### Form 7.1-PWR Written Examination Outline for Senior Operators Limited to Fuel Handling for Pressurized-Water Reactors

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| Facility: Date of Exam: | | | | | | | | | | | | | | | | |
| Tier | K/A Category Points | | | | | | | | | | | | | | | |
| K1 | K2 | K3 | K4 | K5 | | K6 | | A1 | A2 | | A3 | A4 | G\* | Total |
| 1. Emergency and Abnormal Plant Evolutions |  |  |  |  |  | |  | |  |  | |  |  |  | 10 |
| 2. Plant  Systems |  |  |  |  |  | |  | |  |  | |  |  |  | 20 |
| 3. Generic Knowledge and Abilities Categories | 1 | | 2 | | | 3 | | 4 | | | Fundamentals | | | | 10 |
|  | |  | | |  | |  | | |  | | | |
| Notes:   1. Ensure that at least one topic from every knowledge and ability (K/A) category is sampled within each tier. 2. The point total for each tier in the proposed outline must match that specified in the table. The final point total for each tier may deviate by ±1 from that specified in the table. The final exam must total 40 points. 3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system (except fuel handling equipment) or evolution (except refueling accident). 4. The shaded areas are not applicable to the category/tier. 5. Select the generic (G\*) K/As in Tiers 1 and 2 from Section 2 of the applicable K/A catalog, but the topics must be relevant to the applicable evolution/system. 6. Systems/evolutions within each tier are identified on the associated outline. Enter the K/A numbers, a brief description of each topic, importance ratings (IRs) for the senior reactor operator license level, and the point totals (#) for each system and category. Enter the tier totals for each category in the table above. 7. For Tier 3, select topics from Sections 2, 5, and 6 of the applicable K/A catalog. A minimum of four Tier 3 questions shall include basic reactor theory, component, and thermodynamic topics from Sections 5 and 6 of the applicable K/A catalog that apply to fuel handling operations (place these items in the “Fundamental” category). Enter the K/A numbers, descriptions, IRs, and point totals (#) on Form 7.1‑GEN. 8. Eliminate inapplicable or inappropriate K/A statements by (1) discarding randomly selected K/As during the outline development process or (2) prescreening the entire K/A catalog to eliminate inappropriate K/As before beginning the random selection process. Use the facility licensee’s job task analysis for fuel handlers as the basis for eliminating or adding testable topics. 9. \* These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.   \*\* These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. | | | | | | | | | | | | | | | | |

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| **ES-7.1 Form 7.1-PWR**  **Written Examination Outline for Senior Operators Limited to Fuel Handling for Pressurized-Water Reactors**  **Emergency and Abnormal Plant Evolutions—Tier 1** | | | | | | | | | |
| E/APE #/Name/Safety Function | K1 | K2 | K3 | A1 | A2 | G | K/A Topic(s) | IR | # |
| 025 Loss of RHR System |  |  |  |  |  |  |  |  |  |
| 026 Loss of Component Cooling Water |  |  |  |  |  |  |  |  |  |
| 032 Loss of Source‑Range Nuclear Instrumentation |  |  |  |  |  |  |  |  |  |
| 036 (BW/A08) Fuel Handling Accident |  |  |  |  |  |  |  |  |  |
| 061 ARM System Alarms |  |  |  |  |  |  |  |  |  |
| 033 Loss of Intermediate‑Range Nuclear Instrumentation |  |  |  |  |  |  |  |  |  |
| 055 Station Blackout |  |  |  |  |  |  |  |  |  |
| 056 Loss of Offsite Power |  |  |  |  |  |  |  |  |  |
| 057 Loss of Vital AC Instrument Bus |  |  |  |  |  |  |  |  |  |
| 058 Loss of DC Power |  |  |  |  |  |  |  |  |  |
| 062 Loss of Nuclear Service Water |  |  |  |  |  |  |  |  |  |
| 065 Loss of Instrument Air |  |  |  |  |  |  |  |  |  |
| 067 Plant Fire on Site |  |  |  |  |  |  |  |  |  |
| 069 (W/E14) Loss of CTMT Integrity |  |  |  |  |  |  |  |  |  |
| 078\* RCS Leak |  |  |  |  |  |  |  |  |  |
| W/E16 High Containment Radiation |  |  |  |  |  |  |  |  |  |
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| K/A Category Totals: |  |  |  |  |  |  | Tier Point Total: | | 10 |

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| **ES-7.1 Form 7.1-PWR**  **Written Examination Outline for Senior Operators Limited to Fuel Handling for Pressurized-Water Reactors**  **Plant Systems—Tier 2** | | | | | | | | | | | | | | |
| System #/Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | K/A Topic(s) | IR | # |
| 005 Residual Heat Removal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 015 Nuclear Instrumentation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 033 Spent Fuel Pool Cooling |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 034 Fuel Handling Equipment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 103 Containment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 062 AC Electrical Distribution |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 063 DC Electrical Distribution |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 002 Reactor Coolant |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 004 Chemical and Volume Control |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 008 Component Cooling Water |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 013 Engineered Safety Features Actuation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 064 Emergency Diesel Generator |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 072 Area Radiation Monitoring |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 076 Service Water |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 078 Instrument Air |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 079\*\* Station Air |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 086 Fire Protection |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| K/A Category Totals: |  |  |  |  |  |  |  |  |  |  |  | Tier Point Total: | | 20 |

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| Facility: Date of Exam: | | | | | | | | | | | | | | | |
| Tier | K/A Category Points | | | | | | | | | | | | | | |
| K1 | K2 | K3 | K4 | K5 | | K6 | | A1 | A2 | | A3 | A4 | G | Total |
| 1. Emergency and Abnormal Plant Evolutions |  |  |  |  |  | |  | |  |  | |  |  |  | 10 |
| 2. Plant  Systems |  |  |  |  |  | |  | |  |  | |  |  |  | 20 |
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| Notes:   1. Ensure that at least one topic from every knowledge and ability (K/A) category is sampled within each tier. 2. The point total for each tier in the proposed outline must match that specified in the table. The final point total for each tier may deviate by ±1 from that specified in the table. The final exam must total 40 points. 3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system (except fuel handling equipment) or evolution (except refueling accident). 4. The shaded areas are not applicable to the category/tier. 5. Select the generic (G) K/As in Tiers 1 and 2 from Section 2 of the applicable K/A catalog, but the topics must be relevant to the applicable evolution/system. 6. Systems/evolutions within each tier are identified on the associated outline. Enter the K/A numbers, a brief description of each topic, importance ratings (IRs) for the senior reactor operator license level, and the point totals (#) for each system and category. Enter the tier totals for each category in the table above. 7. For Tier 3, select topics from Sections 2, 5, and 6 of the applicable K/A catalog. A minimum of four Tier 3 questions shall include basic reactor theory, component, and thermodynamic topics from Sections 5 and 6 of the applicable K/A catalog that apply to fuel handling operations (place these items in the “Fundamental” category). Enter the K/A numbers, descriptions, IRs, and point totals (#) on Form 7.1‑GEN. 8. Eliminate inapplicable or inappropriate K/A statements by (1) discarding randomly selected K/As during the outline development process or (2) prescreening the entire K/A catalog to eliminate inappropriate K/As before beginning the random selection process. Use the facility licensee’s job task analysis for fuel handlers as the basis for eliminating or adding testable topics. | | | | | | | | | | | | | | | |