - Reactor water level | 3.4 | 1 |
| 215002 | Rod Block Monitor System / 7 | | | | | | | | X | | | | A2.01 - Withdrawal of control rod in high power region of core: BWR-3, 4, 5 | 3.3 | 1 |
| 215002 | Rod Block Monitor System / 7 | | X | | | | | | | | | | K2.03 - APRM channels: BWR-3, 4, 5 | 2.8 | 1 |
| 219000 | RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5 | | | | | | | | | X | | | A3.01 - Valve operation | 3.3 | 1 |
| 219000 | RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5 | | | | | | | | X | | | | A2.02 - Pumps trips | 3.3 | 1 |
| 226001 | RHR/LPCI: Containment Spray System Mode / 5 | | | | | | | | | | X | | A4.14 - Suppression pool temperature | 3.3 | 1 |
| 230000 | RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | X | | | | | | | | | | | K1.05 - A.C. electrical | 3.2 | 1 |
| 245000 | Main Turbine Generator and Auxiliary Systems / 4 | | | | | | | | | | X | | A4.10 - Hydrogen gas pressure | 2.6 | 1 |
| 262001 | A.C. Electrical Distribution / 6 | | X | | | | | | | | | | K2.01 - Off-site sources of power | 3.3 | 1 |

Facility: Monticello Nuclear Generating

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Plant Systems - Tier 2 / Group 2

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 262001 | A.C. Electrical Distribution / 6 | | | | | | | | | | | X | 2.4.10 - Knowledge of annunciator response procedures. | 3.0 | 1 |
| 262002 | Uninterruptable Power Supply (A.C./D.C.) / 6 | | | | | | | | X | | | | A2.01 - Under voltage | 2.6 | 1 |
| 263000 | D.C. Electrical Distribution / 6 | | | | | X | | | | | | | K5.01 - Hydrogen generation during battery charging | 2.6 | 1 |
| 271000 | Offgas System / 9 | | | X | | | | | | | | | K3.02 - †Off-site radioactive release rate | 3.3 | 1 |
| 271000 | Offgas System / 9 | | | | X | | | | | | | | K4.05 - Redundancy | 2.6 | 1 |
| 290001 | Secondary Containment / 5 | | | | X | | | | | | | | K4.03 - Fluid leakage collection | 2.8 | 1 |
| 290001 | Secondary Containment / 5 | | | | | | | | | X | | | A3.02 - Normal building differential pressure: Plant-Specific | 3.5 | 1 |
| 400000 | Component Cooling Water System (CCWS) / 8 | | | | | | | | | | | X | 2.2.2 - Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. | 4.0 | 1 |

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

Group Point Total: 19

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|------------------------------|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 215001 | Traversing In-Core Probe / 7 | | | | | | | X | | | | | A1.03 - Valve status: Mark-I&II(Not-BWR1) | 2.6* | 1 |
| 234000 | Fuel Handling Equipment / 8 | | | | | | X | | | | | | K6.04 - †Refueling platform air system: Plant-Specific | 2.9 | 1 |
| 268000 | Radwaste / 9 | | | | | | | | | | X | | A4.01 - Sump integrators | 3.4 | 1 |
| 290002 | Reactor Vessel Internals / 5 | | | | X | | | | | | | | K4.04 - Moisture removal from generated steam | 2.8 | 1 |

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

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/02/2003

BWR RO Examination Outline

Form ES-401-5

Facility: Monticello Nuclear Generating

| 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 |
| | 2.1.32 | Ability to explain and apply system limits and precautions. | 3.4 | 1 |
| | 2.1.18 | Ability to make accurate, clear and concise logs, records, status boards, and reports. | 2.9 | 1 |
| | 2.1.22 | Ability to determine Mode of Operation. | 2.8 | 1 |
| Category Total: | | | 4 | |
| Equipment Control | 2.2.30 | Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area / communication with fuel storage facility / systems operated from the control room in support of fueling operations / and supporting instrumentation. | 3.5 | 1 |
| | 2.2.13 | Knowledge of tagging and clearance procedures. | 3.6 | 1 |
| Category Total: | | | 2 | |
| Radiation Control | 2.3.11 | Ability to control radiation releases. | 2.7 | 1 |
| | 2.3.2 | Knowledge of facility ALARA program. | 2.5 | 1 |
| | 2.3.9 | Knowledge of the process for performing a containment purge. | 2.5 | 1 |
| | 2.3.4 | Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. | 2.5 | 1 |
| Category Total: | | | 4 | |
| Emergency Plan | 2.4.24 | Knowledge of loss of cooling water procedures. | 3.3 | 1 |
| | 2.4.5 | Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. | 2.9 | 1 |
| | 2.4.17 | Knowledge of EOP terms and definitions. | 3.1 | 1 |
| Category Total: | | | 3 | |
| Generic Total: | | | 13 | |

