

| Facility Browns Ferry                             |             | Date of Exam: 2012     |     |     |     |     |     |     |     |     |     |     |       |                 |   |    |       |    |   |
|---|-------------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----------------|---|----|-------|----|---|
| Tier  | Group       | RO K/A Category Points |     |     |     |     |     |     |     |     |     |     |       | SRO-Only Points |   |    |       |    |   |
|   |             | K 1                    | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G * | Total | A2              |   | G* | Total |    |   |
| 1.<br>Emergency &<br>Abnormal Plant<br>Evolutions | 1           | 4                      | 3   | 3   | N/A |     |     | 4   | 3   | N/A |     |     | 3     | 20              | 4 |    | 3     | 7  |   |
|   | 2           | 1                      | 1   | 1   |     |     |     | 2   | 1   |     |     |     | 1     | 7               | 2 |    | 1     | 3  |   |
|   | Tier Totals | 5                      | 4   | 4   |     |     |     | 6   | 4   |     |     |     | 4     | 27              | 6 |    | 4     | 10 |   |
| 2.<br>Plant<br>Systems                            | 1           | 2                      | 3   | 3   | 3   | 3   | 2   | 3   | 2   | 2   | 1   | 2   | 26    | 3               |   | 2  | 5     |    |   |
|   | 2           | 1                      | 1   | 1   | 1   | 2   | 1   | 1   | 1   | 1   | 1   | 1   | 12    | 0               | 2 | 1  | 3     |    |   |
|   | Tier Totals | 3                      | 4   | 4   | 4   | 5   | 3   | 4   | 3   | 3   | 2   | 3   | 38    | 5               |   | 3  | 8     |    |   |
| 3. Generic Knowledge and Abilities<br>Categories  |             |                        |     |     | 1   |     | 2   |     | 3   |     | 4   |     | 10    | 1               |   | 2  | 3     | 4  | 7 |
|   |             |                        |     |     | 3   |     | 3   |     | 2   |     | 2   |     |       | 2               |   | 2  | 2     | 1  |   |

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

| ES-401   |        | BWR Examination Outline<br>Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO) |        |        |        |        |                        | Form ES-401-1 |      |
|--|--------|--|--------|--------|--------|--------|------------------------|---------------|------|
| E/APE # / Name / Safety Function   | K<br>1 | K<br>2   | K<br>3 | A<br>1 | A<br>2 | G      | K/A Topic(s)           | IR            | #    |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4              | R      |  |        |        |        |        | (R) AK1.03             |               |      |
| 295003 Partial or Complete Loss of AC / 6  |        |  |        |        | R<br>S |        | (R) AA2.02 (S) AA2.05  |               |      |
| 295004 Partial or Total Loss of DC Pwr / 6   |        |  |        | R      |        |        | (R) AA1.01             |               |      |
| 295005 Main Turbine Generator Trip / 3   |        |  |        | R      |        |        | (R) AA1.01             |               |      |
| 295006 SCRAM / 1   | R      |  |        |        |        |        | (R) AK1.02             |               |      |
| 295016 Control Room Abandonment / 7  |        |  |        |        |        | R      | (R) G2.1.32            |               |      |
| 295018 Partial or Total Loss of CCW / 8  |        |  |        | R      |        |        | (R) AA1.02             |               |      |
| 295019 Partial or Total Loss of Inst. Air / 8  |        |  |        |        | S      | R      | (R) G2.2.39 (S) AA2.02 |               |      |
| 295021 Loss of Shutdown Cooling / 4  |        |  |        | R      |        |        | (R) AA2.07             |               |      |
| 295023 Refueling Acc / 8   |        |  | R      |        |        | S      | (R) AK3.04 (S) G2.2.40 |               |      |
| 295024 High Drywell Pressure / 5   |        |  |        |        |        | R<br>B | (R) G2.4.8 (S) G2.4.21 |               |      |
| 295025 High Reactor Pressure / 3   |        |  |        |        | R      |        | (R) EA2.01             |               |      |
| 295026 Suppression Pool High Water Temp. / 5   |        |  |        | R      |        |        | (R) EA1.01             |               |      |
| 295027 High Containment Temperature / 5  |        |  |        |        |        |        |                        |               |      |
| 295028 High Drywell Temperature / 5  |        |  | R      |        |        |        | (R) EK3.04             |               |      |
| 295030 Low Suppression Pool Wtr Lvl / 5  |        | R  |        |        |        |        | (R) EK2.01             |               |      |
| 295031 Reactor Low Water Level / 2   |        |  | R      |        |        |        | (R) EK3.03             |               |      |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | R      |  |        |        |        | S      | (R) EK1.03 (S) G2.4.30 |               |      |
| 295038 High Off-site Release Rate / 9  |        | R  |        |        |        |        | (R) EK2.02             |               |      |
| 600000 Plant Fire On Site / 8  |        | R  |        |        | S      |        | (R) AK2.01 (S) AA2.13  |               |      |
| 700000 Generator Voltage and Electric Grid Disturbances / 6                          | R      |  |        |        | S      |        | (R) AK1.01 (S) AA2.05  |               |      |
|  |        |  |        |        |        |        |                        |               |      |
|  |        |  |        |        |        |        |                        |               |      |
|  |        |  |        |        |        |        |                        |               |      |
|  |        |  |        |        |        |        |                        |               |      |
|  |        |  |        |        |        |        |                        |               |      |
| K/A Category Totals:   | 4      | 3  | 3      | 4      | 3      | 3      | Group Point Total:     |               | 20/7 |

| ES-401  |        | BWR Examination Outline<br>Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO) |        |        |        |     |                    | Form ES-401-1 |     |
|---|--------|--|--------|--------|--------|-----|--------------------|---------------|-----|
| E/APE # / Name / Safety Function                            | K<br>1 | K<br>2   | K<br>3 | A<br>1 | A<br>2 | G   | K/A Topic(s)       | IR            | #   |
| 295002 Loss of Main Condenser Vac / 3                       |        |  |        |        |        |     |                    |               |     |
| 295007 High Reactor Pressure / 3                            |        |  |        |        |        |     |                    |               |     |
| 295008 High Reactor Water Level / 2                         | R      |  |        |        |        |     | (R) AK1.02         |               |     |
| 295009 Low Reactor Water Level / 2                          |        |  |        |        |        |     |                    |               |     |
| 295010 High Drywell Pressure / 5                            |        |  |        |        |        |     |                    |               |     |
| 295011 High Containment Temp / 5                            |        |  |        |        |        |     |                    |               |     |
| 295012 High Drywell Temperature / 5                         |        |  |        |        |        |     |                    |               |     |
| 295013 High Suppression Pool Temp. / 5                      |        |  |        |        |        |     |                    |               |     |
| 295014 Inadvertent Reactivity Addition / 1                  |        |  |        |        | R      |     | (R) AA 2.03        |               |     |
| 295015 Incomplete SCRAM / 1                                 |        |  | (R)    |        |        |     | (R) AK3.01         |               |     |
| 295017 High Off-site Release Rate / 9                       |        |  |        |        | S      |     | (S) AA2.01         |               |     |
| 295020 Inadvertent Cont. Isolation / 5 & 7                  |        |  |        |        |        | (R) | (R) G2.4.4         |               |     |
| 295022 Loss of CRD Pumps / 1                                |        |  |        |        |        |     |                    |               |     |
| 295029 High Suppression Pool Wtr Lvl / 5                    |        |  |        |        | S      |     | (S) EA2.03         |               |     |
| 295032 High Secondary Containment Area Temperature / 5      |        | (R)  |        |        |        |     | (R) EK2.08         |               |     |
| 295033 High Secondary Containment Area Radiation Levels / 9 |        |  |        | (R)    |        |     | (R) EA1.05         |               |     |
| 295034 Secondary Containment Ventilation High Radiation / 9 |        |  |        |        |        |     |                    |               |     |
| 295035 Secondary Containment High Differential Pressure / 5 |        |  |        |        |        |     |                    |               |     |
| 295036 Secondary Containment High Sump/Area Water Level / 5 |        |  |        | (R)    |        |     | (R) EA1.01         |               |     |
| 500000 High CTMT Hydrogen Conc. / 5                         |        |  |        |        |        | S   | (S) G.2.2.44       |               |     |
|   |        |  |        |        |        |     |                    |               |     |
|   |        |  |        |        |        |     |                    |               |     |
|   |        |  |        |        |        |     |                    |               |     |
|   |        |  |        |        |        |     |                    |               |     |
|   |        |  |        |        |        |     |                    |               |     |
|   |        |  |        |        |        |     |                    |               |     |
| K/A Category Point Totals:                                  | 1      | 1  | 1      | 2      | 1      | 1   | Group Point Total: |               | 7/3 |

| ES-401                                   |        | BWR Examination Outline<br>Plant Systems - Tier 2/Group 1 (RO / SRO) |        |        |        |        |        |        |        |        |   |                                     |           | Form ES-401-1 |  |
|--|--------|--|--------|--------|--------|--------|--------|--------|--------|--------|---|-------------------------------------|-----------|---------------|--|
| System # / Name                          | K<br>1 | K<br>2   | K<br>3 | K<br>4 | K<br>5 | K<br>6 | A<br>1 | A<br>2 | A<br>3 | A<br>4 | G | K/A Topic(s)                        | IR        | #             |  |
| 203000 RHR/LPCI: Injection Mode          |        |  |        |        |        |        |        | R      |        |        |   | (R) A2.16                           |           |               |  |
| 205000 Shutdown Cooling                  |        |  |        |        |        |        |        |        |        | R      |   | (R) A4.07                           |           |               |  |
| 206000 HPCI                              |        |  |        |        |        |        |        |        |        | R      |   | (R) G2.2.38                         |           |               |  |
| 207000 Isolation (Emergency) Condenser   |        |  |        |        |        |        |        | N/A    |        |        |   |                                     |           |               |  |
| 209001 LPCS                              |        |  |        |        |        |        |        |        | R      |        | S | (R) A3.03 (S) G2.1.31               |           |               |  |
| 209002 HPCS                              |        |  |        |        |        |        |        | N/A    |        |        |   |                                     |           |               |  |
| 211000 SLC                               | R      |  | R      |        |        |        |        | S      |        |        |   | (R) K1.01<br>(R) K3.01<br>(R) K4.01 | (S) A2.05 |               |  |
| 212000 RPS                               |        |  | R      |        |        |        |        |        |        |        |   |                                     |           |               |  |
| 215003 IRM                               |        |  |        |        |        |        |        | S      | R      |        |   | (R) A3.03 (S) A2.01                 |           |               |  |
| 215004 Source Range Monitor              |        | R  |        |        |        |        |        |        |        |        |   | (R) K2.01                           |           |               |  |
| 215005 APRM / LPRM                       |        | R  |        |        |        |        |        |        |        |        |   | (R) K2.02                           |           |               |  |
| 217000 RCIC                              |        |  |        |        | R      |        | R      |        |        |        |   | (R) A1.02<br>(R) K5.06              |           |               |  |
| 218000 ADS                               |        |  |        | R      |        |        |        | S      |        |        |   | (R) K4.01 (S) A2.05                 |           |               |  |
| 223002 PCIS/Nuclear Steam Supply Shutoff |        |  |        | R      |        |        |        | R      |        |        |   | (R) A2.06<br>(R) K4.04              |           |               |  |
| 239002 SRVs                              |        |  |        |        |        | R      |        |        |        |        | S | (R) K6.02 (S) G2.2.12               |           |               |  |
| 259002 Reactor Water Level Control       |        |  |        |        | R      |        |        |        |        |        |   | (R) K5.03                           |           |               |  |
| 261000 SGTS                              |        |  |        |        |        |        | R      |        |        |        |   | (R) A1.07                           |           |               |  |
| 262001 AC Electrical Distribution        |        | R  |        |        | R      |        |        |        |        |        |   | (R) K2.01<br>(R) K5.02              |           |               |  |
| 262002 UPS (AC/DC)                       |        |  | R      |        |        |        |        |        |        |        |   | (R) K3.17                           |           |               |  |
| 263000 DC Electrical Distribution        |        |  |        |        |        | R      | R      |        |        |        |   | (R) A1.01<br>(R) K6.01              |           |               |  |
| 264000 EDGs                              |        |  | R      |        |        |        |        |        |        |        |   | (R) K3.03                           |           |               |  |
| 300000 Instrument Air                    |        |  |        |        |        |        |        |        |        | R      |   | (R) G2.4.3                          |           |               |  |
| 400000 Component Cooling Water           | R      |  |        |        |        |        |        |        |        |        |   | (R) K1.01                           |           |               |  |
|  |        |  |        |        |        |        |        |        |        |        |   |                                     |           |               |  |
|  |        |  |        |        |        |        |        |        |        |        |   |                                     |           |               |  |
| K/A Category Point Totals:               | 2      | 3  | 3      | 3      | 3      | 2      | 3      | 2      | 2      | 1      | 2 | Group Point Total:                  |           | 26/5          |  |