| Facility: <i>Monticello</i> Date of Exam: <i>9/22/03</i> Exam Level: <i>SRO</i> | | | | | | | | | | | | | |
|---|-------------|---------------------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-----|-------------|
| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total |
| | | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G * | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 3 | 6 | 5 | | | | 5 | 5 | | | 2 | 26 |
| | 2 | 2 | 2 | 4 | | | | 5 | 2 | | | 2 | 17 |
| | Tier Totals | 5 | 8 | 9 | | | | 10 | 7 | | | 4 | 43 |
| | | | | | | | | | | | | | |
| 2. Plant Systems | 1 | 2 | 2 | 2 | 3 | 1 | 2 | 3 | 3 | 3 | 1 | 1 | 23 |
| | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 13 |
| | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 4 |
| | Tier Totals | 3 | 3 | 4 | 5 | 2 | 3 | 6 | 4 | 4 | 3 | 3 | 40 |
| 3. Generic Knowledge and Abilities | | | | Cat 1 | | Cat 2 | | Cat 3 | | Cat 4 | | 17 | |
| | | | | 5 | | 5 | | 3 | | 4 | | | |
| <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. 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 exam must total 100 points.</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 SRO 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> | | | | | | | | | | | | | |

BWR SRO(mination Outline

Printed: 09/02/1

Facility: Monucello Nuclear Generating

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295003 | Partial or Complete Loss of A.C. Power / 6 | | | | | | X | 2.4.27 - Knowledge of fire in the plant procedure. | 3.5 | 1 |
| 295006 | SCRAM / 1 | | | X | | | | AK3.06 - Recirculation pump speed reduction: Plant-Specific | 3.3 | 1 |
| 295007 | High Reactor Pressure / 3 | | X | | | | | AK2.03 - RHR/LPCI: Plant-Specific | 3.2 | 1 |
| 295007 | High Reactor Pressure / 3 | | | | | X | | AA2.02 - Reactor power | 4.1* | 1 |
| 295009 | Low Reactor Water Level / 2 | | X | | | | | AK2.03 - Recirculation system | 3.2 | 1 |
| 295010 | High Drywell Pressure / 5 | | | | X | | | AA1.05 - Drywell/suppression vent and purge | 3.4 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | X | | | | AK3.01 - Suppression pool cooling operation | 3.8 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | | | X | | AA2.01 - Suppression pool temperature | 4.0 | 1 |
| 295015 | Incomplete SCRAM / 1 | | | | X | | | AA1.02 - RPS | 4.2* | 1 |
| 295016 | Control Room Abandonment / 7 | | X | | | | | AK2.02 - Local control stations: Plant-Specific | 4.1* | 1 |
| 295016 | Control Room Abandonment / 7 | | | X | | | | AK3.03 - Disabling control room controls | 3.7* | 1 |
| 295017 | High Off-Site Release Rate / 9 | | X | | | | | AK2.06 - †Site emergency plan | 4.6* | 1 |
| 295017 | High Off-Site Release Rate / 9 | | X | | | | | AK2.12 - Standby gas treatment/FRVS | 3.7 | 1 |
| 295024 | High Drywell Pressure / 5 | X | | | | | | EK1.01 - Drywell integrity: Plant-Specific | 4.2* | 1 |