| ES-401                                    |     | BWR Examination Outline<br>Plant Systems - Tier 2/Group 2 (RO / SRO) |     |     |     |     |     |     |     |     |   |                    | Form ES-401-1 |      |
|---|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|---|--------------------|---------------|------|
| System # / Name                           | K 1 | K 2  | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G | K/A Topic(s)       | IR            | #    |
| 201001 CRD Hydraulic                      |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 201002 RMCS                               |     |  |     | R   |     |     |     |     |     |     |   | (R) K4.04          |               |      |
| 201003 Control Rod and Drive Mechanism    |     |  |     |     |     |     |     |     |     |     |   | S (S) G2.4.18      |               |      |
| 201004 RSCS                               |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 201005 RCIS                               |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 201006 RWM                                |     |  |     |     |     |     |     | R   |     |     |   | (R) A2.05          |               |      |
| 202001 Recirculation                      |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 202002 Recirculation Flow Control         |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 204000 RWCU                               |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 214000 RPIS                               |     |  |     |     |     | R   |     |     |     |     |   | (R) K6.01          |               |      |
| 215001 Traversing In-core Probe           |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 215002 RBM                                |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 216000 Nuclear Boiler Inst.               |     |  |     |     |     |     |     |     |     | R   |   | (R) A4.02          |               |      |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode  |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 223001 Primary CTMT and Aux.              |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 226001 RHR/LPCI: CTMT Spray Mode          |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 230000 RHR/LPCI: Torus/Pool Spray Mode    |     |  |     |     |     |     | R   |     |     |     |   | (R) A1.10          |               |      |
| 233000 Fuel Pool Cooling/Cleanup          |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 234000 Fuel Handling Equipment            |     |  |     |     | R   |     |     |     |     |     |   | (R) K5.02          |               |      |
| 239001 Main and Reheat Steam              |     |  |     |     |     |     |     | S   |     |     |   | (S) A2.11          |               |      |
| 239003 MSIV Leakage Control               |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 241000 Reactor/Turbine Pressure Regulator |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 245000 Main Turbine Gen. / Aux.           |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 256000 Reactor Condensate                 |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 259001 Reactor Feedwater                  |     |  |     |     |     |     |     |     |     |     | R | (R) G2.4.6         |               |      |
| 268000 Radwaste                           |     |  |     |     |     |     |     | S   |     |     |   | (S) A2.01          |               |      |
| 271000 Offgas                             |     |  |     |     | R   |     |     |     |     |     |   | (R) K5.11          |               |      |
| 272000 Radiation Monitoring               |     | R  |     |     |     |     |     |     |     |     |   | (R) K2.03          |               |      |
| 286000 Fire Protection                    |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 288000 Plant Ventilation                  |     |  | R   |     |     |     |     |     |     |     |   | (R) K3.05          |               |      |
| 290001 Secondary CTMT                     |     |  |     |     |     |     |     |     |     |     |   |                    |               |      |
| 290003 Control Room HVAC                  |     |  |     |     |     |     |     |     | R   |     |   | (R) A3.02          |               |      |
| 290002 Reactor Vessel Internals           | R   |  |     |     |     |     |     |     |     |     |   | (R) K1.14          |               |      |
| K/A Category Point Totals:                | 1   | 1  | 1   | 1   | 2   | 1   | 1   | 1   | 1   | 1   | 1 | Group Point Total: |               | 12/3 |

| Facility: <u>Browns Ferry</u>           |          | Date of Exam: <u>2013</u>                         |      |     |          |   |
|---|----------|---|------|-----|----------|---|
| Category                                | K/A #    | Topic   | RO   |     | SRO-Only |   |
|   |          |   | IR   | #   | IR       | # |
| 1.<br>Conduct<br>of Operations          | 2.1.27   | System Purpose and/or Function                    | 3.9  |     |          |   |
|   | 2.1.31   | locate Switches ..., correct lineup               | 4.6  |     |          |   |
|   | 2.1.36   | Core Alterations procedures/limitations           | 3.0  |     |          |   |
|   | 2.1.35   | SRO fuel handling responsibilities (S)            |      |     | 3.9      |   |
|   | 2.1.43   | Use procedures for effects of reactivity (S)      |      |     | 4.3      |   |
|   | 2.1.     |   |      |     |          |   |
|   | Subtotal |   | (3)  |     | (2)      |   |
| 2.<br>Equipment<br>Control              | 2.2.15   | Plant configuration using design/control doc      | 3.9  |     |          |   |
|   | 2.2.25   | Knowledge of T.S. Bases of LO or Safety limit     | 3.2  |     |          |   |
|   | 2.2.39   | Knowledge of ≤ 1 hour Action Statements           | 3.9  |     |          |   |
|   | 2.2.18   | Knowledge of process for managing SD Maint. (S)   |      |     | 3.8      |   |
|   | 2.2.3    | Unit Differences (S)                              |      |     | 3.9      |   |
|   | 2.2.     |   |      |     |          |   |
| Subtotal                                |          | (3)   |      | (2) |          |   |
| 3.<br>Radiation<br>Control              | 2.3.13   | Rad safety principles pertaining to lic operators | 3.4  |     |          |   |
|   | 2.3.14   | Rad/Contamination hazards                         | 3.4  |     |          |   |
|   | 2.3.4    | Exposure limits during normal/emerg. (S)          |      |     | 3.7      |   |
|   | 2.3.     |   |      |     |          |   |
|   | 2.3.     |   |      |     |          |   |
|   | 2.3.     |   |      |     |          |   |
| Subtotal                                |          | (2)   |      | (1) |          |   |
| 4.<br>Emergency<br>Procedures /<br>Plan | 2.4.1    | EOP entry conditions & immediate actions          | 4.6  |     |          |   |
|   | 2.4.9    | Low Power/Shutdown implications                   | 3.8  |     |          |   |
|   | 2.4.18   | EOP bases knowledge (S)                           |      |     | 4.0      |   |
|   | 2.4.19   | EOP layout, symbols, icons (S)                    |      |     | 4.1      |   |
|   | 2.4.     |   |      |     |          |   |
|   | 2.4.     |   |      |     |          |   |
| Subtotal                                |          | (2)   |      | (2) |          |   |
| Tier 3 Point Total                      |          |   | (10) | 10  | (7)      | 7 |