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|---|------|--------|
| 295025 | High Reactor Pressure / 3 | | | | | | X | 2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 4.4 | 1 |
| 295025 | High Reactor Pressure / 3 | X | | | | | | EK1.05 - †Exceeding safety limits | 4.7* | 1 |
| 295026 | Suppression Pool High Water Temperature / 5 | | | | | X | | EA2.02 - Suppression pool level | 3.9 | 1 |
| 295026 | Suppression Pool High Water Temperature / 5 | | | X | | | | EK3.04 - †SBLC injection | 4.1* | 1 |
| 295030 | Low Suppression Pool Water Level / 5 | | | | X | | | EA1.05 - HPCI | 3.5 | 1 |
| 295030 | Low Suppression Pool Water Level / 5 | | X | | | | | EK2.08 - SRV discharge submergence | 3.8 | 1 |
| 295031 | Reactor Low Water Level / 2 | | | X | | | | EK3.01 - Automatic depressurization system actuation | 4.2* | 1 |
| 295031 | Reactor Low Water Level / 2 | | | | X | | | EA1.10 - Control rod drive | 3.7 | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | X | | EA2.02 - Reactor water level | 4.2* | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | X | | EA2.06 - Reactor pressure | 4.1 | 1 |
| 295038 | High Off-Site Release Rate / 9 | | | | X | | | EA1.07 - Control room ventilation: Plant-Specific | 3.8 | 1 |
| 500000 | High Containment Hydrogen Concentration / 5 | X | | | | | | EK1.01 - Containment integrity | 3.9 | 1 |

K/A Category Totals: 3 6 5 5 5 2

Group Point Total: 26

Facility: Monticello Nuclear Generating

BWR SRO(mination Outline

Printed: 09/02/1

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|--|------|--------|
| 295001 | Partial or Complete Loss of Forced Core Flow Circulation / 1 | | X | | | | | AK2.04 - Reactor/turbine pressure regulating system: Plant-Specific | 3.3 | 1 |
| 295002 | Loss of Main Condenser Vacuum / 3 | | | | | X | | AA2.02 - Reactor power: Plant-Specific | 3.3 | 1 |
| 295004 | Partial or Complete Loss of D.C. Power / 6 | | | | X | | | AA1.02 - Systems necessary to assure safe plant shutdown | 4.1 | 1 |
| 295005 | Main Turbine Generator Trip / 3 | | | | X | | | AA1.02 - RPS | 3.6 | 1 |
| 295008 | High Reactor Water Level / 2 | | X | | | | | AK2.11 - Main steam | 3.3 | 1 |
| 295012 | High Drywell Temperature / 5 | | | | | | X | 2.4.21 - Knowledge of the parameters and logic used to assess the status of safety functions including: 1.Reactivity control 2.Core cooling and heat removal 3.Reactor coolant system integrity 4.Containment conditions 5.Radioactivity release control. | 4.3 | 1 |
| 295012 | High Drywell Temperature / 5 | X | | | | | | AK1.01 - Pressure/temperature relationship | 3.5 | 1 |
| 295018 | Partial or Complete Loss of Component Cooling Water / 8 | | | X | | | | AK3.05 - Placing standby heat exchanger in service | 3.3 | 1 |
| 295019 | Partial or Complete Loss of Instrument Air / 8 | | | | X | | | AA1.03 - Instrument air compressor power supplies | 3.0 | 1 |
| 295028 | High Drywell Temperature / 5 | | | | | | X | 2.4.16 - Knowledge of EOP implementation hierarchy and coordination with other support procedures. | 4.0 | 1 |
| 295028 | High Drywell Temperature / 5 | | | | X | | | EA1.05 - ADS | 3.7 | 1 |

Facility: Monticello Nuclear Generating

BWR SRO(mination Outline

Printed: 09/02/1

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295029 | High Suppression Pool Water Level / 5 | | | | | X | | EA2.03 - Drywell/containment water level | 3.5 | 1 |
| 295029 | High Suppression Pool Water Level / 5 | | | X | | | | EK3.03 - Reactor SCRAM | 3.5 | 1 |
| 295033 | High Secondary Containment Area Radiation Levels / 9 | X | | | | | | EK1.02 - Personnel protection | 4.2* | 1 |
| 295034 | Secondary Containment Ventilation High Radiation / 9 | | | X | | | | EK3.02 - Starting SBTG/FRVS: Plant-Specific | 4.1 | 1 |
| 295035 | Secondary Containment High Differential Pressure / 5 | | | | X | | | EA1.02 - SBTG/FRVS | 3.8 | 1 |
| 295036 | Secondary Containment High Sump/Area Water Level / 5 | | | X | | | | EK3.01 - Emergency depressurization | 2.8 | 1 |