| KA            | NAME / SAFETY FUNCTION:  | IR  | K1  | K2                                  | K3                       | K4                                  | K5                       | K6                       | A1                                  | A2                                  | A3                       | A4                       | G                                   | TOPIC:  |
|---------------|--|-----|-----|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
|               |  | RO  | SRO |                                     |                          |                                     |                          |                          |                                     |                                     |                          |                          |                                     |   |
| 295001AK1.03  | Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 | 3.6 | 4.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Thermal limits.....   |
| 295003AA2.02  | Partial or Complete Loss of AC / 6                               | 4.2 | 4.3 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Reactor power / pressure / and level.....   |
| 295004AA1.01  | Partial or Total Loss of DC Pwr / 6                              | 3.3 | 3.4 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | D.C. electrical distribution systems.....   |
| 295005AA1.01  | Main Turbine Generator Trip / 3                                  | 3.1 | 3.3 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Recirculation system: Plant-Specific.....   |
| 295006AK1.02  | SCRAM / 1  | 3.4 | 3.7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Shutdown margin.....  |
| 295016G2.1.32 | Control Room Abandonment / 7                                     | 3.8 | 4.0 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to explain and apply all system limits and precautions.   |
| 295018AA1.02  | Partial or Total Loss of CCW / 8                                 | 3.3 | 3.4 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | System loads.....   |
| 295019G2.2.39 | Partial or Total Loss of Inst. Air / 8                           | 3.9 | 4.5 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of less than one hour technical specification action statements for systems.<br><i>Tech Spec 3.8.3 Action D</i> |
| 295021AA2.07  | Loss of Shutdown Cooling / 4                                     | 2.9 | 3.1 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Reactor recirculation flow .....  |
| 295023AK3.04  | Refueling Acc Cooling Mode / 8                                   | 3.0 | 3.5 | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Non-coincident SCRAM function.....  |
| 295024G2.4.8  | High Drywell Pressure / 5  | 3.8 | 4.5 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of how abnormal operating procedures are used in conjunction with EOPs.   |

**RO**

| KA           | NAME / SAFETY FUNCTION:   | IR  | K1  | K2                                  | K3                                  | K4                                  | K5                       | K6                       | A1                                  | A2                                  | A3                       | A4                       | G                        | TOPIC:  |
|--------------|---|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---|
|              |   | RO  | SRO |                                     |                                     |                                     |                          |                          |                                     |                                     |                          |                          |                          |   |
| 295025EA2.01 | High Reactor Pressure / 3   | 4.3 | 4.3 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Reactor pressure.....   |
| 295026EA1.01 | Suppression Pool High Water Temp. / 5                                 | 4.1 | 4.1 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Suppression pool cooling.....                                   |
| 295028EK3.04 | High Drywell Temperature / 5  | 3.6 | 3.8 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Increased drywell cooling.....                                  |
| 295030EK2.01 | Low Suppression Pool Wtr Lvl / 5                                      | 3.8 | 3.9 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | HPCI: Plant-Specific.....                                       |
| 295031EK3.03 | Reactor Low Water Level / 2   | 4.1 | 4.4 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Spray cooling.....  |
| 295037EK1.03 | SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1 | 4.2 | 4.4 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Boron effects on reactor power (SBLC).....                      |
| 295038EK2.02 | High Off-site Release Rate / 9  | 3.6 | 3.8 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Offgas system.....  |
| 600000AK2.01 | Plant Fire On Site / 8  | 2.6 | 2.7 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sensors / detectors and valves                                  |
| 700000AK1.01 | Generator Voltage and Electric Grid Disturbancecs                     | 3.3 | 3.5 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Definition of the terms: volts, watts, amps, VARS, power factor |

**not GFES**



| KA           | NAME / SAFETY FUNCTION:                              | IR  | K1  | K2                                  | K3                                  | K4                                  | K5                       | K6                       | A1                                  | A2                                  | A3                       | A4                       | G                                   | TOPIC:  |
|--------------|--|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
|              |  | RO  | SRO |                                     |                                     |                                     |                          |                          |                                     |                                     |                          |                          |                                     |   |
| 295008AK1.02 | High Reactor Water Level / 2                         | 2.8 | 2.8 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Component erosion/damage.....   |
| 295014AA2.03 | Inadvertent Reactivity Addition / 1                  | 4.0 | 4.3 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Cause of reactivity addition.....   |
| 295015AK3.01 | Incomplete SCRAM / 1                                 | 3.4 | 3.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Bypassing rod insertion blocks.....   |
| 295020G2.4.4 | Inadvertent Cont. Isolation / 5 & 7                  | 4.5 | 4.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. |
| 295032EK2.08 | High Secondary Containment Area Temperature / 5      | 3.8 | 3.9 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Systems required for safe shut-down.....  |
| 295033EA1.05 | High Secondary Containment Area Radiation Levels / 9 | 3.9 | 4.0 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Affected systems so as to isolate damaged portions....  |
| 295035EA1.01 | Secondary Containment High Differential Pressure / 5 | 3.6 | 3.6 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Secondary containment ventilation system.....   |

| KA            | NAME / SAFETY FUNCTION:  | IR  | K1  | K2                                  | K3                                  | K4                                  | K5                                  | K6                       | A1                                  | A2                                  | A3                                  | A4                                  | G                        | TOPIC:   |
|---------------|--------------------------|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|
|               |                          | RO  | SRO |                                     |                                     |                                     |                                     |                          |                                     |                                     |                                     |                                     |                          |  |
| 203000A2.16   | RHR/LPCI: Injection Mode | 4.4 | 4.5 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | Loss of coolant accident   |
| 205000A4.07   | Shutdown Cooling         | 3.7 | 3.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | Reactor temperatures (moderator, vessel, flange)                 |
| 206000G2.2.38 | HPCI                     | 3.6 | 4.5 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Knowledge of conditions and limitations in the facility license. |
| 209001A3.03   | LPCS                     | 3.5 | 3.5 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | System pressure  |
| 211000K1.01   | SLC                      | 3.0 | 3.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | Core spray line break detection: Plant-Specific                  |
| 211000K3.01   | SLC                      | 4.3 | 4.4 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | Ability to shutdown the reactor in certain conditions            |
| 212000K4.01   | RPS                      | 3.4 | 3.6 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | System redundancy and reliability                                |
| 215003A3.03   | IRM                      | 3.7 | 3.6 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | RPS status   |
| 215004K2.01   | Source Range Monitor     | 2.6 | 2.8 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | SRM channels/detectors   |
| 215005K2.02   | APRM / LPRM              | 2.6 | 2.8 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | APRM channels  |
| 217000A1.02   | RCIC                     | 3.3 | 3.3 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | RCIC pressure  |

| KA          | NAME / SAFETY FUNCTION:           | IR  | K1  | K2                       | K3                                  | K4                                  | K5                                  | K6                                  | A1                                  | A2                                  | A3                       | A4                       | G                        | TOPIC:   |
|-------------|-----------------------------------|-----|-----|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--|
|             |                                   | RO  | SRO |                          |                                     |                                     |                                     |                                     |                                     |                                     |                          |                          |                          |  |
| 217000K5.06 | RCIC                              | 2.7 | 2.7 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Turbine operation  |
| 218000K4.01 | ADS                               | 3.7 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prevent inadvertent initiation of ADS logic                                  |
| 223002A2.06 | PCIS/Nuclear Steam Supply Shutoff | 3.0 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Containment instrumentation failures   |
| 223002K4.04 | PCIS/Nuclear Steam Supply Shutoff | 3.2 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Automatic bypassing of selected isolations during specified plant conditions |
| 239002K6.02 | SRVs                              | 3.4 | 3.5 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Air (Nitrogen) supply: Plant-Specific  |
| 259002K5.03 | Reactor Water Level Control       | 3.1 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Water level measurement  |
| 261000A1.07 | SGTS                              | 2.8 | 2.9 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SBGTS train temperature  |
| 262001K2.01 | AC Electrical Distribution        | 3.3 | 3.6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Off-site sources of power  |
| 262001K5.02 | AC Electrical Distribution        | 2.6 | 2.9 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Breaker control  |
| 262002K3.17 | UPS (AC/DC)                       | 2.9 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Process monitoring: Plant-Specific   |
| 263000A1.01 | DC Electrical Distribution        | 2.5 | 2.8 | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Battery charging/discharging rate  |

| KA           | NAME / SAFETY FUNCTION:    | IR  | K1  | K2                                  | K3                       | K4                                  | K5                       | K6                                  | A1                       | A2                       | A3                       | A4                       | G                                   | TOPIC:  |
|--------------|----------------------------|-----|-----|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|---|
|              |                            | RO  | SRO |                                     |                          |                                     |                          |                                     |                          |                          |                          |                          |                                     |   |
| 263000K6.01  | DC Electrical Distribution | 3.2 | 3.5 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | A.C. electrical distribution  |
| 264000K3.03  | EDGs                       | 4.1 | 4.2 | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Major loads powered from electrical buses fed by the emergency generator(s) |
| 300000G2.4.3 | Instrument Air             | 3.7 | 3.9 | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to identify post-accident instrumentation.                          |
| 400000K1.01  | Component Cooling Water    | 3.2 | 3.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Service water system  |



| KA           | NAME / SAFETY FUNCTION:         | IR  | K1  | K2                                  | K3                                  | K4                                  | K5                                  | K6                                  | A1                                  | A2                                  | A3                                  | A4                                  | G                                   | TOPIC:  |
|--------------|---------------------------------|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|
|              |                                 | RO  | SRO |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |                                     |   |
| 201002K4.04  | RMCS                            | 3.3 | 3.3 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Single notch rod withdrawal and insertion                                   |
| 201006A2.05  | RWM                             | 3.1 | 3.5 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Out of sequence rod movement; P-Spec(Not-BWR6)                              |
| 214000K6.01  | RPIS                            | 2.5 | 2.6 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | A.C. electrical power   |
| 216000A4.02  | Nuclear Boiler Inst.            | 3.3 | 3.1 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Channel select controls   |
| 230000A1.10  | RHR/LPCI: Torus/Pool Spray Mode | 3.7 | 3.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | System lineup   |
| 234000K5.02  | Fuel Handling Equipment         | 3.1 | 3.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Fuel handling equipment interlocks  |
| 259001G2.4.6 | Reactor Feedwater               | 3.7 | 4.7 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge symptom based EOP mitigation strategies.                          |
| 271000K5.11  | Offgas                          | 2.6 | 2.8 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Explain the necessity of reducing relative humidity for carbon bed filters. |
| 272000K2.03  | Radiation Monitoring            | 2.5 | 2.8 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Stack gas radiation monitoring system                                       |
| 288000K3.05  | Plant Ventilation               | 3.1 | 3.3 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | Reactor building pressure: Plant-Specific                                   |
| 290002K1.14  | Reactor Vessel Internals        | 2.9 | 3.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | RWCU  |