K/A Category Totals: 2 2 4 5 2 2

Group Point Total: 17

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 203000 | RHR/LPCI: Injection Mode (Plant Specific) / 2 | | X | | | | | | | | | | K2.03 - Initiation logic | 2.9* | 1 |
| 203000 | RHR/LPCI: Injection Mode (Plant Specific) / 2 | | | | | | | | X | | | | A2.17 - Keep fill system failure | 3.5 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | | | | X | | | | | | | | K4.05 - Pump minimum flow | 2.6 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | | | | | | | | X | | | | A2.05 - Core spray line break | 3.6 | 1 |
| 212000 | Reactor Protection System / 7 | | | | | | | | | X | | | A3.04 - System status lights and alarms | 3.8 | 1 |
| 215004 | Source Range Monitor (SRM) System / 7 | | | X | | | | | | | | | K3.01 - RPS | 3.4 | 1 |
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | X | | | | | | | | | | | K1.04 - LPRM channels | 3.6 | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | X | | | | | | | | | K3.14 - High pressure coolant injection: Plant-Specific | 4.2* | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | | | | | X | | | | | A1.01 - Recorders and meters | 3.3 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | X | | | | | | | | | | | K1.03 - Containment/drywell atmosphere control | 3.3 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | | | | | | | | X | | | | A2.03 - Safety/relief valve leaking or stuck open | 4.2* | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | | | | | | | | | X | | | A3.03 - SPDS/ERIS/CRIDS/GDS: Plant-Specific | 2.8* | 1 |

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | | | | X | | | | | | | | K4.05 - Single failures will not impair the function ability of the system | 3.1 | 1 |
| 226001 | RHR/LPCI: Containment Spray System Mode / 5 | | | | | | | | | | X | | A4.14 - Suppression pool temperature | 3.6 | 1 |
| 239002 | Relief/Safety Valves / 3 | | | | | | X | | | | | | K6.03 - A.C. power: Plant-Specific | 2.9* | 1 |
| 241000 | Reactor/Turbine Pressure Regulating System / 3 | | | | | | | X | | | | | A1.07 - Bypass valve position | 3.7 | 1 |
| 241000 | Reactor/Turbine Pressure Regulating System / 3 | | | | | X | | | | | | | K5.04 - Turbine inlet pressure vs. reactor pressure | 3.3 | 1 |
| 259002 | Reactor Water Level Control System / 2 | | | | | | | X | | | | | A1.05 - FWRV/startup level control position: Plant-Specific | 2.9 | 1 |
| 261000 | Standby Gas Treatment System / 9 | | | | | | X | | | | | | K6.03 - Emergency diesel generator system | 3.1 | 1 |
| 262001 | A.C. Electrical Distribution / 6 | | X | | | | | | | | | | K2.01 - Off-site sources of power | 3.6 | 1 |
| 264000 | Emergency Generators (Diesel/Jet) / 6 | | | | | | | | | | | X | 2.4.38 - Ability to take actions called for in the facility emergency plan, including (if required)supporting or acting as emergency coordinator. | 4.0 | 1 |
| 290001 | Secondary Containment / 5 | | | | X | | | | | | | | K4.03 - Fluid leakage collection | 2.9 | 1 |
| 290001 | Secondary Containment / 5 | | | | | | | | | X | | | A3.02 - Normal building differential pressure: Plant-Specific | 3.5 | 1 |