ES-401, REV 9

RO

T2G2 BWR EXAMINATION OUTLINE

FORM ES-401-1

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

290003A3.02 Control Room HVAC

3.0

3.4

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐

Initiation/failure of fire protection system



| KA      | NAME / SAFETY FUNCTION:    | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                       | A3                       | A4                       | G                                   | TOPIC:  |
|---------|----------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|---|
|         |                            | RO  | SRO |                          |                          |                          |                          |                          |                          |                          |                          |                          |                                     |   |
| G2.1.27 | Conduct of operations      | 3.9 | 4   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of system purpose and or function.  |
| G2.1.31 | Conduct of operations      | 4.6 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup. |
| G2.1.36 | Conduct of operations      | 3.0 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of procedures and limitations involved in core alterations  |
| G2.2.15 | Equipment Control          | 3.9 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to determine the expected plant configuration using design and configuration control documentaion                                       |
| G2.2.25 | Equipment Control          | 3.2 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.                                    |
| G2.2.39 | Equipment Control          | 3.9 | 4.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of less than one hour technical specification action statements for systems.  |
| G2.3.13 | Radiation Control          | 3.4 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of radiological safety procedures pertaining to licensed operator duties  |
| G2.3.14 | Radiation Control          | 3.4 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities                   |
| G2.4.1  | Emergency Procedures/Plans | 4.6 | 4.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of EOP entry conditions and immediate action steps.   |
| G2.4.9  | Emergency Procedures/Plans | 3.8 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.                                    |

| KA            | NAME / SAFETY FUNCTION:   | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                                  | A3                       | A4                       | G                                   | TOPIC:   |
|---------------|---|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--|
|               |   | RO  | SRO |                          |                          |                          |                          |                          |                          |                                     |                          |                          |                                     |  |
| 295003AA2.05  | Partial or Complete Loss of AC / 6                                    | 3.9 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Whether a partial or complete loss of A.C. power has occurred.....   |
| 295019AA2.02  | Partial or Total Loss of Inst. Air / 8                                | 3.6 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Status of safety-related instrument air system loads (see AK2.1 - AK2.19).....   |
| 295023G2.2.40 | Refueling Acc Cooling Mode / 8  | 3.4 | 4.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to apply technical specifications for a system.  |
| 295024G2.4.21 | High Drywell Pressure / 5   | 4.0 | 4.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the parameters and logic used to assess the status of safety functions  |
| 295037G2.4.30 | SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1 | 2.7 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies. |
| 600000AA2.13  | Plant Fire On Site / 8  | 3.2 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Need for emergency plant shutdown  |
| 700000AA2.05  | Generator Voltage and Electric Grid Disturbancecs                     | 3.2 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Operational status of offsite circuit  |

| KA            | NAME / SAFETY FUNCTION:           | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                                  | A3                       | A4                       | G                                   | TOPIC:  |
|---------------|-----------------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
|               |                                   | RO  | SRO |                          |                          |                          |                          |                          |                          |                                     |                          |                          |                                     |   |
| 295017AA2.01  | High Off-site Release Rate / 9    | 2.9 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Off-site release rate: Plant-Specific.....  |
| 295029EA2.03  | High Suppression Pool Wtr Lvl / 5 | 3.4 | 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Drywell/containment water level.....  |
| 500000G2.2.44 | High CTMT Hydrogen Conc. / 5      | 4.2 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions |

| KA            | NAME / SAFETY FUNCTION: | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                                  | A3                       | A4                       | G                                   | TOPIC:  |
|---------------|-------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
|               |                         | RO  | SRO |                          |                          |                          |                          |                          |                          |                                     |                          |                          |                                     |   |
| 209001G2.1.31 | LPCS                    | 4.6 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup. |
| 211000A2.05   | SLC                     | 3.1 | 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Loss of SBLC tank heaters   |
| 215003A2.01   | IRM                     | 2.8 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Power supply degraded   |
| 218000A2.05   | ADS                     | 3.4 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Loss of A.C. or D.C. power to ADS valves  |
| 239002G2.2.12 | SRVs                    | 3.7 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of surveillance procedures.   |



| KA            | NAME / SAFETY FUNCTION:         | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                                  | A3                       | A4                       | G                                   | TOPIC:                                    |
|---------------|---------------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
|               |                                 | RO  | SRO |                          |                          |                          |                          |                          |                          |                                     |                          |                          |                                     |   |
| 201003G2.4.18 | Control Rod and Drive Mechanism | 3.3 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the specific bases for EOPs. |
| 239001A2.11   | Main and Reheat Steam           | 4.1 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Steam line break                          |
| 268000A2.01   | Radwaste                        | 2.9 | 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | System rupture                            |

| KA      | NAME / SAFETY FUNCTION:    | IR  | K1  | K2                       | K3                       | K4                       | K5                       | K6                       | A1                       | A2                       | A3                       | A4                       | G                                   | TOPIC:  |
|---------|----------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|---|
|         |                            | RO  | SRO |                          |                          |                          |                          |                          |                          |                          |                          |                          |                                     |   |
| G2.1.35 | Conduct of operations      | 2.2 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the fuel handling responsibilities of SRO's  |
| G2.1.43 | Conduct of operations      | 4.1 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to use procedures to determine the effects on reactivity of plant changes                   |
| G2.2.18 | Equipment Control          | 2.6 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the process for managing maintenance activities during shutdown operations.            |
| G2.2.3  | Equipment Control          | 3.8 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (multi-unit license) Knowledge of the design, procedural and operational differences between units. |
| G2.3.4  | Radiation Control          | 3.2 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of radiation exposure limits under normal and emergency conditions                        |
| G2.4.18 | Emergency Procedures/Plans | 3.3 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the specific bases for EOPs.   |
| G2.4.19 | Emergency Procedures/Plans | 3.4 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of EOP layout, symbols and icons.   |

Facility: Browns Ferry NPPDate of Examination: 6/3/2013Examination Level: RO/SROOperating Test Number: 1306

| Administrative Topic<br>(see Note)   | Type<br>Code<br>* | Describe activity to be performed  |
|--|-------------------|--|
| Conduct of Operations<br>SRO/RO A1a  | D                 | 2.1.7: 1-SR-3.4.2.1 Jet Pump Mismatch and Operability, need to modify after SR updated following unit 1 outage |
| Conduct of Operations<br>RO A1b  | N                 | 2.1.18: 2/3-SR-2 Operator Logs MODE 5 Table 4.1 through 4.7 part 2   |
| SRO A1b  | N                 | 2.1.18: 2-SR-2 Review a completed set of MODE 5 Operator Logs  |
| Equipment Control<br>RO A2   | N                 | 2.2.41: Determine PSC Pump 2B or 3B isolation boundary   |
| SRO A2   | N                 | 2.2.23: LCO Tracking Log entry for PCIS Valve failed.  |
| Radiation Control<br>SRO/RO A3   | M                 | 2.3.11: Calculate Airborne Effluent Release Rate IAW 0-SI-4.8.b.1.a.1  |
| Emergency Plan<br>SRO A4   | N                 | 2.4.44: Follow up Notification and PAR Change  |
| <b>NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.</b>   |                   |  |
| * Type Codes & Criteria: (C)ontrol Room<br>(D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs and RO retakes)<br>(N)ew or (M)odified from bank ( $\geq 1$ )<br>(P)revious 2 exams ( $\leq 1$ ; randomly selected)<br>(S)imulator |                   |  |

Rec'd  
2/1/11

**Reactor Operator****1. 1-SR-3.4.2.1 Jet Pump Mismatch and Operability**

- Direct from Bank
- 1-SR-3.4.2.1
- Complete a surveillance requirement on Reactor Recirculation System Jet Pump Mismatch and Operability, determines that an Engineering review is required and determines that the Acceptance Criteria is met even though some parts fail to meet the initial requirements.
- 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Importance RO 4.4 SRO 4.7

**2. ICS Logs**

- New
- 2-SR-2 or 3-SR-2
- Perform Operator logs in accordance with 2-SR-2 Instrument Checks and Observations for log tables 4.1 through 4.7. Verify acceptance criteria are satisfied in accordance with notes. If acceptance criteria is NOT satisfied correct if possible.
- 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. RO 3.6 SRO 3.8

**3. Determination of Isolation Boundary for PSC Pump 2B or 3B**

- New <sup>??</sup>
- Drawings 2/3-47E814-1, 2/3-45E779-19, 2/3-47E610-75-1, and 2/3-45E751-3
- Determine the components that shall be identified to isolate PSC Pump 2B or 3B
- 2.2.41 Ability to obtain and interpret station electrical and mechanical drawings. Importance RO 3.5

**4. Calculate Airborne Effluent Release Rate in accordance with 0-SI-4.8.b.1.a.1**

- Modified
- 0-SI-4.8.B.1.a.1
- Calculate Building Ventilation Release Fraction and determine acceptance criteria met. Calculate Stack Release Fraction and determine that acceptance criteria NOT met. Calculate Total Site Release Fraction and determine acceptance criteria met.
- 2.3.11 Ability to control radiation releases RO 3.8 SRO 4.3

Rec'd  
2/4/11

**Senior Reactor Operator****1. 1-SR-3.4.2.1 Jet Pump Mismatch and Operability**

- Direct from Bank
- 1-SR-3.4.2.1
- Complete a surveillance requirement on Reactor Recirculation System Jet Pump Mismatch and Operability, determines that an Engineering review is required and determines that the Acceptance Criteria is met even though some parts fail to meet the initial requirements.
- 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Importance SRO 4.7

**2. ICS Logs**

- New
- 2-SR-2
- Review a completed set of Mode 5 Operator logs in accordance with 2-SR-2 Instrument Checks and Observations. Verify acceptance criteria are satisfied in accordance with notes. If acceptance criteria is NOT satisfied correct if possible.
- 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. Importance SRO 3.8

**3. LCO Tracking Log entry for failed PCIS Valve**

- New
- OPDP-8
- Complete an LCO Tracking Log Entry computer or hard copy from the results of 2/3-SR-3.6.1.3.5 Primary Containment Isolation Valve Operability Section 7.16 RWCU Testing
- 2.2.23 Ability to track Technical Specifications limiting conditions for Operations. Importance SRO 4.6

**4. Calculate Airborne Effluent Release Rate iaw 0-SI-4.8.b.1.a.1**

- Modified
- 0-SI-4.8.B.1.a.1
- Calculate Building Ventilation Release Fraction and determine acceptance criteria met. Calculate Stack Release Fraction and determine that acceptance criteria NOT met. Calculate Total Site Release Fraction and determine acceptance criteria met.
- 2.3.11 Ability to control radiation releases. Importance SRO 4.3

Rec'd  
2/4/11



## 5. Protective Action Recommendation Evaluation

- New
- EPIP-1 and 5 Emergency Classification Procedure and General Emergency
- Completed Notification Handouts Appendix F – General Emergency Follow-Up Information Form and J – Upgrade – Protective Action Recommendation
- 2.4.44 Knowledge of emergency plan protective action recommendations. Importance SRO 4.4

Heid  
2/4/11

Facility: Browns Ferry NPPDate of Examination: 6/3/2013Exam Level: RO/SROI/SROUOperating Test No.: 1306**Control Room Systems<sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)**

| System / JPM Title  | Type Code*  | Safety Function |
|---|-------------|-----------------|
| <b>a. Recirc Pump Shutdown Plant in Mode 2, 2/3-OI-68</b>                                   | A, N, S, L  | 1               |
| b. Alternate RPV Injection Standby Coolant, 2/3-EOI Appendix-7D                             | D, S        | 2               |
| c. Alternate RPV Pressure Control RFPT, 2/3-EOI Appendix-11F                                | D, S        | 3               |
| d. Restore Shutdown Cooling, 2/3-AOI-74-1   | M, S, L     | 4               |
| <b>e. Stroke Time PCIS Valve 3-SR-3.6.1.3.5 (CSII)</b>                                      | N, A, S, EN | 5               |
| f. Alternate Method of Determining Control Rod Position of a Single Control Rod, 3-AOI-85-4 | N, A, S     | 7               |
| <b>g. Containment Venting, High Pressure 2/3-EOI Appendix-12</b>                            | M, S, A     | 9               |
| h. 0-SSI-2-1 Steps 10 thru 24 (U2 Only)   | N, S, L     | 8 (RO only)     |

**In-Plant Systems<sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)**

|   |         |   |
|---|---------|---|
| i. 263000 A3.01: Transfer of AC Alternate Source to Battery Charger SB-C ONLY, 0-OI-57D section 8.6 | N, A    | 6 |
| <b>j. 600000 AA2.17: 0-SSI-21 Attachment 7</b>  | N, E    | 8 |
| <b>k. 295031 EA1.08: 1-EOI Appendix-7B SLC Alternate Injection</b>                                  | N, R, E | 2 |

**@**

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

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

Rec'd  
2/4/13

**Control Room Systems:****a. Recirc Pump Shutdown with plant in Mode 2 (Unit 2 or 3)**

- <sup>§</sup> Alternate path / New / Simulator / Low power
- 2/3-OI-68 Reactor Recirculation System
- 295001 Partial or Complete loss of forced core flow circulation AA1.01 Ability to operate and/or monitor the following as they apply to Partial or Complete loss of forced core flow circulation: Recirculation system IMPORTANCE: RO 3.5 SRO 3.6
- Operator directed to shutdown Recirculation Pump B and maintain temperature in the idle loop in MODE 2 in accordance with 2/3-OI-68 section 7.1, when the operator opens the discharge valve to maintain temperature the idle Reactor Recirculation pump will rotate requiring the operator to close the discharge valve.