Form ES-401-1

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|---|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 201002 | Reactor Manual Control System / 1 | | | | | | | X | | | | | A1.04 - Overall reactor power | 3.5 | 1 |
| 205000 | Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | X | | | | | | | K5.02 - Valve operation | 2.9 | 1 |
| 205000 | Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | | | | X | | | | | A1.05 - Reactor water level | 3.4 | 1 |
| 215002 | Rod Block Monitor System / 7 | | | | | | | | X | | | | A2.01 - Withdrawal of control rod in high power region of core: BWR-3, 4, 5 | 3.5 | 1 |
| 215002 | Rod Block Monitor System / 7 | | X | | | | | | | | | | K2.03 - APRM channels: BWR-3, 4, 5 | 2.9 | 1 |
| 219000 | RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5 | | | | | | | | | X | | | A3.01 - Valve operation | 3.3 | 1 |
| 230000 | RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | | | | | | | | | | X | | A4.09 - Indicating lights and alarms | 3.3 | 1 |
| 230000 | RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | X | | | | | | | | | | | K1.05 - A.C. electrical | 3.3 | 1 |
| 234000 | Fuel Handling Equipment / 8 | | | | | | X | | | | | | K6.04 - †Refueling platform air system: Plant-Specific | 3.7 | 1 |
| 234000 | Fuel Handling Equipment / 8 | | | | | | | | | | | X | 2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. | 4.0 | 1 |
| 271000 | Offgas System / 9 | | | X | | | | | | | | | K3.02 - †Off-site radioactive release rate | 3.9 | 1 |

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|---|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 271000 | Offgas System / 9 | | | | X | | | | | | | | K4.05 - Redundancy | 2.6 | 1 |
| 400000 | Component Cooling Water System (CCWS) / 8 | | | | | | | | | | | X | 2.2.2 - Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. | 3.5 | 1 |

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

Group Point Total: 13

Facility: Monticello Nuclear Generating

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|------------------------------|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 215001 | Traversing In-Core Probe / 7 | | | | | | | X | | | | | A1.03 - Valve status: Mark-I&II(Not-BWR1) | 2.8 | 1 |
| 268000 | Radwaste / 9 | | | | | | | | | | X | | A4.01 - Sump integrators | 3.6 | 1 |
| 290002 | Reactor Vessel Internals / 5 | | | | X | | | | | | | | K4.04 - Moisture removal from generated steam | 2.8 | 1 |
| 290002 | Reactor Vessel Internals / 5 | | | X | | | | | | | | | K3.01 - Reactor water level | 3.3 | 1 |

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

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/02/2003

BWR SRO Examination Outline

Form ES-401-5

Facility: Monticello Nuclear Generating

| Generic Category | KA | KA Topic | Imp. | Points |
|------------------------------|--------|---|----------|--------|
| Conduct of Operations | 2.1.7 | Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 4.4 | 1 |
| | 2.1.11 | Knowledge of less than one hour technical specification action statements for systems. | 3.8 | 1 |
| | 2.1.32 | Ability to explain and apply system limits and precautions. | 3.8 | 1 |
| | 2.1.18 | Ability to make accurate, clear and concise logs, records, status boards, and reports. | 3.0 | 1 |
| | 2.1.22 | Ability to determine Mode of Operation. | 3.3 | 1 |
| Category Total: | | | 5 | |
| Equipment Control | 2.2.8 | Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question. | 3.3 | 1 |
| | 2.2.13 | Knowledge of tagging and clearance procedures. | 3.8 | 1 |
| | 2.2.26 | Knowledge of refueling administrative requirements. | 3.7 | 1 |
| | 2.2.24 | Ability to analyze the affect of maintenance activities on LCO status. | 3.8 | 1 |
| | 2.2.32 | Knowledge of the effects of alterations on core configuration. | 3.3 | 1 |
| Category Total: | | | 5 | |
| Radiation Control | 2.3.11 | Ability to control radiation releases. | 3.2 | 1 |
| | 2.3.2 | Knowledge of facility ALARA program. | 2.9 | 1 |
| | 2.3.4 | Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. | 3.1 | 1 |
| Category Total: | | | 3 | |

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 09/02/2003

BWR SRO Examination Outline

Form ES-401-5

Facility: Monticello Nuclear Generating

| Generic Category | KA | KA Topic | Imp. | Points |
|------------------|--------|---|------|--------|
| Emergency Plan | 2.4.24 | Knowledge of loss of cooling water procedures. | 3.7 | 1 |
| | 2.4.5 | Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. | 3.6 | 1 |
| | 2.4.30 | Knowledge of which events related to system operations/status should be reported to outside agencies. | 3.6 | 1 |
| | 2.4.6 | Knowledge symptom based EOP mitigation strategies. | 4.0 | 1 |

Category Total: 4

Generic Total: 17