**b. Alternate RPV Injection Standby Coolant (Unit 2 or 3)**

- Direct from Bank / Simulator
- 2/3-EOI Appendix-7D Alternate RPV Injection System Lineup Standby Coolant
- ✓ • 295031 Reactor Low Water Level EA1.08 Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate Injection systems: Plant-specific IMPORTANCE: RO 3.8 SRO 3.9
- Inject with Standby Coolant IAW 2/3-EOI Appendix-7D to restore RPV Level.

**c. Alternate RPV Pressure Control RFPT (Unit 2 or 3)**

- Direct from Bank / Simulator
- 2/3-EOI Appendix-11F Alternate RPV Pressure Control Systems RFPT On Minimum Flow
- ✓ • 295007 High Reactor Pressure AA2.01 Ability to determine and/or interpret the following as they apply to High Reactor Pressure: Reactor Pressure IMPORTANCE: RO 4.1 SRO 4.1
- Places RFPT A and B in pressure control in accordance with 2/3-EOI Appendix-11F

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**d. Restore Shutdown Cooling (Unit 2 or 3)**

- Modified from Bank / Low Power / Simulator
- 2/3-AOI-74-1 Loss of Shutdown Cooling
- 295021 Loss of Shutdown Cooling AA1.02 Ability to operate and/or monitor the following as they apply to Loss of Shutdown Cooling: RHR/shutdown cooling  
IMPORTANCE: RO 3.5 SRO 3.5
- Operator is directed to restore shutdown cooling following an inadvertent RPS actuation, will restore shutdown cooling with RHR Pump B and establish a cooldown IAW with the AOI for loss of Shutdown Cooling.

**e. Perform Surveillance 3-SR-3.6.1.3.5(CSII) (Unit 3 Only)**

- New / Alternate Path / Simulator / Engineered Safety Feature
- 3-SR-3.6.1.3.5(CSII)
- 223002 Primary Containment Isolation System/Nuclear Steam Supply Shut-Off A4.01  
Ability to manually operate and/or monitor in the control room: Valve closures  
IMPORTANCE: RO 3.6 SRO 3.5
- Operator properly strokes and times Core Spray PCIS valve and restrokes valve for having a time above high alert but below limiting value when valve is stroked closed.

**f. Alternate Method of Determining Control Rod Position of a Single Control Rod**

- New / Alternate Path / Simulator
- 3-AOI-85-4
- 214000 Rod Position Information System A4.02 Ability to manually operate and/or monitor in the control room: Control Rod Position IMPORTANCE: RO 3.8 SRO 3.8
- Operator uses alternate methods of determining Control Rod position of a signal Control Rod in accordance with 3-AOI-85-4. When inserting the control rod one notch fails to restore position indication the operator fully inserts the control rod.

**g. Containment Venting High (Unit 2 and 3)**

- Modified / Simulator / Alternate Path
- 2/3-EOI Appendix-12 Primary Containment Venting
- 261000 Standby Gas Treatment System A2.14 Ability to (a) predict the impacts of the following on the Standby Gas Treatment System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High System Pressure IMPORTANCE: RO 3.0 SRO 3.2
- Vent Primary Containment IAW 2/3-EOI Appendix-12, due to high system pressure vent valve will cycle open and close until the operator adjusts flow to lower the system pressure.

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**h. Unit 2 Control Room actions for a major fire in Unit 2 Reactor BLDG (Unit 2 Only)**

- New / Simulator / Low Power
- 0-SSI-2-1, Unit 2 Reactor Building Fire EL 519 through 565 West of Column Line R11
- ✓ • 600000 Plant Fire on Site AA2.16 Ability to determine and interpret the following as they apply to Plant Fire on Site: Vital equipment and control systems to be maintained and operated during a fire IMPORTANCE: RO 3.0 SRO 3.5
- Perform Time Critical steps 10 through 24 of 0-SSI-2-1, prevent HPCI operation, aligns diesel generators, and commences rapid depressurization.

**In-Plant Systems:****i. Transfer of AC Alternate Source to Battery Charger Shutdown Board - C ONLY**

- New / Alternate Path
- 0-OI-57D, DC Electrical System
- 263000 A3.01 Ability to monitor automatic operations of the DC ELECTRICAL DISTRIBUTION including meters, dials, recorders, alarms, and indicating lights. IMPORTANCE: RO 3.2 SRO 3.3
- Simulate Transfer of AC Alternate Source to Battery Charger Shutdown Board - C ONLY and when charger malfunctions AC and DC power breakers will be placed in OFF.

**j. Align Common Accident Signal Logic Inhibit Switches**

- New / Emergency in Plant
- 0-SSI-21, Unit 3 Diesel Generator Building
- 600000 Plant Fire on Site AA2.17 Ability to determine and interpret the following as they apply to Plant Fire on Site: Systems that may be affected by the fire IMPORTANCE: RO 3.1 SRO 3.6
- Align Common Accident Signal Logic Inhibit Switches for all three Units.

**k. Alternate RPV Injection Standby Liquid Control System**

- New / Emergency in Plant / RCA
- 1-EOI Appendix-7B Alternate RPV Injection System Lineup SLC System
- 295031 Reactor Low Water Level EA1.08 Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate Injection systems: Plant-specific IMPORTANCE: RO 3.8 SRO 3.9
- Perform field actions to Line Up for Injection with SLC IAW 1-EOI Appendix-7B.

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